

Oral & Poster Presentations

Basic and Clinical
5th NEUROSCIENCE
Congress 2016

December 7-9, 2016 Razi Hall, Tehran, Iran



Oral & Poster Presentation



Chronic pain and insomnia

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Chronic pain has become the most reason for outpatient visits. A bidirectional relationship exists between pain and sleep disturbances. Two thirds of peoples with chronic pain experience a sleep disorder and pain is the number one cause of insomnia. Many patients with chronic pain do not feel refreshed in the morning. A sleep problem termed non-restorative sleep.

Research has demonstrated that individuals with chronic pain may experience several micro-arousals per hour of sleep which lead to awakening during the night as well as less efficient sleep. It is associated with increased high frequency EEG activity and decreased slow frequency EEG activity. This low quality sleep can then cause diminished energy, depressed mood, fatigue and decreased pain threshold and exacerbate the pain response.

The normal physiology of neuronal function, receptors and ion channels is altered by persistent pain. Chronic pain is classified to cancer-related, neuropathic, arthritis, and musculoskeletal pain.

Interdisciplinary and multimodal management of chronic pain must include specialists in psychology, physical therapy, occupational therapy, neurology and anesthesiology.

Drug used for chronic pain are multiple and include opioids, nonsteroidal antiinflammatory drugs, serotonin receptor ligands, antiepileptics, antidepressants, topical analgesics and adjuvants such as local anesthetics, alpha-2 agonists, baclofen, botulinum toxin and novel drugs such as cannabinoids and iron channel blockers.

Interventional management of chronic pain include the use of diagnostic blocks, therapeutic blocks, continuous catheter techniques (peripheral, epidural, intrathecal) and stimulation techniques such as acupuncture, transcutaneous electrical nerve stimulation and spinal cord stimulation.



Critical role of amygdaloid complex in emotional memories

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Considerable evidence suggests that the amygdaloid complex, which is composed of different nuclei and medially located deep within the temporal lobes, is directly or indirectly involved in emotional memories. It seems that long-term memory can be affected by the emotion experienced during the acquisition, consolidation, retention and retrieval phases of learning and memory processes. The amygdaloid complex mediates the formation and expression of stimulus-reward associations to process emotional memories. Among various nuclei of this complex, the basolateral (BLA) and central nuclei (CeA) of the amygdala have key elements in arousal regulation, expression of emotions, reward-related memory retrieval, fear memory processing and forming associations between affective states and environmental stimuli. The BLA may be highly involved in modulating inhibitory avoidance memory so that the activation or inhibition of different neurotransmitter systems including glutamatergic, GABAergic and dopaminergic systems affects memory formation in this task. Functional interactions between the BLA with other cortical and mesolimbic structures is essential for inducing and modulating emotional memories. For example, the BLA and the VTA via glutamatergic and GABAergic systems have a significant interaction for inducing inhibitory memory consolidation. In addition, acute and chronic stress have significant influences on learning and memory processes. The impairing effects of stress on memory formation, which may induce by the stimulation of the hypothalamic–pituitary–adrenal axis (HPA), depend on the functional changes of hippocampal formation and amygdaloid complex. It is important to note that stressful conditions change the extracellular level of neurotransmitters in the amygdala. The BLA GABA-A and 5HT1A receptors has also been shown to mediate stress-induced impairment of memory consolidation and retrieval. On the other hand, it seems that the CeA, that receives dense dopaminergic afferents from the ventral tegmental area (VTA) and anatomically connects with the nucleus accumbens (Nac), may be a critical site for the acquisition of emotional association memory and drug-related memories. The blockade of dopamine D1- and D2-like receptors in the CeA impaired the acquisition of the conditioned responses in a conditioned place preference task, suggesting the important role of this site in reward-related memory. Taken together, the amygdala, which has widespread projections to different brain regions such as the hippocampus, is a key structure for processing emotional memory.

Keywords: Basolateral amygdala; Central amygdala; Hippocampus; Emotions; memory formation



Feeling of social erosion

Mohsen Goodarzi, Sociologist, PHD

Numerous problems such as youth unemployment, the growth of slums, polarization of social norms, failure of socialization institutions, corruption and inefficient bureaucracy threaten the social cohesion. Some people experiences powerlessness in controlling the forces which determine their life. Due to individualized norms, weakness of collective conscience and decline of social trust, they can't organize themselves into collective action to cope to these problems. Therefore these separated persons experiences fear, frustration and anger. I employ the umbrella concept of "feeling of social erosion" to describe this situation. In contrast this, we can realize the trends which reflect the increased sensitivity to social and environmental threats. Some people pursuit to improving the life condition of poor and preserve the environment organized themselves in NGOs. These actions cause to form and growth of new forms of social solidarity, through developing the values such as participation and cooperation and eliminating violence and revenge sense. Considering the interaction of these two trends should be a framework to realizing the Iranian society. In this article, I will use empirical evidence to report "feeling of social erosion" and propose a necessity of "restructuring society and reinforcement of the State."

Key words: Social erosion, Social cohesion, Iranian society

Speaker: Eliana Garcia Cossio (PhD)



Integration of non-invasive transcranial brain stimulation with EEG/MEG.

Abstract

Recent developments in non-invasive transcranial brain stimulation techniques have allowed the induction of reversible changes in brain activity and the temporary modulation of cognitive, affective and motor brain functions. Transcranial electric stimulation (tES) and transcranial magnetic stimulation (TMS) are relevant tools to study brain structures or neuronal activity patterns for a given brain function. However, the direct effects of TES and TMS on brain oscillations have remained an enigma because of the inability to record them simultaneously. The use of such an approach could allow a more detailed understanding of the neural mechanisms involved and might provide high temporal resolution information regarding the modulatory effects of TES and TMS in cortical activity. This lecture aims at presenting novel knowledge about new and innovative approaches making the co-registration of tES and EEG/MEG possible as well as the co-registration of TMS with EEG.



Slow wave sleep enhancement and pain

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Sensory gating during deep sleep prevents feeling outside world. Some evidences suggest impairment of sensory gating during sleep is a feature of primary insomnia. On the other hand chronic pain can cause comorbid insomnia which in turn decrease pain tolerance in wake time.

Recently modern approaches have shown that manipulation of sleep and increasing sleep slow wave activity increase sensory gating. Here we review recent techniques in this regard which may be in future as an adjuvant therapy in management of pain during sleep hospitals. Rocking beds, rhythmic acoustic stimulation and slow oscillatory trans-cranial direct current stimulation mimic effects of slow wave sleep enhancing pharmacological drugs. An optimized combination of these techniques hopefully may decrease dosage of anti-nociceptive drugs.



Count: 1

Abstract ID: 575

Presentation Type: Oral

The effects of captopril on behavioral dysfunctions induced by lipopolysaccharide in male rats

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Background and Aim : Neuroimmune factors have been proposed as the contributors to the pathogenesis of behavioral disorders. Besides of protective effects against learning and memory impairments, captopril (Capto) has been shown to have anti-inflammatory and antioxidant effects. In the present study, the effects of Capto on behavioral impairments induced by lipopolysaccharide (LPS) were investigated.

Methods : The rats were divided into groups and treated: control (saline), LPS (1 mg/kg 2 h before behavioral tests), LPS- Capto10, LPS- Capto 50 and LPS- Capto 100 (10, 50 or 100 mg/kg Capto before LPS) and three groups including Capto 10, Capto 50, Capto 100 which were treated by 10, 50 or 100 mg/kg Capto before saline (instead of LPS). Morris water maze (MWM) and passive avoidance (PA) and LTP with high frequency stimuli (HFS) protocol of 100 Hz were carried out. IL-6 level of hippocampus and tissue concentration of malondialdehyde (MDA), total thiol, and the activities of superoxide dismutase (SOD) and catalase (CAT) in the cortex and hippocampus were determined

Results : In MWM, latency and traveled distance to find the platform in the control group and the groups pretreated by captopril before LPS was significantly lower than LPS group ($p < 0.05$ - $p < 0.001$). In PA test, the latency to enter the dark compartment by the naive control group and the groups pretreated by captopril before LPS was significantly higher than LPS group at 3, 24, 48 and 72 hours after receiving a shock ($p < 0.05$ - $p < 0.001$). In HFS protocol of 100 Hz, the amplitude of fEPSP was higher in control and LPS- Capto 50 groups compared to LPS group ($p < 0.05$ - $p < 0.01$). According to biochemical tests, Administration of Capto) LPS- Capto 50 and LPS- Capto 100 (significantly reduced the cortex and hippocampus tissue

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concentration of MDA ($P < 0.001$) while, increased the level of total thiol ($p < 0.01 - p < 0.001$), and the activities of SOD and CAT ($p < 0.01 - p < 0.001$) compared to LPS group. the level of hippocamp IL-6 reduced in LPS- Capto 50 and LPS- Capto 100 groups compared to LPS group ($p < 0.01 - p < 0.001$). : In MWM, latency and traveled distance to find the platform and In PA test, the latency to enter the dark compartment by the receiving captopril group without LPS was not significantly different compared to control group. According to biochemical tests, Administration of captopril significantly reduced the cortex and hippocampus tissue concentration of MDA while, increased the level of total thiol and the activities of SOD and CAT compared to control group ($p < 0.05 - p < 0.001$).

Conclusion : The results of present study showed that the Capto reduced the LPS- induced sickness behavior in rats and improved learning, memory and LPS induced synaptic plasticity and also improved the inflammatory response and oxidative stress

Keywords : Captopril, Behavioral disorders, Inflammation, Lipopolysaccharide, Memory



Count: 2

Abstract ID: 266

Presentation Type: Poster

The role of top-down feedback in figure-ground segregation: a computational modeling approach

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Background and Aim : The human visual system can effortlessly and accurately detect and identify objects even in complex and cluttered environments. Some studies demonstrated that feedback signals from higher to lower areas are crucial to segregating figure from background. In this study we proposed a recurrent convolutional neural network (CNN) using top-down feedback from higher level representation. The proposed recurrent model shows significantly better performance compared to the feed-forward CNN on the figure-ground segregation task.

Methods : Our proposed computational model is based on AlexNet architecture. This model is comprised of 8 layers including 5 convolutional and 3 fully connected layers. Proposed model consists of two processing stages: feed-forward and feedback. The feed-forward processing is as the same as traditional CNNs. To amplify the object related signals compared to the background signals in the feed-forward sweep we used object related signal from higher layers. The feedback vector is computed by a weight vector derived from the feed-forward sweep. In the weight vector, minimum values correspond to lower scores and maximum values correspond to higher scores in the output layer. To compute feedback signal in a lower layer the weight vector was back propagated. Then the initial representation of the image in a lower layer was modulated through feedback vector leading to generating new responses in the higher layers. By continuously performing this procedure, classes with less weight were removed from competition. We used data set from M. Ghodrati et.al. (Ghodrati, M., Farzmaadi, A., Rajaei, K., Ebrahimpour, R., & Khaligh-Razavi, S. M. (2014). *Frontiers in computational neuroscience*, 8, 74.) that was consist of five object categories at seven levels of variations (scale, position, rotation in depth and rotation in plain). We used four-fifths of object images as training data set and the remaining images superimposed on randomly chosen background from 4000 natural images as test data set.

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Results : The results show that the proposed recurrent mechanism significantly increased the performance of the CNN model at the most of variation levels. However, this improvement decays by increasing the variation level. This probably implies that another further mechanism is needed for the recognition in the very high image variation.

Conclusion : Experimental results demonstrated top-down feedbacks have important role in the figure-ground segregation. The feedback gradually removes the irrelevant background and improves the object recognition performance.

Keywords : figure-ground segregation, CNN, feedback, top-down feedback



Count: 3

Abstract ID: 499

Presentation Type: Poster

Effects of Left Prefrontal Transcranial Direct Current Stimulation on the Acquisition of Contextual and Cued Fear Memory

Submission Author: Shahsanam Abbasi

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Background and Aim : Behavioral and neuroimaging studies have shown that transcranial direct current stimulation, as a non-invasive neuromodulatory technique, beyond regional effects can modify functionally interconnected remote cortical and subcortical areas. In this study, we hypothesized that the induced changes of cortical excitability following the application of anodal tDCS over the left frontal cortex as pretraining, would affect functional connectivity in resting –state circuits of fear memory and consequently could improve or disturb the acquisition of fear memory

Methods : In order to evaluate the polarity-dependent effects of tDCS on the acquisition of fear memory and the functional connectivity, we applied left prefrontal anodal stimulation at 200 μ A for one session to healthy mice for the durations of 20 and 30 minutes prior to fear conditioning.

Results : Our results revealed that the administration of left prefrontal anodal (for both 20 and 30 minute durations) tDCS impaired the acquisition of both contextual and cued fear memory. In addition, we did not observe a direct correlation between stimulation duration and the efficacy of tDCS on the acquisition of contextual and cued fear memory.

Conclusion : In this study, the impairments of both contextual and cued memory further confirmed the previous studies reporting that the administration of transcranial stimulation would affect the activity of deeper structures like amygdala and hippocampus as the main components of fear memory circuit in acquisition , storage and expression of the memory

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Keywords : transcranial Direct Current Stimulation Left prefrontal cortex, Contextual and cued fear memory acquisition



Count: 4

Abstract ID: 620

Presentation Type: Poster

Electrophysiological study of effect of intraperitoneal injection of phenytoin on anesthetized rats hippocampal neuronal circuits

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Background and Aim : Epilepsy is a serious neurological disorder. patient with epilepsy often suffer from one or more mental disorders are the major ones is that undermine learning and memory. Phenytoin is one of the most common drugs used to treat epilepsy. Research has shown that the use of this drug can cause or exacerbate learning and memory impairment. Although many studies have been conducted on effect of antiepileptic drug. However, the mechanism of the drug in learning and memory impairment has not been determined. The aim of this study was to investigate the cellular mechanisms effect of phenytoin on circuits in the hippocampus involved in spatial learning in anesthetized rats.

Methods : In this experimental study, 12 male vistar rats were divided into two groups. The control group which received saline every other day for one month and phenytoin group that treated with 30 mg/kg of phenytoin and other experimental parameters was as same as control group. Forty eight hours after the last injection, To evaluate changes in synaptic transmission in the CA1 region of the hippocampus, field excitatory postsynaptic potentials from the stratum radiatum of CA1 neurons, were recorded following Schaffer collateral stimulation and synaptic transmission, long-term potentiation and paired pulse index (PPI) were measured in them.

Results : The results showed that phenytoin causes deficits in synaptic transmission and long-term potentiation (LTP) in the hippocampus. In addition, paired-pulse index with a 20 msec interstimulus interval was decreased in phenytoin rats as compared to control group. Paired pulse paradigm with 120 msec ISI shows facilitation of the second population response in phenytoin treated animals.

Conclusion : In conclusion, deficit in synaptic transmission, blocked LTP induction and change the paired pulse index may explain the negative effect of phenytoin on learning abilities in rats.

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Keywords : Phenytoin; Hippocampus; Epilepsy; Long term potentiation; Synaptic transmission; Paired pulse index



Count: 5

Abstract ID: 197

Presentation Type: Poster

Maternal exercise increased neurogulin1 gene expression in newborns

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Background and Aim : Neuregulin-1 (Nrg1)/ErbB signaling pathway regulates neuronal development, migration, myelination, and synaptic maintenance. The Nrg1 gene encodes a family of signaling proteins mediating cell-cell interaction in the brain and other organs by signaling through ErbB receptor tyrosine kinases. Physical exercises improve learning and memory. The exact mechanisms involved in the memory improvement through the exercise have not been well understood. This study was aimed to assess the effect of maternal exercise during pregnancy on the (Nrg1)/ErbB signaling in the pups.

Methods : After confirming pregnancy, the pregnant rats were divided into two groups: the control group and the exercise group (n=9 in each group). In Control group: the animals with any exercise were housed in their cage for 4 weeks. In exercise group: the animals were forced to run on treadmill for 30 min at a mild-intensity, from 1th day of pregnancy, 5days a week until delivery. After all the pregnant rats had given birth, the hippocampus of the newborns was removed to assess the gene expression of NRG1 and ErbB4.

Results : The gene expression of NRG1 in exercise group significantly increased compared to control group ($p < 0.01$). The gene expression of ErbB4 in exercise group significantly increased compared to control group ($p < 0.01$).

Conclusion : Our findings suggest the potential role of maternal exercises in the neural development and synaptic plasticity through the improvement of the (Nrg1)/ErbB signaling pathway in pups.

Keywords : Memory, Rat, Hippocampus, NRG1, Exercise, Pregnancy



Count: 6

Abstract ID: 126

Presentation Type: Poster

The role of cerebral/behavioral systems (BIS/BAS) in predicting the severity of Multiple sclerosis (MS) disease

Submission Author: Reza Abadi

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Background and Aim : MS is the most common neural disorder in young and middle-aged individuals in the world. The disease starts between 20 and 40 years of age and it is more common among women than men. The evidence of disease progression refers to the interplay between genetic and environmental factors. Three brain / behavior systems reflect brain structures which influence the sensitivity to reinforcing and punishing events, and they control emotional experiences.

Methods : The present study is a research conducted by the descriptive-correlational method. A number of 162 MS patients in the city of Shiraz were selected as samples via purposive sampling. The population consisted of all MS patients in the city of Shiraz and the multiple regression analysis was used. Research instruments Jackson-5 scale Developed by Jackson (2009) to appropriately measure r-TST, these scales include the subscale of behavioral approach system (BAS), the fight-flight system, freeze system (FFFS), and behavioral inhibition system (BIS). Six items are considered for each r-RST subscales. Expanded Disability Status Scale (EDSS) The EDSS is a method to evaluate the degree of neural disorder in MS. Developed by John F. Kurtzke, this scale determines the amount of disability in EDSS. This is to quantify the disability in eight functional systems (FSS) (Kurtzk, 1983).

Results : In this study, 162 patients with MS were studied. Results show that among the RST indices, the components of behavioral inhibition and the behavioral activation system are significantly able to predict the severity of the extent of disability of MS. Beta values specify that the behavioral inhibition system (? = 0/31, P <0/05) is significant in the severity of disability of MS.

Conclusion : Results indicate that the RST components of behavioral inhibition and behavioral activation systems are significantly able to predict the severity of MS and the extent of the disability. Results of the present study also revealed that MS patients have higher mean scores in terms of the behavior inhibition system. This analysis can be explained by referring to the theoretical model developed by Gray. This system

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is activated by aversive stimuli (e.g. adverse emotional experiences such as fear, anxiety, disappointment, sadness, sorrow, and depression). In the case of anxiety, the patient has an active behavioral inhibition system. This causes intense anxiety, behavioral inhibition, and risk avoidance. Based on BIS functioning, such patients are expected to be shy, socially isolated, sensitive to punishment, and vulnerable to failure, and they often lose their courage and have difficulty in or fail to develop active ways to encounter situations. Such individuals seem to experience more anxiety than others in facing stressful events.

Keywords : cerebral/behavioral systems (BIS/BAS) , Multiple sclerosis (MS)



Count: 7

Abstract ID: 339

Presentation Type: Poster

The role of exercise in reducing depression, anxiety and stress in older women in Kermanshah

Submission Author: Nasrin Abdoli

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Background and Aim : Aging is a stage of human life, naturally accompanied by reduced physical and mental abilities, Exercise is one way of preventing mental disorders in the elderly. Sports and activities would postpone aging and older people who exercise are greater health and vitality given the importance of the quality of life in old age, to compare the effect of stress, anxiety and depression in elderly women athletes and non-athletes

Methods : This research method is descriptive - comparative. The study population were women who were aged for sports and physical activity clubs and comparison with women without physical activity were referred to the parks. The study population were women who were aged for sports and physical activity clubs and comparison with women without physical activity were referred to the parks. 42 elderly women aged 60 to 75 were selected by convenience sampling method In this study, demographic questionnaire and interview study of sports and also test (DASS) were used. The chi-square test, T independent data analysis and comparison of stress, anxiety, and depression among athletes and non-athletes

Results : The results showed that the stress, anxiety and depression among athletes and non-athletes is very different

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Conclusion : Based on the findings of exercise and physical activity can reduce depression, anxiety and stress in older women help And as effective manner and in conjunction with other common support in reducing depression, anxiety and depression to be used.

Keywords : Depression ; anxiety ; stress ; athletes; non-athletes



Count: 8

Abstract ID: 341

Presentation Type: Poster

riders in the highly aggressive offender in Kermanshah

Submission Author: Nasrin Abdoli

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Background and Aim : One of the most common causes of death in traffic accidents during motorcycle accidents ,So that more than 20 percent of deaths are motorcyclists accidents in Iran. Many people who lost their lives in accidents caused by motorcyclists do not ride a motorcycle license. Applicants must have the physical and mental health status in terms of vision, hearing and physical disabilities and mental illness that can reduce the lack of ability to control the engine, leading to an increase in accidents, be examined. Legal Medicine Organization said in a report: three-fourths of dead motorcyclists under 40 years of age. According to ISNA, Forensic Medicine Organization said in a report that head trauma and multiple fractures more than 80 percent of deaths due to motorcycle riders and motorcycle riders dead while more than 60 percent under 30 years of age.

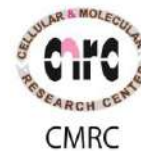
Methods : In this study, motorcyclists were about 443 people had completed the questionnaire demographic and aggression among motorcyclists offender was seized vehicle they were studied .The offending vehicle was confiscated from among motorcyclists were studied Analyze the data, descriptive and inferential statistics and t-test was used and solidarity with spss22

Results : 25 percent and 75 percent certified engines were on motorcycles without license. The subjects under 20 years of age to 59 years, The mean age of 30 with a standard deviation of 9 Justice Education, respectively, 4/9, 4/36,41/39,63.bysvad, elementary and junior high, Diploma and Advanced Diploma were older .and Job requirements by 58/10.68 / 96.96 / 13.92 / 27 and 83/37 percent respectively idle, clerks, drivers, are free Of the sample, 24 per cent of drugs (methamphetamine, alcohol, tobacco ...) reported. Between the aggressive driving was higher than the norm of society .Among the riders addicted higher aggression levels and at the level of 0/95is significant

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Conclusion : In general, it seems that due to the low immunity of the vehicle and the high percentage of dead resulting from motorcycle accidents and an impressive number of wounded, injured and disabled people who enjoyed these types of accidents, Most of them are young people and adolescents, and harassment for their citizens' rights Serious attention of decision-makers and regulatory agencies to make appropriate decisions and rigor in regard to mental health on the one hand training certification through the media show. The consequences of inappropriate use of the vehicle for the people to pay attention to safety recommendations on the other hand, it seems absolutely necessary.

Keywords : motor riding, aggression, addiction,



Count: 9

Abstract ID: 94

Presentation Type: Poster

Temperament and Character dimensions in PTSD and BPD. Is Borderline personality disorder sort of post-traumatic stress disorder?

Submission Author: Ayda Abdollahzadeh jeddi

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Background and Aim : Differential diagnosis of overlapping disorders is one of the main areas of research in the field of mental disorders which is a very basic area. Overlapping syndrome and some underlying factors result in some issues which make the diagnosis and treatment of the disorder difficult. Therefore, extensive and through research in this area can help to create more accurate and more specific treatment for a medical disorder. Since the inclusion of post-traumatic stress disorder (PTSD) in DSM_III, its similar aspects with borderline personality disorder (BPD) such as similarity in symptoms and etiological similarity especially history of childhood trauma in majority of BPDs, has called researchers attention. In this study we tried to investigate and compare patterns of temperament and character for PTSD and BPD patients.

Methods : 26 inpatients with post-traumatic stress disorder, 26 inpatients with borderline personality disorder and 26 healthy people (as control group) completed Cloninger's Temperament and Character Inventory (TCI_125).

Results : Results from data multivariate variance analysis showed that there is meaningful differences in character and temperament dimension. BPD inpatients in comparison with PTSD inpatients have higher Novelty-Seeking and Reward-Dependence and lower Harm-avoidance and Self-directedness.

Conclusion : Existence of significant differences disorders in Novelty Seeking (NS), Harm Avoidance (HA), Reward Dependence (RD) and Self Directedness (SD) between the patients of the two groups challenges and rejects the hypothesis that these two disorders are similar. Based on these significant differences and considering the theoretical background regarding the stability and genetic nature of temperament dimensions, it can be concluded that PTSD and PBD patients have temperament differences with each other and PTSD and PBD cannot be different cases of a same disorder .For further studies, larger samples including inpatients and outpatients which can help us to discover the effect of disorder severity on these patterns is suggested.

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Keywords : Post-traumatic stress disorder; Borderline personality disorder; Temperament; Character; Cloninger's Theory

Count: 10

Abstract ID: 545

Presentation Type: Oral

The effects of active fractions of *Buthotus schach* Scorpion venom on ion channel

Submission Author: Akram Aboutorabi

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Background and Aim : Potassium channels are membrane proteins, which play a major role in cellular excitability and signal transduction path. Scorpion toxins blocking the ion-conducting pore from the outside have been invaluable tools to illustrate the structural, functional, regulation, physiology and pathology characteristics of these ion channels. Bothotous Schach (BS) scorpion fractions consists of several polypeptides that could modulate ion channels. In this study, the effects of BS fractions on passive and active electrophysiological properties of rat neurons in supraoptic nucleus (SON) of hypothalamus was investigated using current clamp condition.

Methods : Young male rats (50-80g) were anesthetized with ether and decapitated, then brains were rapidly removed and placed in ice-cold, oxygenated aCSF solution. Brain slices containing Supraoptic nucleus (300µm) were prepared with a Vibrating microtome. The slices were transferred into recording chamber. The scorpion venom was applied in different concentration through extracellular recording solution.

Results : The results showed that bath application of BS fraction 2 and 3 produced significant change in passive properties of SON neurons, namely a decrease in resting membrane potential and an increase in input resistance of the cells. Also, significant change in active properties of SON neurons was shown after bath application of BS F2 and F3; including a decrease in the number of evoked action potential along with

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an increase in half-width of action potential and a significant decrease in after hyperpolarization amplitude. In addition, a decreased latency to the first spike accompanied by a lower current threshold to elicit the first spike was shown compared with the values before F2 and F3 application.

Conclusion : These findings suggested F2 and F3 suppressed the firing and neuronal excitability in spontaneous action potential protocol possibly by interfering with ion channels function, potassium channels.

Keywords : Buthotus Schach , Scorpion venom fraction, ion channel

Count: 11

Abstract ID: 379

Presentation Type: Poster

The effect of cognitive cueing intervention on speaking fundamental frequency in individuals with Parkinson's disease

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Background and Aim : Cognitive cueing is one of the voice therapy approaches that changes speaker's voice by stimulating mental patterns. In the current study, cognitive cueing was used in order to change mean and range of fundamental frequency in the individuals with Parkinson's disease.

Methods : This study is the kind of pre-post intervention without control group that was done over 15 adults (11 men, 4 women) with Parkinson's disease (mean age: 55.13 years). They were asked to read 6 sentences with keywords including respectively "firmly", "down", "pull", "sad", "up", "quick" twice, before and after cognitive cueing. The mean and range of fundamental frequency during reading of keywords and sentences was analyzed by praat software.

Results : Results showed that after cognitive cueing, fundamental frequency mean in all keywords and sentences have been significantly increased ($p < 0.05$). The range of fundamental frequency changed only in the keywords of "firmly" and "pull" and the sentence included "up" after cognitive cueing but no significant increase has been seen in other keywords and sentences.

Conclusion : Cognitive cueing can cause changes in the speaking fundamental frequency in individuals with Parkinson's disease with the focus on the image of words and sentences. It is suggested to investigate utility of cognitive cueing approach to improve monotone and monoloudness in individuals with Parkinson's disease in future.

Keywords : Cognitive cueing; Parkinson; Fundamental frequency; Prosody



Count: 12

Abstract ID: 21

Presentation Type: Poster

Hippocampal MnSOD enhancement by simvastatin in a rat model of streptozotocin-induced cognitive decline

Submission Author: Soheila Adeli

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Background and Aim : Brain oxidative status is a crucial factor in the development of sporadic Alzheimer's disease (AD). Klotho, an anti-aging protein, diminish oxidative stress by inducing the manganese superoxide dismutase (MnSOD) transcription. Hence, Klotho-enhancing molecules could be considered as a therapeutic approach for the treatment of Alzheimer's disease where oxidative imbalance is the main pathogenesis. Statins are one of many potential candidates that may up-regulate Klotho expression.

Methods : We examined the effect of simvastatin (5 mg/kg, daily, 3 weeks) on hippocampal Klotho and MnSOD expression in an animal model of intracerebroventricular (ICV)-streptozotocin (STZ) induced cognitive decline. Cognition was evaluated with the Morris Water Maze (MWM) test

Results : We observed significantly improved spatial performance in simvastatin treated animals. This effect may be due in part to increase of defenses against oxidative stress as shown by Klotho and MnSOD up-regulation in simvastatin treated group.

Conclusion : The study indicates the effectiveness of simvastatin in preventing cognitive impairment and oxidative stress induced by ICV-STZ. Our current study suggests the potential neuroprotective role of simvastatin as Klotho-enhancing molecules against cognitive decline in AD

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Keywords : Alzheimer, Cognitive impairment, Klotho, Manganese superoxide dismutase



Count: 13

Abstract ID: 246

Presentation Type: Oral

Evaluating executive functions in patients with temporal lobe epilepsy by frontal assessment battery

Submission Author: Elmira Agah

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Background and Aim : Whether cognition and executive function is impaired in temporal lobe epilepsy (TLE) or not, is a matter of debate. Many studies answered yes to this question, but some have disagreed. The aim of present study is to apply frontal assessment battery (FAB) as a useful tool to evaluate executive function in TLE patients.

Methods : Forty eight TLE patients and 48 sex and age-matched healthy controls participated in this study. A trained medical student interviewed and instructed TLE patients to perform the six subtests of FAB including conceptualization (similarity), mental flexibility (fluency), motor programming (Luria motor series), sensitivity to interference (conflicting instructions), inhibitory control (Go-No-Go Task) and Environmental autonomy (prehension behavior). The total FAB score and its subtest scores were calculated and compared in both study groups.

Results : The total FAB score was significantly lower in the patient group. TLE patients performed significantly worse at mental flexibility, motor programming, sensitivity to interference and inhibitory control tasks. Time passed since the last seizure was the only significant predictor of FAB score and patients with the last episode of seizure in less than a week had fewer FAB scores.

Conclusion : In conclusion, the results of the present study confirm previous studies indicating impaired executive function in TLE patients and suggest time passed since the last seizure as a significant predictor of executive function in these patients, which is needed to be assessed further in the future.

Keywords : Temporal lobe epilepsy; Executive function; Frontal assessment battery



Count: 14

Abstract ID: 248

Presentation Type: Poster

Metronidazole Induced Encephalopathy: a common drug with an uncommon side effect

Submission Author: Elmira Agah

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Background and Aim : Metronidazole is among the most widely used antibiotics for treatment of many infections. It is usually safe and tolerable, but in rare cases may have serious side effects involving the nervous system.

Methods : Here, we report a patient with encephalopathy, cerebellar dysfunction and bilateral hearing loss secondary to taking metronidazole as a part of H. Pylori treatment.

Results : Brain magnetic resonance imaging (MRI) without contrast demonstrated bilateral symmetric T2-weighted hypersignal lesions in dentate nucleus, the splenium of corpus callosum and cerebral white matter. Dramatic was seen following discontinuation of the metronidazole and adjuvant therapy with L-carnitine and coenzyme Q10.

Conclusion : Nervous system toxicity should be considered in patients under treatment with metronidazole and the drug should be discontinued by developing any sign of neurotoxicity. It is not clear whether administration of L-carnitine and coenzyme Q10 shorten the course of the disease and accelerate the improvement.

Keywords : Metronidazole Induced Encephalopathy; Neurotoxicity; Drug adverse event



Count: 15

Abstract ID: 642

Presentation Type: Oral

Nitric oxide pathway presumably does not contribute to anti-anxiety and memory retrieval effects of losartan

Submission Author: Iraj Aghaei

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Background and Aim : Stress can be defined as a subjective experience of threats when individuals are grappled with physical or psychological burdens. Nitric oxide and angiotensin (AT) receptors have demonstrated well-established interactions in sets of physiological phenomena. AT1 receptors can play a part in stress-induced activation of hypothalamic-pituitary-adrenal (HPA) axis; besides angiotensinergic neurotransmission plays a pivotal role in stress-evoked physiological responses. Based on the stress-modulating characteristics of both NO, AT1 and AT2 receptors, the present study has attempted to evaluate the roles of nitric oxide and AT1 receptors on the anti-stress effects of losartan.

Methods : In the current study, male Wistar rats were exposed to the communication stress box by using a novel method to induce physical or psychological stress. In this regard, losartan, losartan+L-NAME, L-NAME, and normal saline treated groups were all compared.

Results : The results showed that losartan has the ability of reducing both types of stresses and enhancing memory retrieval. Anxiety-like behaviors were significantly attenuated by administration of losartan, remarkably in psychological rather than physical stress group.

Conclusion : Our results indicate that losartan can not only improve memory retrieval but also lessen anxiety-like behaviors probably through some other involved mechanisms rather than nitric oxide pathway

Keywords : Nitric Oxide; Losartan; Memory; Anxiety; AT1 and AT2 receptors



Count: 16

Abstract ID: 678

Presentation Type: Poster

the protective effect of curcumin on anxiety and social interaction in offspring with autism

Submission Author: Forough Aghajani torshkooh

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Background and Aim : autism is a severe and pervasive heterogeneous neurodevelopment disorder. that usually show in childhood and under the influence of genetic and environmental and toxicant impacts. the hallmark of autism include poor social interaction, lack of concentration, repetitive behavior patterns and anxiety. curcumin play a role in preventing degenerative disease of the brain. recently the role of curcumin have examined in cognitive activity.

Methods : In the present study, 50 female albino Wistar rats (200-240 g) are used. In this study ,animals are classified into five groups (10 rat in each groups): pregnant rat with 400mg/kg vpa in 12.5day, pregnant rat with carrier in 7-11day ,pregnant with curcumin(50mg/kg/day/i.p)in 7-11day and 400mg/kg vpa in 12.5day, pregnant with curcumin (100mg/kg/day/i.p)in 7-11day and 400mg/kg vpa in 12.5day and pregnant with curcumin (200mg/kg/day/i.p)in 7-11day and 400mg/kg vpa in 12.5day.the animal maintained on 12h light and dark cycle and had free access of food and water. first, female with male rat in the weight range can be given to pregnant female rat to be done then isolated female rats than male rats and transmitted a separate cage.in each group anxiety and social interaction were tested by elevated plus maze and 3-chamber social test.

Results : in assessment of anxiety in the percentage of time spent in the open arm of elevated plus maze was decreased in positive control as compared to negative control. there was a significant and dose-dependent decreased in anxiety like behavior after the regular administration of curcumin at the dose of 200mg/kg. social novelty is defined as the ability to prefer and interact with new social over the old partner.in the social novelty test negative control spend more time as compared to positive control. the time

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spent in interaction with stranger2 has significantly increased after treatment with curcumin as compared to positive control. Similarly, test for social preference indicates that negative control spent more time as compared to positive control and the time spent in interaction with stranger1 has increased after treatment with curcumin.

Conclusion : This study indicates that curcumin can reduce anxiety and improve social interaction in children born in a model of autism. The results of this study show that curcumin may be able to improve cognitive disorders in patients with autism that need to be investigated further.

Keywords : Rat; Curcumin ; Autism



Count: 17

Abstract ID: 605

Presentation Type: Poster

Exposure to enriched environment protects against the impairment of avoidance memory and long-term potentiation by transient cerebral ischemia in rats

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Background and Aim : It has been demonstrated that environment enrichment (EE), where animals are placed in a complex novel environment improves synaptic plasticity in both injured and intact animals. The present study studied the capacity of an early environmental intervention to normalize the impairment of passive avoidance memory and long-term potentiation (LTP) induced by transient bilateral common carotid artery occlusion (2VO) in rats.

Methods : Young Wistar rats (at the age of 22) and after weaning, were housed in EE or standard environment for 40 days. Transient (30-min) incomplete forebrain ischemia was produced 4 days before the passive avoidance memory test and LTP induction.

Results : Passive avoidance memory and LTP induction in the perforant path-dentate gyrus (PP-DG) synapses were significantly impaired by transient forebrain ischemia. Interestingly, growing in EE prior to 2VO was found to significantly reverse 2VO-induced cognitive and LTP impairments.

Conclusion : early housing and growing in EE exhibits therapeutic potential to normalize cognitive and LTP abnormalities induced by 2VO ischemic model in rats.

Keywords : environment enrichment ; memory, stroke, LTP

Count: 18

Abstract ID: 277

Presentation Type: Oral

Hepatic encephalopathy decreased expression of p38 mitogen activated protein kinase in the hippocampus in rat

Submission Author: Shamseddin Ahmadi

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Background and Aim : Hepatic encephalopathy (HE) is a term that is used to describe some alterations in cerebral and cognitive functions that result from liver failures. There are different reports that HE is primarily induced by hyperammonemia and brain inflammation followed by liver failure. Mitogen-activated protein (MAP) kinases are key molecules in the signaling pathways of inflammatory and neurotransmitter receptors. It has been reported that MAP kinases are affected at transcriptional and post-transcriptional levels in hepatic encephalopathy in response to inflammation induced by hyperammonemia. The aim of the present study was to investigate expression of a main member of the MAP kinase family known as p38 MAP kinase in the hippocampus of rats with hepatic encephalopathy.

Methods : Male Wistar rats weighing 300-350 g were used. Chronic liver failure was induced using a common bile duct ligation (BDL) in a group of rats as a model of HE. Sham control operation consisted of laparotomy and bile duct identification without ligation and resection. On day 28 after the surgery, the animals were decapitated, their brain were removed and the hippocampus was dissected from both hemispheres of each rat. A RT-PCR as well as western blotting methods were used for evaluating gene and protein expressions of the p38 MAP kinase in the hippocampus. The results of p38 expression between the sham control group and the group with HE was analyzed with independent sample t-test. $P < 0.05$ was defined as statistical significant level.

Results : The result of gene expression of p38 MAP kinase in the hippocampus revealed a significant decrease ($P < 0.01$) at mRNA level in the rat model of HE group compared to sham control group. In addition, the result of western blotting method for protein expression of p38 MAP kinase in the hippocampus also showed a tendency to decrease in the group with HE compared to sham control group.

Conclusion : It can be concluded that changes in p38 MAP kinase in the hippocampus may associate with brain inflammation and cognitive impairment in animals with HE.

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Keywords : p38 MAP Kinase, Gene expression, Western blotting, rat



Count: 19

Abstract ID: 243

Presentation Type: Poster

Considering the McGurk effect in the ASD and Schizophrenic patients. A review article.

Submission Author: Negar Ahsant

Negar Ahsant¹, Anahita Khorrami²

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Background and Aim : In this study we consider the McGurk effect as an important phenomenon in related to the multisensory integration in speech perception for psychiatry disorder. In the McGurk effect, pairing incongruent auditory and visual syllables produces a percept different from the component syllables. There are a lot of studies that investigate this effect in the different disorders, especially disorders such as Autism Spectrum Disorder and schizophrenia. ASD and schizophrenia are neurodevelopmental disorders that have extensively been associated with impairments in functional brain connectivity. Studies have shown that patients with ASD have Multisensory Integration difficulties that impact their speech perception and language development. On the other hand, studies on the patients with schizophrenia showed that the cognitive impairments seen in this disorder may be due to deficits in the integrity of connections between brain areas.

Methods : In this review we focused on the most studies considering these two disorders in terms of difficulties in MSI and the McGurk effect.

Results : According to the studies both ASD and Schizophrenic patients have deficits in the McGurk effect.

Conclusion : Considering these studies may help researchers to design new investigations for neuropsychological assessment or treating these patients and this can lead to improving their condition in social relationships and speech processing.

Keywords : Multisensory Integration, McGurk effect, ASD, Schizophrenia



Count: 20

Abstract ID: 549

Presentation Type: Oral

Can Age and Gender Effects on Executive Functions of Iranian Healthy Adults?

Submission Author: Malahat Akbarfahimi

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Background and Aim : Executive functions refer to a group of higher-order cognitive processes responsible for self-regulated and targeted behavior. This study aimed to investigate the effects of age and gender on executive functions by focusing on three distinct areas of attention control, planning and set shifting among healthy subjects 18-80 years old.

Methods : This cross-sectional study involved a total of 200 healthy sample adults (100 women and 100 men) 18-80 years of age living in Tehran. Sampling was done through a random stratified cluster procedure regarding the inclusion and exclusion criteria. Each area of executive function was evaluated using Stroop test for attentional control, Tower of London test for planning and problem-solving and Wisconsin test for set shifting. The correlation between age and components of executive functions was evaluated through Pearson correlation test. Moreover, the differences between age groups were examined by ANOVA while correlation between gender and components of executive functions was examined by T-test.

Results : Age was significantly correlated with all subscales of Stroop test except time-interference, with the total number of errors and the overall result from Tower of London and all subscales of Wisconsin ($P < 0.001$, $R = 0.49$). There were no gender effect on executive function except total time ($t = -2.09$, $p = 0.037$) and the number of errors ($t = -9.2$, $p = 0.004$) in Tower of London test which was significantly higher in women than men.

Conclusion : In this study, executive functions included attentional control, planning and set shifting decreased at higher ages. Problem-solving and planning were better in men than women.

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Keywords : executive function, age, gender, healthy individuals



Count: 21

Abstract ID: 347

Presentation Type: Poster

Regulation of anxiety by GABA-A receptor and Morphinergic System of Basolateral Amygdala

Submission Author: Atefeh Akbari

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Background and Aim : Anxiety is a psychological, physiological, and behavioral response to anticipation of an aversive. Basolateral Amygdala is an important site of anxiety. muscimol acts as a competitive agonist at GABA-A receptors and also Morphine has the effect of relieving anxiety through the π -opioid system and exerts Suppression of GABA inhibitory inputs.

Methods : Interactions between gabaergic and opioidergic systems in Basolateral amygdala were used for investigation anxiety. The elevated plus-maze has been employed. The male wistar rats were used for this test. The site of BLA were cannulated unilaterally. Rats were injected by morphine intraperitoneally, while muscimol were injected to BLA. Open arm time percentage (%OAT), open arm entry (%OAE) and locomotor activity were determined by this behavioral test.

Results : Administration of morphine (6mg/kg) increased the OAT% in anxiety test. Intra Basolateral amygdala administration of muscimol (0.2 μ g/rat) increased OAT%, indicating of decrease anxiety-like behaviour. While co-administration of intra Basolateral amygdala muscimol (0.2 μ g/rat) and ineffective dose of morphine (4mg/kg) showed a significant increase of OAT%, presenting anxiolytic response.

Conclusion : It should be noted that there is no significant changes in locomotor activity. The results indicate that morphine creates the compromise changes in gabaergic neurons of Basolateral amygdala by changing the gabaergic system on anxiety.

Keywords : Basolateral Amygdala; GABA-A; Anxiety; Rat



Count: 22

Abstract ID: 121

Presentation Type: Poster

Effect of probiotic supplementation on cognitive function in Alzheimer's disease: a randomized, double-blind and controlled trial

Submission Author: Elmira Akbari

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Background and Aim : Alzheimer's disease (AD) is associated with severe cognitive impairments. Scant studies in animal models indicate a link between probiotics and cognitive function. This randomized, double-blind and controlled clinical trial was conducted among 60 AD patients to assess the effects of probiotic supplementation on cognitive function.

Methods : The patients were randomly divided into two groups (n=30 in each group) treating with either milk (control group) or a mixture of probiotic (probiotic group). The probiotic supplemented group took 200 ml/day probiotic milk containing *Lactobacillus acidophilus*, *Lactobacillus casei*, *Bifidobacterium bifidum* and *Lactobacillus fermentum* (2×10⁹ CFU/g for each) for 12 weeks. Mini-mental state examination (MMSE) score was recorded in all subjects before and after the treatment.

Results : After 12 weeks intervention, compared with the control group (-5.03%±3.00), the probiotic treated (+27.90%±8.07) patients showed a significant improvement in the MMSE score (P<0.001).

Conclusion : Overall, the current study demonstrated that probiotic consumption for 12 weeks positively affects cognitive function in the AD patients.

Keywords : Alzheimer's disease; Clinical trial; Cognitive function; Probiotic



Count: 23

Abstract ID: 680

Presentation Type: Poster

Downregulation of CYP27B1 gene expression in Iranian patients with relapsing remitting multiple sclerosis

Submission Author: Zahra Akbari

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Background and Aim : Multiple sclerosis (MS) as a complex neurological disease can be due to vitamin D deficiency. CYP27B1 is referred to as a vitamin D metabolizing enzyme.

Methods : This study compared the expression level of CYP27B1 in Relapsing-Remitting MS (RRMS) patients with normal individuals in Iran. The RNA was extracted from 50 RRMS patients and 50 normal controls. Quantitative RT-PCR was adopted to measure the expression level of CYP27B1 gene.

Results : The expression level of CYP27B1 gene was significantly lower in the RRMS patients than their normal counterparts (P value=0.04). Also, the RRMS females participating had a significant reduction in CYP27B1 gene expression compared to normal females (P-Value=0.01). In addition, the correlation between CYP27B1 expression level, and the risk of Expanded Disability Status Scale of Kurtzke (EDSS) was not linear. Additionally, there was no significant correlation between expression status of CYP27B1 gene and duration of the disease.

Conclusion : A significant decrease in the expression level of CYP27A1 in female patients could indicate their greater vulnerability to MS than the male patients.

Keywords : Multiple sclerosis, CYP27B1 gene, vitamin D



Count: 24

Abstract ID: 558

Presentation Type: Poster

The role of NMDA receptor and nitric oxide /cyclic guanosine monophosphate pathway in the antidepressant-like effect of dextromethorphan in mice forced swimming test and tail suspension test

Submission Author: REYHANEH AKBARIAN

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Background and Aim : Depression is devastating disorder which has a high impact on the wellbeing of society. As such, need for innovative therapeutic agents are always there. Most of the researchers focused on N-methyl-D-aspartate receptor to explore the antidepressant like activity of new therapeutic agents. Dextromethorphan is a cough suppressant agent with potential antidepressant activity reported in mouse force swimming test. Considering N-methyl-D-aspartate as a forefront in the exploration of antidepressant agents, here we focused to unpin the antidepressant mechanism of dextromethorphan targeting N-methyl-D-aspartate receptor induced nitric oxide- Cyclic guanosine monophosphate signaling.

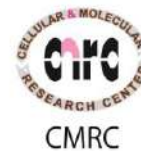
Methods : Forced swimming test; Tail suspension test

Results : Dextromethorphan administered at a dose of 10 and 30 mg/kg i.p significantly reduced the immobility time. Interestingly, this effect of drug (30 mg/kg) was inhibited when the animals were pretreated either with N-methyl-D-aspartate (75mg/kg), or L-arginine (750mg/kg) as a nitric oxide precursor and/or sildenafil (5mg/kg) as a phosphodiesterase 5 inhibitor. However, the antidepressant effect of Dextromethorphan subeffective dose (3 mg/kg) was augmented when the animals were administered with either L-NG-Nitroarginine methyl ester (10 mg/kg) non-specific nitric oxide synthase inhibitor, 7-Nitroindazole (30 mg/kg) specific neural nitric oxide synthase inhibitor, MK-801 (0.05 mg/kg) an N-methyl-D-aspartate receptor antagonist but not aminoguanidine (50 mg/kg) which is specific inducible nitric oxide synthase inhibitor as compared to the drugs when administered alone. No remarkable effect on

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locomotor activity was observed during open field test when the drugs were administered at the above mentioned doses.

Conclusion : It is evident that the antidepressant like effect of Dextromethorphan is owed due to its inhibitory effect on N-methyl-D-aspartate receptor and NO- Cyclic guanosine monophosphate pathway.

Keywords : Depression; Dextromethorphan; Forced swimming test ;Nitric oxide; NMDA, Mice



Count: 25

Abstract ID: 383

Presentation Type: Poster

MicroRNAs play an important role in the pathogenesis of fragile x syndrome

Submission Author: Mohammadhussein Akhlaghpasand

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Background and Aim : Fragile x syndrome (FXS) is one of the most important neurodevelopmental disorders that is counted as pivotal cause of inherited intellectual disability. This syndrome comes from the loss of function of fragile x mental retardation protein (FMRP) due to the hypermethylation of FMR1 gene. MicroRNAs (miRNAs) are small, noncoding RNAs that damp expression of the genes at the posttranscriptional level. They cooperate with the RISC complex to play an important role in posttranscriptional regulation. A large amount of investigations have studied the potential of using miRNAs in clinical diagnosis and therapies in various CNS disorders. Recent studies have reported that FMRP collaborates with core components of the RISC complex including Dicer and Argonaute. FMRP interaction with mRNAs and microRNAs (miRNAs) mediated in gene expression regulation at translational level so controls some of the brain functions. However, little is known about the transcription regulation of miRNAs by FMRP. We can divide the role of FMRP-miRNA cooperation in the pathogenesis of FXR into three categories: 1. Regulation of miRNA expression 2. Brain development and neural plasticity and 3. Act as translational repressor.

Methods : 1. Regulation of miRNA expression: Studies suggest that the miRNA expression alterations resulted from the absence of FMRP might contribute to molecular pathology of FXS. MiR-9 and miR-219, as well as several other miRNAs, are associated with FMRP in mouse brain function. 2. Brain development and neural plasticity: Some molecules like NMDAR, that have important role in brain development and neural plasticity, influenced by some of miRNAs like miRNA-125b and miRNA-132 suggesting the crucial role of them in FXS pathophysiology . 3. Act as translational repressor: Investigations prove the cooperation of miRNAs with RISC and suggest the crucial role for them in specifying mRNAs as the target of RISC. For instance miR-138 represses expression of acyl protein thioesterase1 (APT1) and regulates spine formation negatively. MiR-124 also inhibits cAMP response element-binding protein (CREB) expression.

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Results : Investigations have been conducted on the use of miRNAs for FXS pharmacotherapy. However, there are some problems with using miRNAs as therapeutic agents. One of the most important of them is that there aren't enough evidences that approve the essential role of some reported miRNAs in FXS's changes. However, some of the reported miRNAs like miR-125b, miR-138, miR-132, miRNA-219, miR-34b-5p, miR-340-5p, miR-101a, and miR-148a-5p might have ameliorative effects. Moreover, miRNAs are not the only player in the pathophysiology of FXR so they can be used in addition to other conventional treatments strategies to enhance their effects.

Conclusion : Today studies are directed to utilizing miRNAs as therapeutic or diagnostic agents. However, this work seems to be complicated at first with respect to pathophysiological role of miRNAs, they could be assessed in various positions.

Keywords : fragile x syndrome (FXS); miRNAs; pathophysiology; regulation of gene expression; therapeutic agents



Count: 26

Abstract ID: 201

Presentation Type: Poster

Multivariate Synchronization Analysis of EEG

Submission Author: Vahid Alamfard

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Background and Aim : Extraction of brain functional connectome is one of the first steps of decoding information processing in the human brain which is achieved through several methods in the literature, and investigation of these methods and their operation on EEG data has a crucial role in brain study today. In this research, we applied several multivariate synchronization methods on EEG signals and compared the results. Our EEG signal dataset is recorded from 20 people in relaxed state with closed eyes.

Methods : Signals are filtered into frequency bands of delta, theta, alpha, beta and gamma after pre-processing. Local synchronization methods applied include Correlation (Corr), Coherence (Coh), Mutual Information (MI), and Phase Lock Value (PLV). Global methods include Multivariate Phase Synchronization (MPS), Global Field Synchronization (GFS), Omega Complexity (Omega), State-Space estimator (SS) and State-Space estimator Based on Renyi Entropy (SS-Renyi).

Results : Local methods had correlation in alpha band and almost in all electrodes, but their correlation in beta and gamma bands was low in most electrodes using Coh method. This method also had the most difference in delta and theta bands. Results for Omega, SS and SS-Renyi was almost the same in all bands with high correlation. GFS was highly uncorrelated with other methods, except in alpha band and some electrodes in beta band which was correlated with Coh.

Conclusion : In a nutshell, results indicate that Correlation, Phase Lock Value, Mutual Information, State-Space estimator, Omega Complexity and State-Space estimator Based on Renyi Entropy methods are highly correlated, whilst Coherence method is correlated with these methods in alpha band. Global Field Synchronization is almost uncorrelated with all other methods.

Keywords : electroencephalogram; EEG; multivariate measurement; synchronization;



Count: 27

Abstract ID: 588

Presentation Type: Oral

Brain Functional Network Analysis of Alzheimer's disease : Changes in Global and Local Connectivity

Submission Author: Vahid Alamfard

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Background and Aim : Statistical studies indicate that Alzheimer's disease is the most common cause of psychosis, including 50 to 70 percent of the cases. This disease is usually developed in people who are more than 60 years old. nineteen percent of people in range 75 to 84 years old and 42 percent of people above 85 years old suffer from Alzheimer's disease. This disease destroys brain cells and causes problems in procedures of thinking, memory and behaviour which directly affects social life and working ability of the individual. Alzheimer's disease gets worse with time and finally results in death. Recent studies show there are structural and functional disorders in communication between anatomically separated regions of brain in these patients, which supports the hypothesis that Alzheimer's disease is a disconnection syndrome. Thus, investigation of these connections can help us to know this disease better.

Methods : In this research, we have used synchronization likelihood method for extracting functional connectome. Then using different threshold values, binary graphs are extracted and network criterions, clustering factor "C" and mean path length "L", are calculated as functions of threshold value. Also, Pearson product-moment correlation coefficient between Mini Mental State Examination (MMSE) factor and both C and L factors to consider the relationship between changes in topological parameters and biological criterions.

Results : Having clustering factor as a criterion for evaluating local connections among points and mean path length for evaluating global connections, brain functional connectome is investigated. Acquired connectome from each group is compared with random connectomes which have degree distributions equal to individual degree distributions. These comparisons indicate that brain connectomes have higher clustering factor and lower mean path length, which represents that brain connectomes are small-world networks. Also, negative correlation between MMSE score and mean path length for patients are presented.

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Conclusion : As a conclusion, our results indicated that clustering factor is almost the same in both patients and healthy groups, but mean path length is higher in the group with Alzheimer's disease. Hence, it can be concluded that Alzheimer's disease results in losing small-world-ness of brain connectome in the patients.

Keywords : alzheimer; electroencephalogram; EEG; synchronization;



Count: 28

Abstract ID: 454

Presentation Type: Poster

The effect of O-1602, an atypical cannabinoid, on morphine-induced conditioned place preference and physical dependence

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Background and Aim : Previous studies show that some non-CB1/non-CB2 effects of cannabinoids are mediated through G protein coupled receptor 55 (GPR55). As this receptor is activated by some of cannabinoid receptor ligands and is involved in the modulation of pain, it was hypothesized that this receptor may also interact with opioids. This study examined the effect of atypical cannabinoid O-1602 as a GPR55 agonist on morphine-induced conditioned place preference (CPP) and physical dependence.

Methods : We used a biased CPP model to evaluate the effect of O-1602 (0.2, 1 and 5 mg/kg, intraperitoneal; ip) on the acquisition and expression of morphine-induced CPP in male mice. The locomotor activities of mice were also recorded. Moreover, repeated administration of morphine (50, 50 and 75 mg/kg/day) for three days, induced physical dependence. The withdrawal signs such as jumps and diarrhea were precipitated by administration of naloxone (5 mg/kg, ip). The effect of O-1602 on the development of morphine physical dependence was assessed by injection of O-1602 (0.2, 1 and 5 mg/kg) before morphine administrations.

Results : Morphine (40 mg/kg, subcutaneous; sc), but not O-1602 (5 mg/kg) elicited significant preference in the post-conditioning phase. O-1602 at the doses of 0.2 and 1 mg/kg, but not 5 mg/kg reduced acquisition of morphine CPP with an increase in locomotor activity at the dose of 5 mg/kg. O-1602 at the doses of 0.2, 1 and 5 mg/kg also reduced expression of morphine CPP with an increase in locomotor activity at the dose of 5 mg/kg. O-1602 had a significant inhibitory effect on development of morphine-induced physical dependence at the dose of 5 mg/kg by decreasing jumps and diarrhea during withdrawal syndrome

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Conclusion : The present results indicate that O-1602 decreased acquisition and expression of morphine CPP and inhibited development of morphine-induced physical dependence.

Keywords : Morphine GPR55 protein Opiate dependence O-1602 Reward



Count: 29

Abstract ID: 526

Presentation Type: Poster

Nitric oxide inhibition disrupts the naloxone effect on inhibitory avoidance learning in mobile radiation exposed rats

Submission Author: Samaneh sadat Alavi

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Background and Aim : Effect of mobile radiation in memory consolidation disruption has been reviewed and approved in several studies. In previous study we have reported the involvement of opioid system in this process, which reflects the role of opioid receptors in the development of memory impairment as a result of the GSM radiations. In this study we assessed the relationship between opioid system with nitric oxide pathway, to identify if nitric oxide could enhance or inhibit the destructive role of opioid system on memory at the time of exposure.

Methods : Method: 60 male Wistar rats weighing 200 ± 20 g, as in the previous study, were anesthetized and then by stereotaxic apparatus, stainless steel canola were placed in the third ventricle of the brain. Three days after surgery, animals were divided in groups: control (no wave), Sham (Exposed with phone off) and treatment groups were (450-minutes missed call). In the train day, naloxone or saline at a volume of 2 μ l injected by Hamilton syringe into the third ventricle of the brain. After naloxone injection in the post train, respectively LNAME or L-arginine (50, 100 or 150 mg/kg) was injected intraperitoneally. After an hour, the rats were transferred to the chamber on passive avoidance learning apparatus.

Results : The results showed that LNAME, 50 and 100 mg/kg, reduce memory consolidation process in mice that received an effective dose of naloxone, but a dose of 150 mg/kg had no significant effect. In this regard, the use of L-arginine had no significant influence on protective effect of naloxone on memory consolidation phase after waves exposed.

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Conclusion : These results indicate, because nitric oxide inhibition disrupted the process of memory consolidation, Naloxone with nitric oxide cooperation plays protective role against waves. This results could confirm the theory of the effective role of nitric oxide on memory.

Keywords : LNAME; Opioid receptors; Inhibitory avoidance learning; Rat



Count: 30

Abstract ID: 641

Presentation Type: Poster

Evaluation of Human Motor Neuron Differentiation from Umbilical Cord Blood CD133 Positive Hematopoietic Stem Cells; in vitro

Submission Author: Sepideh Alavi moghaddam

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8. Cellular and Molecular Research Center, Iran University of Medical Sciences, Tehran, Iran.

Background and Aim : Central Nervous System diseases and especially spinal cord injuries impact on the life of many patients around the world. Since using chemical drugs and doing surgery are not efficient in regeneration of this tissue; stem cell therapy as a good strategy to restore the damaged cells is the focus of interest. Among different sources of stem cells, cord blood is an ethically approved reservoir which contains hematopoietic stem cells with multi lineage differentiation potential and self- renewal property. Interestingly, Umbilical Cord Blood CD133+ Hematopoietic Stem Cells(UCB- CD133+ HSCs) by their neural lineage differentiation capacity are appropriate cell candidate in regeneration of neural tissues. Accordingly, the aim of this study was to evaluate the differentiation potential of human UCB- CD133+ HSCs into motor neuron- like cells, in vitro

Methods : CD133+ HSCs were isolated from human UCB using MACS system. Then, flow cytometry was used to characterize the isolated cells. To induce motor neuron differentiation, CD133+ cells were treated with a combination of Retinoic Acid(RA), Sonic Hedgehog (Shh), Brain derived Neurotrophic Factor(BDNF), Fetal Bovine Serum(FBS) and B27 through a 2- step procedure for two weeks. The

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expression of motor neuron- specific markers; including Islet-1, AChE, NF-H, Nestin, ChAT, Pax-6 and Hb-9 was examined using Immunocytochemistry, Real time PCR and Flow cytometry.

Results : At the end of the first week of induction, the treated cells showed neural- like projections. One week later, the cells elongated and developed the morphology of neural cells. The cells could express AChE, NF-H, Nestin and Islet-1 at the end of the second week of induction. We could also detect the expression of Islet-1 (62.14 ± 2.39), AChE (41.82 ± 1.04), NF-H, (21.54 ± 1.11) and Nestin (17.45 ± 1.25) at this time point using Flow cytometry. The expression of Pax-6, Hb-9, AChE, ChAT, NF-H and Hb-9 was also confirmed using Realtime- PCR.

Conclusion : Our results showed that human UCB CD133+ HSCs are potent cell candidate to transdifferentiate into motor neuron-like cells, in vitro; however, more studies are needed to evaluate their function in vitro and in vivo.

Keywords : Umbilical Cord Blood; Hematopoietic Stem Cells; Motor Neuron; CD133



Count: 31

Abstract ID: 349

Presentation Type: Oral

The outstanding therapeutic effects of neural stem cells supported by a nanoscaffold in brain injury

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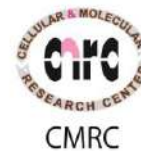
Background and Aim : Despite the vast majority of efforts, there is no definite clinical treatment for repair of damaged brain tissue following brain injury. In this sense, using stem cells and nanoscaffolds open a new window in front of scientists. The present study tried to address this issue.

Methods : Twenty male wistar rats were divided into four following groups: phosphate buffer saline (PBS), nanoscaffold, Neural stem/progenitor cells (NS/PCs) and nanoscaffold+ NS/PCs groups. At the beginning of the study, NS/PCs were stereotactically harvested from right subventricular zone of lateral wall of lateral ventricles and cultured for 45 days followed by pre labeling with bromodeoxyuridine (BrdU). Subsequently, brain injury was done in left side and treatments were performed. Neurological evaluations were done for four weeks. Then, molecular and histological assessments were carried out in terms of lesion volume, apoptosis, inflammatory reactions, cell migration, cell survival and cell differentiation.

Results : Combination of NS/PCs with nanoscaffold resulted in neurologic status improvement as well as reduction in lesion size, Astrogliosis, microglial and macrophagal reaction and apoptosis. The transplanted cells could migrate in the scaffold and most of them differentiate to neuroblasts.

Conclusion : Using nanoscaffolds with NS/PCs can be helpful for achieving a therapeutic strategy in a higher level for brain injury.

Keywords : Brain injury, neural stem cells, autologous transplantation, nanoscaffold, neural tissue engineering, rat



Count: 32

Abstract ID: 228

Presentation Type: Poster

Investigating the antioxidant role of vitamin C during cadmium neurotoxicity on stress in male rats

Submission Author: Yousef Alipour oliaei

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Background and Aim : Cadmium (Cd) was discovered as an element in 1817 and its industrial use was quite minor until 50 years ago. Cadmium is an extremely toxic metal commonly found in industrial workplaces, a food contaminant and a major component of cigarette smoke. Cadmium has been linked to neurotoxicity as well as infertility and cancer. [1] A wide variety of biological effects including central nervous system dysfunctions in humans and experimental animals have been reported earlier by cadmium. It has recently been reported that olfactory primary neurons are a route of entry for cadmium into central nervous system and it is known to enhance production of free radicals in brain. On the other hand, oxidative stress is causing anxiety. So the aim of this study is to investigate the effects of cadmium neurotoxicity on anxiety- like behaviors in the absence or presence of vitamin C, which is an antioxidant able to alter the brain oxidative stress status.

Methods : In this study, 63 male Wistar rats were used in 9 groups including: control (saline), cadmium (1.4 , 2.2 , 3 mg/kg), vitamin C (80 and 120 mg/kg), all doses of cadmium + vitamin C 80, all doses of cadmium + Vitamin C 120. The period of intraperitoneal injection (I.P) was once a day for 21 days. Elevated plus maze was used for studying the anxiety related behavior. Data analysis was performed by using one-way ANOVA.

Results : Results showed that I.P injection of cadmium in both doses, decreased the indices of anxiety on elevated plus maze ($p < 0.01$). Vitamin C in both doses has anxiolytic effects ($p < 0.001$). In the groups of different doses of vitamin C + different doses of cadmium, the presence of vitamin C improved the toxic effect of cadmium ($p < 0.01$).

Conclusion : In high doses , rats usually stand in the middle or close-arms. Anxiety was easily observed in some of them also extra amount of excreta was observed on plus maze when put the rats in it, that shows high degree of anxiety and stress in our experiment.

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Keywords : Cadmium, Vitamin C, Plus maze, Male wistar rat



Count: 33

Abstract ID: 143

Presentation Type: Poster

The effect of exercise during pregnancy on the hippocampal expression of NR2B receptors of neonatal rats

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Background and Aim : Maternal exercise during pregnancy has been suggested to improve learning and memory of offsprings. The purpose of the present study was to investigate the effects of pregnant rats' treadmill running on the density of (NMDA) NR2B subtype receptors in the newborn's hippocampus

Methods : after confirming pregnancy, the pregnant rats were divided into two groups: the control group and the exercise group (n=9 in each group). In Control group: the animals with any exercise were housed in their cage for 4 weeks. In exercise group: the animals were forced to run on treadmill for 30 min at a mild-intensity, from 1th day of pregnancy, 5days a week until delivery. After all the pregnant rats had given birth, the hippocampus of the newborns was removed to assess the Nr2b gene and NR2B protein by RT-PCR technique and Western-Blotting.

Results : our finding showed a significant increase in the level of NR2B protein in the hippocampus of newborns in the exercise group. In addition, there were no significant changes in the Nr2b gene expression between groups.

Conclusion : these findings indicate the potential role of maternal exercise on the memory improvements of newborns.

Keywords : NMDA receptor, hippocampus, NR2B subtypes, maternal treadmill exercise, memory



Count: 34

Abstract ID: 219

Presentation Type: Oral

High-Voltage electromagnetic Field improves visual memory in male Rhesus monkey

Submission Author: Hamed Aliyari

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Background and Aim : Usage of devices generating electromagnetic fields in modern industrial societies increasing in recent decade. According to this fact, biological effects of electromagnetic fields became located in the center of research. Due to the biological similarities between monkeys and humans, extensive research has been done in different areas in this animal model. The aim of this study was to assess visual memory and hormonal and morphological changes in male rhesus monkey after exposing to high voltage electromagnetic field (3 kV/m AC).

Methods : Male Rhesus monkey (*Mucaca Mulatta*, Age 4 years old and weighing 5 kg) was used as the subject. The animal was maintained in its cage (1×1×1 m) at High-voltage laboratory, Department of Electrical Engineering, AmirKabir University, Tehran, Iran. Storing conditions, in terms of light, temperature and humidity was standard. Also room was equipped with camera and active fans. To create a uniform field two metal plate's one on top and another below the cage was placed to simulate uniform field the 3 kV/m AC high voltage field. The primate was exposed to this electromagnetic field 4 h/day for 30 days. Water and enough food for three meals were offered to the animal three times a day except during the cognitive test, in which the animal was fasting for 17:00 hours. Before and after the exposure, active visual memory test was performed by using a device containing the bowls were coated (Invisible rewarded by the monkey). In addition, 10 cc of blood from the femoral vein was taken to assess changes in cortisol and melatonin concentrations which were assessed by MyBiosource kit, USA.

Results : The results of this study showed that visual learning and visual memory performance in monkeys after exposure were improved. In addition, plasma cortisol and melatonin concentrations were decreased

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Conclusion : Our results indicated that exposure to the electric field may improve visual memory in monkey, which was in consistent with decrease in plasma cortisol and melatonin hormones concentrations.

Keywords : Cortisol, Electromagnetic field, Male Rhesus monkeys, Melatonin, Visual memory



Count: 35

Abstract ID: 584

Presentation Type: Poster

Adipokines and CVD risk factors and their association with Normal-Weight Obesity Syndrome in women with multiple sclerosis

Submission Author: Mohammad Allivand

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Background and Aim : Multiple sclerosis (MS) is a neuroinflammatory disease mediated by immune-cell in the central nervous system (CNS) which is mainly characterized by selective and coordinated inflammatory destruction of myelin, with damage to the axon. It is a chronic and progressive inflammatory disease caused by an interaction of genetic and environmental risk factors such as diet and obesity. Adipose tissue is an endocrine and paracrine organ producing and secreting various active cytokines and biologic mediators. Recently the new syndrome (Normal-Weight Obesity) has identified which is characterized by a normal body weight and BMI but a high fat mass (>30%). The aim of the present study was to determine relationship between adipocytokines, selected lipid indexes associated with increased CVD risk and Normal-Weight Obesity syndrome in women with multiple sclerosis.

Methods : In this study, we analysed anthropometric variables of 80 women 20-40 years of ages. We identified 4 groups: 1) 20 healthy women with a normal weight and a BMI <25 ; 2) 20 NWO women with a normal weight, a BMI< 25, and a %FM >30% who all of them were in generally good health. 3) Multiple sclerosis patients: 20 women with a normal weight and a BMI <25. 4) 20 women with multiple sclerosis and NWO syndrome (MS-NWO). Plasma concentration of chemerin, omentin and adipocytokines were measured in duplicate by using the multiplex sandwich enzyme-linked immunosorbent assay (ELISA) and selected lipid indexes were measured through standard enzymatic colorimetric techniques.

Results : Plasma concentration of chemerin, IL-1alpha, IL-1beta, IL-6, TNF-alpha, TG, LDL and total Ch in the MS-NWO women were significantly greater than controls. (p<0.05). The mean chemerin, Adipocytokines and lipid profile concentrations were significantly elevated in NWO group compared with the MS group (p<0.05), and the MS group compared with the healthy group but no significant differences in HDL and omentin were found between 4 groups. Correlation analysis revealed strong associations between adipocytokines, lipid profile (except HDL and omentin) and body fat percentage and multiple sclerosis.

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Conclusion : Fat mass seems to be the main determinant factor of increased adipocytokines and lipid profile in women with MS, and BF% is a greater potential predictor of CVD and weight management than BMI in multiple sclerosis patients.

Keywords : Adipokines, Chemerin, omentin, Fat mass, Normal-weight obesity, Multiple sclerosis



Count: 36

Abstract ID: 571

Presentation Type: Oral

Basal Ganglia and Dementia

Submission Author: Mostafa Almasi

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Background and Aim : Dementia defines as a decrease in cognitive function. The major part of cognitive function is rendered by cortical area, but the other area of brain are also involved in cognitive function which had important interactions with the cortex. One of these area is basal ganglia and their projections to cortex.

Methods : In this study, we will review the recent data in medical literatures for the relationship between the dementia and basal ganglia.

Results : Based on the clinical features , the dementia is divided into two categories including cortical and subcortical dementia. The subcortical dementia is caused by degeneration of the brain structures that have interactions with high cortical area. Huntington disease, progressive supranuclear palsy, dementia with Lewy body and vascular dementia are the major diseases with subcortical dementia. In all of these diseases, different part of basal ganglia are injured. The major parts of cognitive decline in subcortical dementia is the speed of thought and process and executive function.

Conclusion : the subcortical dementia cause difficulty in the speed of thought and process and executive function and basa; ganglia is one the major part that involved in this type of dementia.

Keywords : Basal ganglia, dementia, subcortical dementia



Count: 37

Abstract ID: 533

Presentation Type: Oral

Frontotemporal Dementia, Diagnosis and Treatment

Submission Author: Mostafa Almasi

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Background and Aim : Frontotemporal Dementia (FTD) is a type of degenerative dementia which involves the frontal and/or temporal lobes. Based on clinical features, it can be divided into two different categories including behavioral variant (bvFTD) and primary progressive aphasia (PPA). The major symptom of the first one, is behavioral change and PPA is recognized with difficulty in language skills.

Methods : In this study, we will review the recent data in medical literatures for diagnosis and treatment of FTD and its variants.

Results : For diagnosis of FTD and its subtypes, some diagnostic criteria were established. These criteria involve both clinical characteristics and paraclinical findings. An international consortium of experts introduced diagnostic criteria for bvFTD in 2010. The criteria include early behavioral disinhibition, early apathy or inertia, early loss of sympathy or empathy, early perseverative, stereotyped or compulsive/ritualistic behavior, hyperorality and dietary changes, executive/generation deficits with relative sparing of memory and visuospatial functions and imaging or pathological results consistent with bvFTD. The diagnostic criteria for PPA and its subtypes developed by an international group of PPA investigators. Each subtype of PPA including semantic variant PPA (SV-PPA) and nonfluent/agrammatic variant PPA (NFAV-PPA) have specific criteria for language disturbances which must met them and also without meeting any of the exclusion criteria for PPA. Beside the clinical features, paraclinical aspects can also be useful in diagnosis of FTD. The imaging findings consist of brain MRI and functional imaging procedures are performed routinely for patients suspicious to FTD. Some gene mutations and post mortem histological findings are also useful in diagnosis of definite FTD. The management of a patient with FTD should be performed by different medical fields. Social interventions, counseling, and speech/language/cognitive therapy to facilitate the use of spared functions may help the patient and his family members for adopting with the condition. None of the pharmacologic treatment are approved, but selective serotonin reuptake inhibitor (SSRI) antidepressants and trazodone are widely recommended. It is hopeful that future progresses in molecular biology and genetics can help for treatment of patients.

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Conclusion : The diagnosis of FTD and its subtypes can be performed with clinical features and paraclinical findings. Recently some diagnostic criteria were developed that use for research and clinical proposes. The management of a patient with FTD needs to the help of different medical fields.

Keywords : Frontotemporal Dementia, diagnosis, treatment



Count: 38

Abstract ID: 432

Presentation Type: Poster

Mycophenolate Mofetil for the Treatment of Multiple Sclerosis-associated Uveitis

Submission Author: Mostafa Almasi

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9. Singapore National Eye Centre, Singapore, Singapore Eye Research Institute, Singapore, Department of Ophthalmology, Yong Loo Lin School of Medicine, National University of Singapore, Singapore, and Duke-NUS Graduate Medical School, Singapore

Background and Aim : To report the efficacy of mycophenolate mofetil (MMF) as adjunctive therapy for the treatment of multiple sclerosis (MS)-associated uveitis.

Methods : In this retrospective, interventional case series, patients with MS-associated uveitis who were treated by MMF as an adjunct therapy to systemic corticosteroid were studied. Patients' demographics, clinical course, response to treatment, and complications were assessed.

Results : A total of 30 eyes of 15 patients with a mean age of 34.5 ± 8.3 years were studied. In three patients (20%), onset of uveitis preceded the diagnosis of MS. The course of MS was relapsing–remitting in 11 patients (73.3%) and secondary progressive in four patients (26.7%). At 1 year after institution of MMF, all the patients were on oral prednisolone ≤ 7.5 mg/day, all eyes were quiet without macular edema, and 53.3% of eyes gained visual improvement. Supplemental periocular and intraocular injections were needed

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during the first 6 months after starting MMF therapy. The systemic adverse effects were transient and minor in severity.

Conclusion : MMF had beneficial effects on vision and intraocular inflammation with an acceptable safety profile.

Keywords : Multiple sclerosis, mycophenolate mofetil, uveitis



Count: 39

Abstract ID: 629

Presentation Type: Poster

Graph analysis of brain functional connectivity in ADHD using task-free fMRI

Submission Author: Ashkan Alvand

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3. Institute of Biochemistry and Biophysics, Tehran University, Tehran, Iran

Background and Aim : Our brain similar to social networks is a kind of complex networks with an anatomical and a functional organization. These topological organizations change in psychological disorders. Nevertheless, pattern of changes in attention-deficit/hyperactivity disorder (ADHD) is still remaining unknown. In this study, we used Graph theory to investigate ADHDs' brain functional networks using resting state fMRI data. The primary objective of this study was to describe alteration of brain connectome in ADHD individuals using graph properties.

Methods : In this method, brain functional networks of 43 male children (21 ADHDs-combined subtype and 22 Healthy controls) were estimated from subjects' resting state fMRI data. Then, pattern of changes in ADHD individuals was tracked using characteristics of the functional networks in following steps: 1) the brain was Parcellated with cc400 approach to 391 regions. 2) local and global parameters of the brain functional networks were calculated using graph theory. 3) network parameters of the ADHDs were statistically compared to the Healthy controls.

Results : In this method, brain functional networks of 43 male children (21 ADHDs-combined subtype and 22 Healthy controls) were estimated from subjects' resting state fMRI data. Then, pattern of changes in ADHD individuals was tracked using characteristics of the functional networks in following steps: 1) the brain was Parcellated with cc400 approach to 391 regions. 2) local and global parameters of the brain functional networks were calculated using graph theory. 3) network parameters of the ADHDs were statistically compared to the Healthy controls.

Conclusion : In this method, brain functional networks of 43 male children (21 ADHDs-combined subtype and 22 Healthy controls) were estimated from subjects' resting state fMRI data. Then, pattern of changes in ADHD individuals was tracked using characteristics of the functional networks in following steps: 1) the brain was Parcellated with cc400 approach to 391 regions. 2) local and global parameters of the brain

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functional networks were calculated using graph theory. 3) network parameters of the ADHDs were statistically compared to the Healthy controls.

Keywords : ADHD, rsfMRI, Graph Theory, functional connectivity, cc400 parcellation



Count: 40

Abstract ID: 386

Presentation Type: Poster

Brain imaging tools in neuromarketing research: a review

Submission Author: Elahe Sadat Alvani

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Background and Aim : Neuromarketing is the study of the neurobiological and computational basis of value-based decision making from a neurophysiological point of view. Providing a biologically based account of human behavior, it could be applied in both natural and social sciences. The purpose of this study was to conduct a review of studies evaluating neuromarketing using neuroimaging.

Methods : An electronic search of the Medline database and google scholar was performed on August 1, 2016 using the following keywords: “neuromarketing”, “neuroeconomics”, “brain imaging” and “neuroimaging”. Reviews and non-original articles were excluded.

Results : The search retrieved 31 articles. The review included 13 full-text articles. Four non-invasive tools to measure neurophysiological responses have been well developed and widely used such as electroencephalography (EEG), magnetoencephalography (MEG), functional magnetic resonance imaging (fMRI) and Magneto field tomography (MFT). They can be roughly grouped into two categories according to the underlying mechanisms: procedures for measuring electromagnetic activity of the brain and those sensitive to changes of cerebral blood flow or metabolism. Electroencephalography (EEG) EEG measures voltage fluctuations on the scalp. The underlying ion currents occur rather remote from the electrodes (across skin, skull and meninges) in surface-near cortex areas and result from changes in membrane conductivity cortex areas and result from changes in membrane conductivity elicited by synaptic activity and intrinsic membrane processes. An electrode on the skin virtually “sees” the summed potentials generated by a large number of neurons. Magnetoencephalography (MEG) MEG is sensitive to changes of magnetic fields that are induced by the electrical brain activity. The temporal resolution can be compared to that of the EEG, so that this modality can, e.g. resolve the temporal sequence of different cortical activities involved in decision-making. Functional magnetic resonance tomography (fMRI) fMRI is currently the most frequently used functional brain imaging technique. Magnetic resonance scanners produce sets of cross sections – tomograms – of the brain, exploiting weak but measurable resonance signals that are emitted by tissue water in a very strong magnetic field after excitation with a high frequency electromagnetic pulse. The acquired resonance signals can be attributed to their respective spatial origin, and cross-sectional images can be calculated. The signal intensity, coded as gray value of a picture element,

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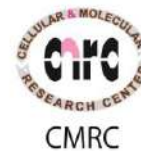
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depends on water content and certain magnetic properties of the local tissue. Magneto field tomography (MFT) MFT provides 3-dimensional estimates of brain activity, from non-contact, non-invasive measurements of the magnetic field generated by coherent electrical activity in the brain.

Conclusion : In principle, all kinds of neuroscientific tools can be used to investigate economic decision-making.

Keywords : neuromarketing; neuroeconomics; brain imaging; neuroimaging



Count: 41

Abstract ID: 741

Presentation Type: Poster

Neuroprotective effect of silymarin in a rat model of Parkinson disease via attenuation of apoptotic responses: possible involvement of toll like receptor 4

Submission Author: Sara Ami ahmadi

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Background and Aim : Parkinson's disease (PD) is a neurodegenerative disorder characterized by a progressive loss of dopaminergic neurons in the substantia nigra pars compacta (SNpc). Several lines of evidence show that apoptosis, oxidative stress and neuroinflammation are associated with the development of Parkinson's disease (PD). In the present study, we investigated the effect of pre-treatment with SM on oxidative stress, apoptosis and toll-like receptor 4 (TLR4) expression in substantia nigra pars compacta (SNc) of 6-hydroxydopamine(6-OHDA)-lesioned rats.

Methods : Male Wistar rats were pretreated with 100, 200 or 300 (mg/kg, ip) of SM daily for 5 consecutive days and at 6th day 6-OHDA (8 µg/2 µl) was infused unilaterally into the central region of the SNc.

Results : Results showed that 6-OHDA decreased the number of survived neurons in the SNc. Interestingly we found that 6-OHDA caused to TLR4 up regulation. SM strongly decreased 6-OHDA-induced elevation of striatal caspase-3, Bax/Bcl-2 ratio and apoptosis. Furthermore, SM markedly ($p < 0.001$) prevented from striatal over expression of TLR4 caused by 6-OHDA.

Conclusion : We suggest that pre-treatment of 6-OHDA-lesioned rats with SM reduces SNc neuronal degeneration and apoptosis possibly through inhibition of TLR4 over expression. Further clinical trial study should be carried out to prove potential application of SM for protection against PD in susceptible individuals.

Keywords : Silymarin, Apoptosis, Neurodegeneration, TLR, 6-OHDA, Parkinson's disease



Count: 42

Abstract ID: 708

Presentation Type: Poster

Does methamphetamine enhance the antinociceptive effects of buprenorphine?

Submission Author: Sara Ami ahmadi

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Background and Aim : Methamphetamine (Meth) and buprenorphine (Bup) modulate pain perception. However, the antinociceptive effects of the interactions of these two substances, which belong to different systems, are unclear in rats. The purpose of this study was to compare the analgesic effects of Meth, Bup, and their coadministration and the withdrawals from these substances in male rats.

Methods : In this experiment, 40 male Wistar rats (250-300 g) were categorized into four groups, Sham, Meth, Bup, or Meth+Bup. After seven days of once-a-day treatments, the antinociceptive effects were assessed with hot plate and tail flick tests. The differences among the groups were analyzed with analyses of variance and Tukey's post hoc tests, and P values less than 0.05 were considered significant.

Results : Meth and Bup increased the times of the hot plate and tail flick tests. The combination of Meth and Bup increased the hot plate and tail flick test times compared with Meth and Bup alone.

Conclusion : The significantly increased test times in rats treated with Meth and Bup indicated that these substances had antinociceptive effects. In addition, Meth enhanced the antinociceptive effects of Bup. These synergistic effects might occur through dopaminergic, serotonergic, and/or adrenergic systems.

Keywords : Methamphetamine, Buprenorphine, Pain, Antinociceptive, Hot plate, Tail flick, Interactions



Count: 43

Abstract ID: 441

Presentation Type: Poster

Dual Effect of one Week Intraperitoneal Injection of Aminoguanidine on Expression of Bcl-2 Family Genes in hippocampus diabetic rats

Submission Author: Bayan Amini

Bayan Amini¹, Mohammad R. Jafari², Mohsen Alipour³

1. corresponding Author
2. Associate Professor
3. Associate Professor

Background and Aim : Diabetes mellitus is associated with hippocampus neuronal apoptosis. The present study was conducted to examine the effect of one week intra-peritoneal (ip), administration of aminoguanidine (AG) on expression of Bcl-2 family genes in streptozotocin induced diabetic rats.

Methods : Sixty male rats were divided into ten groups: non-diabetics/diabetics animals with/without AG (50, 100, 200 and 400 mg/kg, ip) treatment for one week. After 6 weeks, expression of Bcl-2 family genes were measured by RT-PCR and (Bcl-2+Bcl-x1)/(Bak+Bax) ratio was calculated.

Results : AG in 100 and 200 mg/kg improved Bax, Bak, Bcl-2 and Bcl-x1 impairment in diabetic rats. But in high dose (400 mg/kg) lead to apposite effect.

Conclusion : These results propose that one week ip administration of AG in low doses results in the reduction of apoptosis possibly due to increasing (Bcl-2+Bcl-x1)/(Bak+Bax) ratios.

Keywords : Diabetes mellitus, Aminoguanidine, Bcl-2 family genes , RT-PCR, Rats.



Count: 44

Abstract ID: 683

Presentation Type: Oral

The effect of combining computer-assisted cognitive rehabilitation and transcranial direct current stimulation (tDCS) on improving working memory in stroke patients

Submission Author: Milad Amini Masouleh

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4. MSc Student in Cognitive science, Azarbaijan Shahid Madani University, Tabriz, Iran

Background and Aim : Executive functions and especially working memory deficits are the most common complaints in post stroke patients. Many studies showed that tDCS could have a potential to enhance the cognitive impairments with increasing the cortical excitability. This study aimed to investigate whether anodal tDCS applied to the left DLPFC during cognitive rehabilitation would improve the efficiency of the treatment more than CACR alone or sham (control) group.

Methods : 24 participants (17 males and 7 females; average age 55.92 years) with subacute stroke, took part in the present study. All the participant randomly assigned in two experimental conditions and a control Group with sham stimulation. All groups completed sessions of the Dual N back training task for 20 minutes and CACR+ tDCS group received Anodal tDCS over the left DLPFC for 30 minutes at 2 mA with 5 cm×7cm=35 cm² electrodes, during the CACR sessions (Online tDCS). The rehabilitation protocol included 16 sessions that administered four times/week and for a total of four weeks. All patients were evaluated before the interventions with forward and backward digit span task, Corsi block-tapping and Paced Auditory Serial Addition Test (PASAT). After the interventions, all the subjects assessed again.

Results : A repeated measures analysis of variance revealed that Compared with the control and CACR group, tDCS+ CACR group had larger improvement in working memory tasks after the intervention (P.05). At the 8-weeks follow-up compared with two others groups, the tDCS+ CACR group still had larger improvements in working memory tasks (P.05).

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Conclusion : These results indicate that there may be potential for the Concomitant Use of tDCS and CACR to enhance the efficiency of the cognitive rehabilitation protocol of the stroke patients.

Keywords : computer-assisted cognitive rehabilitation (CACR), transcranial direct current stimulation (tDCS), working memory, stroke



Count: 45

Abstract ID: 166

Presentation Type: Oral

Effect of Aqueous Alcoholic Extract of Ginseng on Migraine-like Symptom in Rat

Submission Author: Marziyeh Amiri andebili

Marziyeh Amiri andebili¹, Mahnaz Taherianfard²

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Background and Aim : A migraine is a severe, painful headache that can be preceded or accompanied by sensory warning signs such as flashes of light, blind spots, tingling in the arms and legs, nausea, vomiting, and increased sensitivity and sound. On the other hand ginseng can relief pain sensitivity. So the aim of present study was to investigate the effect of Korean red ginseng on migraine like headache.

Methods : Forty male albino rat weighting 250 50 were used. Rats were divided into 8 equal groups 1- intact control; 2- rats were received IP injection of bisphenol A (BPA) 500mg/kg/day for 7 days; 3- rats were received inflammatory soup (IS) in meninge membrane; 4- rats were received PBS instead of IS in ménages membrane; 5- rats were received IP injection of BPA 500mg/kg/day for 7 days + PBS in ménages membrane; 6- rats were received IP injection of BPA 500mg/kg/day for 7 days + IS in ménages membrane; 7- rats were received IP injection of BPA 500mg/kg/day for 7 days + IS in ménages membrane + ginseng 100mg/kg/day for 7 days; rats were received IP injection of BPA 500mg/kg/day for 7 days + IS in ménages membrane + ginseng 100mg/kg/day for 7 days. Animal were maintained in standard condition of 12 hours of light-dark cycle and temperature 20-22, food and water were used ad libitum. Migraine was induced by microinjection of 40 µl inflammatory soups in ménages membrane of rats were exposure to BPA 500 µg/kg/day for 7 days.

Results : In the present study combination of BPA and inflammatory soups induces the symptoms of migraine like headache. Our data were shown animal which after migraine like headache were treated with hydro alcoholic extract of ginseng 100 and 200 mg/kg/day, in comparison to animal with migraine like headache without treatment, symptoms of migraine were diminished to low level

Conclusion : According to our result, hydro alcoholic extract of ginseng in two doses were reduced all symptoms of migraine like headache

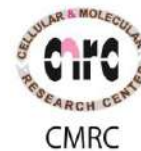
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Keywords : Ginseng, Migraine-like Pain, rat



Count: 46

Abstract ID: 435

Presentation Type: Poster

Sodium nitroprusside ameliorates lipopolysaccharide-induced brain oxidative damage and memory retention impairment in rat

Submission Author: Akbar Anaei goudari

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Background and Aim : The purpose of present study was to evaluate if sodium nitroprusside (SNP) ameliorates lipopolysaccharide (LPS)-induced brain oxidative damage and memory retention impairment.

Methods : The animals were divided and treated: Control (Saline), LPS (1mg/kg ip, 2h before behavioral test), SNP (2 mg/kg, ip, 30 min before LPS)-LPS and SNP.

Results : In Passive avoidance (PA) test, the latency to enter the dark compartment and the total time spent in light compartment in LPS group were shorter than control after receiving shock ($p < 0.001$) while, in SNP-LPS group they were longer than LPS ($p < 0.05$ and $p < 0.001$). The total time spent in dark compartment in LPS group was longer than control ($p < 0.001$) while, in SNP-LPS group it was shorter than LPS ($p < 0.001$). Malodialdehyde (MDA) concentration in the hippocampus and serum TNF α level of LPS was higher in LPS group than control group ($p < 0.001$ and $p < 0.01$ respectively) while, in SNP-LPS group they were lower than LPS group ($p < 0.001$ and $p < 0.01$ respectively). Nitric oxide (NO) metabolites concentration in the hippocampus was higher in LPS group than control group ($p < 0.05$) and there was not any significant difference in this parameter between LPS and SNP-LPS groups. The thiol content and the activities of superoxide dismutase (SOD) and catalase (CAT) in the hippocampus of LPS group decreased compared to control group ($p < 0.001$ and $p < 0.05$ respectively) while, in LPS group they increased compared to LPS group ($p < 0.01$ and $p < 0.05$ respectively).

Conclusion : pretreatment with SNP restores LPS-induced brain oxidative damage and memory retention impairment.

Keywords : Sodium nitroprusside, passive avoidance test, memory retention, lipopolysaccharide

Count: 47

Abstract ID: 251

Presentation Type: Poster

The role of estrogen receptors in the pain modulatory effect of intra-paragigantocellularis lateralis injection of 17 β -estradiol in the ovariectomized female rat

Submission Author: Sanam Ansari

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Background and Aim : 17 β -Estradiol acts as a neurosteroid in the brain and modulates nociception by binding to the estrogen receptors and also by allosteric interaction with other membrane-bound receptors like glutamate and GABAA receptors. Paragigantocellularis lateralis nucleus (LPGi), located in the rostral ventrolateral medulla (RVLM), is a key brain region implicated in the Besides pain modulation. It was shown that a part of the antinociceptive effect of intra-LPGi 17 β -estradiol is mediated by the estrogen receptors in the male rats. There are evidences suggesting a hyperalgesic role for estrogen and a hypoalgesic role for testosterone. So, this study was planned to evaluate the possible involvement of the intracellular estrogenreceptors of LPGi nucleus in the pain modulatory effect of 17 β -estradiol in the ovariectomized female rats.

Methods : This study was performed using female Wistar rats in the range of 180-225 g. 48 female Wistar rats were divided into the eight groups (n = 6): the control (intact animals), sham/CAN (just cannulation of the LPGi nucleus), sham/OVX (just ovariectomy of female rats), saline, DMSO, estradiol (E2; 0.8 μ mol), ICI182,780(50 nmol) and estradiol/AP5 (E2/AP5) groups. In order to avoid the effect of the fluctuations of the sex hormones concentration during the estrous cycle on the pain responses, rats were bilaterally ovariectomized. Also, for studying the pain modulatory effect of intra-LPGi microinjection of 17 β -estradiol in the ovariectomized female rats, cannulation of the LPGi nucleus was performed. After recovery period, 500 nl of saline, DMSO, E2 and ICI 182,780 were unilaterally administered into the right LPGi by Hamilton syringe. In addition, for assessing the role of the estrogen receptors in the pain modulation by 17 β -estradiol, E2 was injected 15 min after the intra-LPGi administration of ICI 182,780. Then, 50 μ l of 4% formalin was subcutaneously injected into the plantar surface of contralateral hind paw (left) and the animal was returned to the test chamber. After that, the number of paw jerking behavior was observed for 60 min. The data



collected between 0 and 7 min post-formalin injection were considered as the acute phase and the data collected between 15 and 60 min post-formalin injection were considered as the chronic phase. One-way analysis of variance (ANOVA) followed by post hoc Tukey's test was used to compare differences between treatments. $P < 0.05$ was considered statistically significant.

Results : Animals belonging to the control, sham-CAN and sham/OVX did not show any significant differences with the vehicle groups (intra-LPGi injections of saline and DMSO). The results of the present study showed that the intra-LPGi injection of 17β -estradiol attenuated both acute ($P < 0.05$) and chronic phase ($P < 0.01$) of formalin-induced paw jerking behavior. Pretreatment of LPGi nucleus by the estrogen receptor antagonist (ICI 182,780), counteracted the anti-nociceptive effect of 17β -estradiol on this behavior in the both phases of formalin test ($P < 0.05$).

Conclusion : Considering the results of this study, it can be concluded that the intra-LPGi injection of 17β -estradiol is sufficient to produce moderate analgesia on the formalin-induced inflammatory pain; and this antinociceptive effect of 17β -estradiol is probably mediated by the intracellular estrogen receptors

Keywords : 17β -estradiol, estrogen receptors, paw jerking behavior, ovariectomized female rats.



Count: 48

Abstract ID: 342

Presentation Type: Oral

Activation of mTOR pathway is involved in neuroprotection effects of chronic morphine treatment on CA1 hippocampus neurons

Submission Author: Maedeh Arabian

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Background and Aim : The signalling pathway of chronic morphine treatment (CM) to prevent neuronal damage following transient cerebral ischemia is not clear. However in the heart it has been shown that the effects of acute and chronic opioid treatment are mediated via different signalling pathways. Mammalian target of rapamycin (mTOR) and related pathways are involved in tissue protection against ischemia reperfusion (IR) injury. In the present study, we examined the role of mTOR to reveal the neuroprotective effects of chronic morphine preconditioning in hippocampus.

Methods : Morphine sulphate administrated subcutaneously (sc) for 5 days twice a day before Ischemia Reperfusion (IR) (day 1&2: 10mg/kg, day 3&4: 15mg/kg and day 5: 30 mg/kg). Possible role of mTOR involved in preconditioning was evaluated by injection of rapamycin (mTOR inhibitor; 5 mg/kg, i.p.) 30 min before IR. Passive avoidance test was used to evaluate retention and recall capability in the animals. Neuronal cell density and apoptosis were measured in the Hippocampal CA1 region, 72 hours after IR. BCL-2, BAX, mTOR and p-mTOR proteins expression and superoxide dismutase (SOD) activity, were determined 24 hours after global ischemia in the hippocampus.

Results : CM attenuated functional and structural damage of the hippocampus after IR which led to improvement in retention and recall capability ($p < 0.05$ vs. IR), increase the expression of p-mTOR ($p < 0.05$

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vs. IR) and BCL-2 ($p < 0.01$ vs. IR), SOD activity ($p < 0.05$ vs. IR) and decreased BAX expression ($p < 0.05$ vs. IR) in hippocampus. Pre-treatment with rapamycin abolished all above mentioned protective effects.

Conclusion : These results describe novel findings whereby chronic morphine preconditioning in hippocampus CA1 neurons is mediated by mTOR pathway and through increased phosphorylation of mTOR, can improved oxidative stress, apoptotic agents and eventually protects hippocampus against IR injury.

Keywords : morphine, ischemia reperfusion, mTOR, apoptosis, hippocampus, memory



Count: 49

Abstract ID: 60

Presentation Type: Oral

Effect of Curcumin Against Pentylentetrazol-Induced Seizure in Mice: Possible Involvement of Serotonin 5HT1A, 5HT2C, 5HT4 and 5HT7 Receptors.

Submission Author: Ahmad Arbabi jahan

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Background and Aim : Introduction: Medical plants are used for treatment of epileptic disorders. It has been shown curcumin (the principal curcuminoid of turmeric) has antiepileptic properties. Hence, the mechanism of antiepileptic effect of curcumin is not clear yet. This study was conducted to evaluate the effect of 5-HT and their receptors on inhibitory effect of curcumin in seizure induced by PTZ in mice.

Methods : Ninety of mice (22-30 gr) were subdivided in nine groups. Mice in group one were injected with p-chlorophenylalanine (PCPA), after 30 min PTZ and after 25 min the vehicle of curcumine were injected . Groups 2 to 4 received curcumine, PCPA and Curcumin+PCPA, respectively. The animals in group 5 were injected curcumin+selective antagonists of 5HT1A, 5HT2C, 5HT4, 5HT7. Groups 6-9 in addition to PTZ and curcumine, received selective antagonists of 5-HT (5HT1A ,5HT2C ,5HT4 and 5HT7), respectively.

Results : Curcumine decreased tonic-clonic and tonic seizure duration. It also decreased falling and death and increased the latency of onset of seizure stages ($p<0.05$). Block of 5HT1A, 5HT2C, 5HT4 receptor with antagonists, eliminate inhibitory effect of curcumin significantly ($p<0.05$). Finally, 5-HT1A, 5-HT2C and 5-HT4 had inhibitory effect on seizure parameters, but 5-HT7 had excitatory effect.

Conclusion : The results of this study show that curcumin has inhibitory effect on seizure by 5-HT1A, 5-HT2C and 5-HT4 receptors And Real-time PCR analysis showed Changes in the expression level of 5HT1A, 5HT2C, 5HT4 and 5HT7 receptor in curcumin acute and chronic Group, acute and PTZ kindled group Compared with the control group with no intervention.

Keywords : Epilepsy, Curcumine, Pentylentetrazol, Serotonin.



Count: 50

Abstract ID: 314

Presentation Type: Poster

The effect of two factor exercise and replacement of estrogen on body weight in ovariectomized rats with Parkinson model with reserpine

Submission Author: Sepide Arjmand

Sepide Arjmand¹, Azam khalaj²

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Background and Aim : Parkinson's disease is a chronic progressive disease that affects the central nervous system and with disrupting the brain's basal ganglia, creates a lot of motor problems such as akinesia or slowness of movement. Since the meta-analyzes have shown that seeks to reduce estrogen after ovariectomy, the neuropeptide Y is increased and increasing of this peptide increase food intake and decrease energy expenditure and cause weight gain. Research has shown that estradiol results in upregulation of lipoprotein lipase, and by increasing fat oxidation rate and speed of adipocytes lipolysis, fat as the main source of fuel is used. However, studies have suggested that aerobic- resistance exercise leads to a significant reduction in visceral fat weight and BMI.

Methods : In this study, 30 female rats with an average weight of 178-80 grams in 5 groups of 6 rats including the control group, Parkinson + ovariectomy, Parkinson + ovariectomy + treated with medication of estradiol, parkinsonism + ovariectomy + exercise, Parkinson + ovariectomy + estradiol + exercise was used. After 10 days of ovariectomy, Parkinson's disease is induced with reserpine administration (1 mg/kg, ip). Bar test was used to assess their catalepsy. Estrogen was administered for 21 days (0.1 mg/kg, i.p). Rats were underwent treadmill exercise for 21 days and every day from ovariectomy, rats were weighed and the data was recorded and ANOVA was used to compare the result of test and significant level of $P < 0.05$ was determined.

Results : The results obtained showed that estrogen causes weight loss in ovariectomized parkinsonian rats and the groups who have ovariectomy, the increase in weight compared to the group treated with estrogen and exercise was more and exercise groups compared to the group treated with estrogen had less weight loss

Conclusion : Estrogen reduction after ovariectomy and slowness of movement due to Parkinson's in rats, led to weight gain, while subcutaneous injection of estrogen compare to exercise, reduced body weight and the estrogen factor accelerate the reduction of body weight compare to exercise.

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Keywords : rats, ovariectomy, Parkinson's disease, body weight, 17 beta-estradiol, exercise



Count: 51

Abstract ID: 56

Presentation Type: Poster

The Relationship Between the Type and Amount Consumable Drug of Attentional and Preattentional Bias in Drug-dependent Patients

Submission Author: Kiumars Arjmand Ghujur

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Background and Aim : The aim of this study was to determine the relationship between the type and amount Consumable drug of attentional and preattentional bias in drug-dependent patients

Methods : The research design is causal - comparative respectively. The study population consisted of all patients, drug-dependent men Takab city, which in 1394 were referred to treatment centers in this city. Of them, 40 patients with available sampling method and with the same number of people sampled into account as the control group were compared. Both groups were matched in terms of demographics variables. Research tools include task "Dot-probe", Structured Clinical Interview and demographics information questionnaire. In order to analyze data in addition to descriptive statistics of the Pearson correlation coefficient and independent t-test was used.

Results : The results showed that the patients who use stimulants such as amphetamines and methamphetamine virgin compared to patients dependent on opiates such as opium and opium juice, threat (offered words in 500 ms) compared to words related to materials show this location. The increase of consumption in all patients, with increased attentional bias. In connection with the preattentional bias (providing words in 20 ms) the difference between individuals in terms of type and amount of substance used was observed.

Conclusion : Considering that attentional bias an important role in the development of recurrence and reuse of materials, the identification and understanding of these factors in treatment is necessary.

Keywords : Attentional bias, preattentional bias, addiction



Count: 52

Abstract ID: 406

Presentation Type: Poster

Effects of Transcranial Direct Electrical Stimulation on Tinnitus Relief

Submission Author: Shirin Arjmandi rad

Hamid Reza Abtahi ¹, Motahare Mirdamadi², Saied sabaghy pour³, Shirin Arjmandi rad⁴

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Background and Aim : Tinnitus is the perception of a phantom sound (1). Permanent tinnitus is observed in 6 to 30 percent of the population and in 1 to 3 percent it is so severe, affects the quality of life or leads to impaired sleep and occupational and mental health problems (2, 3). Researchers suggest central and peripheral factors are involved in causing tinnitus and due to the numerous causes of tinnitus and lack of understanding of its exact mechanism, finding an effective treatment is still challenging. Tinnitus perception is thought to be the by-product of altered neuronal activity in the central nervous system (2,5) and modification of this pathological neuronal activity for Tinnitus management is referred to as neuromodulation (6,7). Neuromodulation techniques are hypothesized to work by inducing neural plasticity and disturbing the pathological neural networks responsible for Tinnitus (6). The potentials of transcranial direct electrical stimulation (tDCs) as one of the treatment methods to eliminate tinnitus has not been studied systematically.

Methods : The present study is a quasi-experimental study with random assignment of participants in experimental and control groups, with pretest and posttest comparison. Among people attending a psychiatric clinic, 20 persons with left tinnitus and acute or chronic infections of the middle ear, thyroid disease, rheumatologic history, history of occupational exposure to noise and age below 65, were chosen with availability sampling method. After the proper explanation about the study, its stages and obtaining informed consent from all participants, the audiogram test was carried out for all participants. Then, they were divided into two groups i.e. experimental group (n=10) and control group (n=10). The instrument used in this study was Tinnitus Handicap Inventory Questionnaire (THIQ), which was carried out before and after intervention. Transcranial direct electrical stimulation (tDCs) included 20 minutes of left temporal anodal stimulations (2 mA) on T3 site for 10 sessions. The data were analyzed using analysis of covariance.

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Results : Analysis of data obtained using analysis of covariance showed that there is a significant difference in tinnitus relief between the experimental and control groups in post-test stage.

Conclusion : According to the results of our study, it seems that transcranial direct electrical stimulation (tDCs) can decrease the tinnitus annoyance. Therefore, it is proposed that the said method can be used in order to alleviate the symptoms of tinnitus sufferers as a non-invasive, cheap and easy intervention with long-term effects.

Keywords : transcranial direct electrical stimulation, tinnitus



Count: 53

Abstract ID: 408

Presentation Type: Poster

The Effects of Quantitative EEG (QEEG) – Guided Neurofeedback on adults with Attention Deficit Disorder

Submission Author: Shirin Arjmandi rad

Shirin Arjmandi rad¹, Saied.sabaghy Pour²

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Background and Aim : Attention Deficit disorder is a lifelong disorder that affects many people .The propose of this study is to investigate the effects of QEEG – guided neurofeedback training on treatment of Attention deficit disorder in adults. Neurofeedback is being utilized more commonly today in treating individuals who have suffered from attention deficit disorder (ADD). Neurofeedback, which is based on theories that recognize the organic basis of ADD, utilizes biofeedback to guide individuals to regulate their brain activity. Quantitative EEG (QEEG) is a technique in which EEG recordings are analyzed to produce metrics (e.g. amplitude or power, ratios, coherence, phase, etc) used to guide decision-making and therapeutic planning. QEEG can also be used to monitor and assess treatment progress. QEEG data typically consists of raw numbers, z-scores, and/or topographic or connectivity maps.

Methods : The present study is a quasi-experimental study with random assignment of participants in experimental and control groups, with pretest and posttest comparison. Among people attending a Psychology clinic. The instruments were kaners questionnaire and diagnostic interview. Participants were placed in 2 experimental (10) and control (10) groups. The data entered into SPSS, version 15.descriptive and analytical statistic such as covariance analyses were used.

Results : The results showed tha QEEG – guide neurofeedback training up to 95/7 percent ($p < 0.01$) can treat ADD in adults.

Conclusion : As a result it can be argued that, having attention deficit disorder cause disruption of brain waves and neurofeedback training can modify and adjust this dysregulation. The effects are clinically stable. Hence, QEEG – guided neurofeedback training can be used as an alternative therapy for ADD treatment and other related disorders.

Keywords : Quantitative electroencephalogram, Neurofeedback, Attention deficit disorder, adults



Count: 54

Abstract ID: 458

Presentation Type: Poster

Compare Self-Efficacy and Social Self-Critical In Women with addiction and Normal Women

Submission Author: Farshia Arshadi

Farshia Arshadi¹

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Background and Aim : Given the importance of understanding the social and psychological aspects of women addiction by the lack of research in this area, this study examines self-efficacy and self-criticism in the Women with addiction and normal women.

Methods : In this study, which was ex post facto, the population of girls and women and girls Narcotics Anonymous Hamadan 1394, With regard to the criteria for entry and exit with purposive sampling method, 50 people were selected. Replication in the normal group with maximum demographic variables were included Sherer's general self-efficacy and self-critical levels were used to gather information. Data were analyzed using descriptive and inferential statistics were multivariate analysis.

Results : The results showed that women addict subscales of social self-efficacy and gained an average of less than normal women, It also includes two subscales self-critical and self-critical internal comparison of normal women gained more scores, all of which were significant differences between the two groups.

Conclusion : Unfavorable results of the psychological variables of self-efficacy and self-criticism among socially vulnerable women addiction, The need for more attention to these variables reveals in the treatment and education of women.

Keywords : addiction, Self-Efficacy , Social Self-Critical , Women



Count: 55

Abstract ID: 540

Presentation Type: Poster

Design and Assessment of a New Fractal Shaped Transcranial Direct Current Stimulation Electrode

Submission Author: Saeedeh Asadi

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Background and Aim : Transcranial direct current stimulation (tDCS) is a noninvasive method of brain modulation that is usually used in the treatment of neurological disorders. In this method the brain is stimulated by a direct electrical current with a small amplitude. This current is inserted through electrodes located on the scalp. Several factors such as the amplitude of the current, the duration of the stimulation, and the electrodes' number, size and geometry can affect on the efficiency of the stimulation results. In this study, we have focused on the effect of the geometry on the distribution of electrical current and we have suggested a new design for the electrodes' shape

Methods : Two types of electrodes were proposed and designed by the software Solidwork. The aim was finding a geometry that can lead to more uniform current distribution. For this purpose, electrodes with fractal properties, has been offered. Fractal shapes are known as forms that consist of repeated patterns. The feature of self-similarity can be observed in the new proposed electrode geometry.

Results : The results of the stimulations and analyses show that the new suggested geometry can produce more current density in a more focal region. This new shape also increased the homogeneity of the current distribution in the gray matter.

Conclusion : According to the successful results of the stimulations, it seems that a consideration in the geometry of the electrodes would be useful. The new proposed fractal shaped electrode can be used in tDCS treatment procedures. It seems that it can increase the expected treatment effects with lower level of current intensity.

Keywords : Transcranial Direct Current Stimulation; Electrode Geometry; Current Distribution; Fractal



Count: 56

Abstract ID: 175

Presentation Type: Oral

Genetic polymorphisms of serotonergic system proteins associate with familial form of obsessive compulsive disorder (OCD) and gender in Iranian patients with OCD

Submission Author: Sareh Asadi

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Background and Aim : Obsessive compulsive disorder (OCD) is a heterogeneous psychiatric disorder encompassing a vast range of symptoms. Though its etiology remains essentially unknown, studies have discovered that genetic polymorphisms may play role in the manifestation of different symptoms and treatment response. Pharmacological studies indicated dysregulation of the serotonergic system in OCD. This study designed to reach the comprehensive perspective of OC symptoms and its correlation with genetic polymorphisms of serotonin transporter and serotonin receptor 1A genes (SCL6A4 and HTR1A) in Iranian patients with OCD considering demographic and clinical characteristics.

Methods : The included OCD patients fulfilled the criteria for DSM-IV-TR whom Y-BOCS score was more than 9. Blood samples (186 cases and 193 controls) for SCL6A4 polymorphisms (5-HTTLPR, rs25531, rs25532, rs25533 and I425V) and HTR1A polymorphisms (rs10042486, -1019 C>G and Gly272Asp) were genotyped by means of PCR-RFLP. To assess the correlation of genotypic patterns with OCD subtypes and patients' subgroups, item-based exploratory factor analysis and clustering algorithms applied on the obsessive and compulsive symptoms of the self report Y-BOCS checklist. Five different clustering algorithms (FCM, K-means, Ward, Ward + K-means and Complete) were conducted on YBOCS checklist and results were evaluated by four clustering indices including Davies-Bouldin, Calinski-



Harabasz, Silhouettes and Dunn indices for 2 to 6 cluster solutions to find the most appropriate patients classification model. The associations between genotypes and OCD were also evaluated in the stratified groups according to the age of onset and family history of psychiatric disorders considering the gender as well as symptom severity.

Results : Factor analysis resulted in five factors including aggression/checking, contamination/cleaning, symmetry/ordering/repeating/counting/hoarding, sexual and somatic. Genotype frequencies for the studied polymorphisms of SCL6A4 and HTR1A were compared between the patients who have got the higher 25% and lower 25% of scores in each factor by means of chi-square. No significant associations were identified between OCD subtypes and studied polymorphisms. Clustering algorithms separated OCD patients based on their severity not symptom patterns. However, patients with different genotypes were not significantly different in symptom severity. The results of case-control association studies revealed a correlation between Rs25533 and OCD ($P=0.011$), especially in females ($P=0.016$). The distribution of rs10042486 genotypes were significantly different in OCD patients and healthy controls ($P=0.019$) and also in male subjects ($P=0.028$). Rs25532 CC genotype showed significant association with OCD in men ($P=0.02$) and were detected more in the patients reported positive family history of psychiatric disorders ($P=0.05$) but the other single loci (5-HTTLPR and rs25531) did not associate with OCD. Haplotype analysis showed significant association of 14-A variant with OCD ($P=0.000$) and revealed the association of 14-A/14-A genotype with familial form of OCD ($P=0.04$). Association of the other polymorphisms and OCD were not detected even by considering gender and clinical characteristics.

Conclusion : The findings of this study showed the association of SLC6A4 and HTR1A variants with familial form of OCD and gender, proposed stratified analyses in the genetic studies to reduce heterogeneity and facilitate identification of genetic risk factors for this heterogeneous disorder.

Keywords : Obsessive compulsive disorder; Association study; Polymorphism; SCL6A4; HTR1A; Factor analysis



Count: 57

Abstract ID: 63

Presentation Type: Poster

Inhibition and sensory processing patterns in autistic children

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Background and Aim : Autism is a neurodevelopmental disorder characterized by impaired social interaction, verbal and nonverbal communication and restricted and repetitive behavior. Parents usually notice signs in the first two years of their child's life. In addition, they clinically suffer from sensory processing problems and executive function deficit such as inhibition

Methods : This study has categorized in correlational research methods. After determining of entry criteria, according to purposive sampling method, 60 children were selected. Sensory profile Dunn school component for assessment of sensory processing patterns and rating inventory of executive functions (Brief) for assessment of function of inhibition were used

Results : The results showed 24% of the changes in inhibition could be predicted by one sensory processing pattern (registration). Also sensitivity, seeking and avoiding went out of the regression model

Conclusion : According to the findings, there is significant relationship between the registration and inhibition so, in order to improve the inhibition, some interventions based on sensory processing could be used.

Keywords : sensory processing, inhibition, autistic



Count: 58

Abstract ID: 261

Presentation Type: Oral

The MCIC collection: More years of education leads to later onset of schizophrenia

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Background and Aim : Wide-ranging evidence suggest dysconnection in schizophrenia (SCZ). In terms of functional connectivity, neuroimaging studies of language have shown reduced frontotemporal coupling in SCZ relative to control subjects. If education has the effect of increasing synaptic density in some brain region, and if it is indeed loss of cells in these regions can predispose to SCZ, then the epidemiological data could confirm this. Here, we investigate the correlation between year of education (YOE) and age at onset (AAO) in schizophrenic patients.

Methods : We downloaded MIND Clinical Imaging Consortium (MCIC) collection for 212 schizophrenic patients. Considering the possible impeding effect of SCZ on YOE, YOE of each Subject was defined as years of education before SCZ onset (school starting age was assumed six) . After screening for outliers and missing data, Pearson correlation between YOE and AAO was generated using IBM SPSS statistics 20. Univariate analysis of covariance was then conducted on AAO as dependent variable. Independent variables in each analysis included YOE. To reduce the possible confound of demographic variables, we included in the gender and parental socioeconomic status (PSES) as covariates.

Results : Univariate analysis of covariance revealed no main effect of gender ($F=0.335$, $P\text{-value}=0.546$). It also demonstrated main effect of PSES ($F=10.338$, $p\text{-value} =0.002$) and YOE ($F=2.925$, $p\text{-value} =0.002$). YOE($r=0.378$) was significantly correlated to AAO. Significant level was deemed 0.05.

Conclusion : We showed for the first time that later onset of schizophrenia is correlated with higher level of education. This can be a clue to prevent SCZ progression and improve its symptoms. It is noteworthy that educating people may reduce the financial burden of SCZ .The exact etiology of SCZ is still imprecise. More imaging studies, functional and structural, might facilitate discovering involved area and underlying mechanism.

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Keywords : Schizophrenia; Age at onset; Year of education; Parental Socioeconomic status

Count: 59

Abstract ID: 532

Presentation Type: Poster

VDR and CYP24A1 genes expression analysis in Iranian relapsing remitting Multiple sclerosis patients

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Background and Aim : Multiple sclerosis (MS) is a common disease of the central nervous system which can be initiated by vitamin deficiency. It may also be triggered by enzymes such as CYP24A1 and vitamin D receptor related to vitamin D metabolism.

Methods : The expression of vitamin D receptor (VDR) and CYP24A1 in relapsing-remitting MS (RRMS) patients was compared with normal individuals in Iranian population. RNA from whole blood of 50 RRMS patients (HLA-DRB1*15 negative and responders to interferon-beta with a normal vitamin D level) and 50 normal controls were extracted. The level of CYP24A1 and VDR gene expression was measured using Real time-PCR.

Results : The RRMS patients manifested a significantly higher expression level of VDR gene than their normal counterparts (P value=0.04). On the other hand, there was a decrease in the expression level of CYP24A1 gene in MS patients which was not statistically significant. Besides, there was no linear correlation between CYP24A1 or VDR expression level, and the risk of Expanded Disability Status Scale of Kurtzke (EDSS); nor were there any significant correlation between expression status of CYP24A1 or VDR genes and duration of the disease.

Conclusion : Up-regulation of VDR gene expression is likely to happen in RRMS patients in Iranian population. In this study, we failed to draw an exact CYP24A1 gene expression-phenotype correlation which may be due to limited statistical confirmation as a result of the small sample size and needs more investigation. In fact, although the people taking part in this study had normal levels of vitamin D, the increase in VDR expression levels may perhaps be a response to defect in vitamin D processing; or, despite a increase in VDR expression level, factors such as micro-RNAs could cause their deactivation while an

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increase in VDR expression level can be seen as a compensatory response. Of course, further studies are needed to identify the mechanism of action of vitamin D and the genes involved in the signaling pathway of this vitamin, particularly VDR and CYP24A1.

Keywords : VDR; CYP24A1; expression; multiple sclerosis;real time PCR



Count: 60

Abstract ID: 402

Presentation Type: Oral

The Role of crocin (active derivatives of saffron) on dopaminergic behaviors and plasma corticosterone concentrations in Post-traumatic Stress Disorder of adult rat

Submission Author: Sara Asalgoo

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Background and Aim : Posttraumatic stress disorder (PTSD) is a debilitating mental condition occurring after a tragedy or a Traumatic experience, such as rapes, assaults, natural disasters; etc. In fact, PTSD is a mental illness in anxiety disorders group. According to endocrinological studies, one common feature has been reported in patients suffering from PTSD, which is a significant reduction in the plasma cortisol level. Glucocorticoid hormones, especially cortisol in humans and corticosterone in rats, have a marginal impact on the brain's HPA axis (coordinating center in stress responses). Crocin is a chemical compound derivate from saffron that has a specific effects, such as antioxidant; memory and reminding and natural interaction improvement.

Methods : In this study, animals were divided randomly into two groups receiving the drug and stress / control group. Stereotaxic method was used for central administration of the drug in the animal's brain's left lateral ventricle. Crocin were injected with a dose of 10 µg/ml just (ICV) 5 minutes before stress phase than, the animals went under the acute stress with shuttle box. Electric shock box (Electric Foot Shock) was used to create models of acute post-traumatic stress. 3 weeks after treatment, the animals were transported in boxes electric shock for 5 minutes to remind the physical stress. Then, the corticosterone concentration was measure in three levels; basic; Stress; and returned to baseline. Dopamine-related behaviors of each animal were digitally videotaped for 5min.

Results : The corticosterone basic and Stress and returned to baseline level increased significant in comparison with the physical/surgical stress groups with the P<0.05 and P<0.001 respectively. No significant differenced were noticed in the crocin effects between the negative / sham groups. In the groups

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of physical stress induction and a combination of physical/surgical, a significant reduction ($P < 0.001$) was showed in the dopamine-related behavior (rearing, grooming and sniffing) in comparative with normal group. Also, a significant decrease resulted ($P < 0.01$) in the treatment groups dopamine behavior compared to the control group. Freezing behavior in the group of the physical stress and receive a combination of the physical and surgery stress showed a significant decreased ($P < 0.05$) compared to the control group. Freezing behavior was reduced in the treatment group and compared to control group had no significant difference.

Conclusion : Crocin has no significant effects on the dopamine-related behaviors, but it reduces the animal's freezing behavior because it's associated with the dorsal part of striatum brain. Also, Crocin increased blood corticosterone levels in the Post-traumatic stress disorder

Keywords : Crocin , PTSD , Corticostron,



Count: 61

Abstract ID: 457

Presentation Type: Poster

The comparison of executive functions between Methamphetamine Users females versus Non-Users

Submission Author: Mahnaz Asgarizade

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Background and Aim : Chronic use of opiates has been associated with a wide range of cognitive deficits, Involving domains of attention, inhibitory control, planning, decision-making, and memory. Therefore, the main aim of this research was the comparison of executive functions in Methamphetamine Users females versus Non-Users.

Methods : The retrospective research method was used in the current study. Accessible sampling method was used in 42 Methamphetamine Users females in Hamedan city in 2014, which had been referred to medial, rehabilitation centers were selected, and in age, education, marriage status and socioeconomic status matched with Non-Users. They were evaluated based on Wisconsin card sorting and Stroop neuropsychological Tests

Results : The non-users group had better performance in Stroop test than Methamphetamine Users females. Also, there was a significant difference among control and Methamphetamine Users females in Wisconsin's test (total error, perseveration error, number of categories).

Conclusion : Methamphetamine Use probably, causes prefrontal cortex and executive dysfunctions, and neurological disturbances in frontostriatal systems. According to these findings, we can design professional cognitive rehabilitation programs to rehabilitate patients in their personal, occupational, and social life.

Keywords : Executive functions, Methamphetamine



Count: 62

Abstract ID: 151

Presentation Type: Oral

The effect of post-natal stress on the developmental competence of mice preantral follicles during in vitro culture

Submission Author: Zeynab Asghari mati kolaei

Zeynab Asghari matikolaei¹, Saeed Zavareh², Taghi Lashkarboluki³, Mahmoud Elahdadi Salmani⁴

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Background and Aim : Adverse environmental early life experiences can have major implications for reproductive health. The aim of this study was to investigate the effects of maternal separation (MS) as social stress state during post-natal period on the developmental competence of in vitro cultured mice preantral follicles.

Methods : The female newborn NMRI mice were divided into two groups. One group was nursed by their own mothers until 16 days after delivery (control). The other group was experienced MS 6 h per day between the second and sixteen postnatal day. Preantral follicles were isolated mechanically from mice ovaries and cultured in α -MEM medium supplemented with 5% FBS, 100 mIU/ml FSH, 1% Insulin-Transferrin-Selenium and 10 ng/ml rEGF. At 12th day of culturing, ovulation was induced by addition of 1.5 IU/ml human chorionic gonadotropin. Developmental parameters, including survival rate, growth, antrum formation and metaphase II oocytes were also analyzed.

Results : The developmental parameters (survival rate, growth, antrum formation and metaphase II oocytes) of preantral follicles derived from control groups were significantly higher than those of preantral follicles derived from MS group ($p < 0.05$).

Conclusion : Our findings suggest that maternal separation as social stress disturbs in vitro development of mice preantral follicles which in turn affect fertility.

Keywords : Stress, Preantral follicle, Mice



Count: 63

Abstract ID: 563

Presentation Type: Poster

Effectiveness of cognitive behavioral therapy in treating bipolar disorder: An updated meta-analysis with randomized controlled trials

Submission Author: Amir Hossein Ashna

Amir Hossein Ashna¹, Faezeh Aghayan kol kashani², zahra majdi³

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Background and Aim : The aim of this updated meta-analysis was to further assess the effectiveness of cognitive behavioral therapy (CBT) in treating bipolar disorder (BD).

Methods : We carried out a literature search on PubMed, Embase, and the Cochrane Library up to October 2015. We calculated the pooled relative risk of relapse rate and standard mean difference (SMD) of mean change (data at a follow-up time-point – baseline) of the Beck Depression Inventory, Beck Hopelessness Scale, Hamilton Rating Scale for Depression, Young Mania Rating Scale (YMRS) and Mania Rating Scale scores with their 95% confidence interval (95%CI). Subgroup analyses based on follow-up time were performed.

Results : Nine randomized controlled trials with 520 bipolar I or II disorder patients were reanalyzed. Overall analysis showed that CBT did not significantly reduce the relapse rate of BD or improve the level of depression. However, significant efficacy of CBT in improving severity of mania was proved based on the YMRS (SMD = -0.54, 95%CI, -1.03 to -0.06, P = 0.03) but not based on MRS. Subgroup analyses showed that CBT had short-term efficacy in reducing relapse rate of BD (at 6 months' follow-up: relative risk = 0.49, 95%CI: 0.29–0.81, P = 0.006) and improving severity of mania based on YMRS score (post-treatment: SMD = -0.30, 95%CI, -0.59 to -0.01, P = 0.04).

Conclusion : Short-term efficacy of CBT in reducing relapse rate of BD and improving the severity of mania was proved. But these effects could be weakened by time. In addition, there was no effect of CBT on level of depression in BD.

Keywords : bipolar disorder, cognitive behavioral therapy, mania

Count: 64

Abstract ID: 494

Presentation Type: Poster

Diospyros kaki has promising effects on ischemic insult: evidence of in-vitro study

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Background and Aim : Studies have shown that oxidative stress plays an important role in nerve cell damage and closely related to the pathogenesis of many central nervous system diseases such as cerebral ischemia and other neurodegenerative disorders. Recently, there are intensive interests towards neuroprotective properties of herbal products in ischemic brain injury because of relatively high therapeutic value and less serious side effects. *Diospyros kaki* (persimmon) has been shown to exert anti-inflammatory, anti-oxidant and antineoplastic effects. However, its effects on ischemic damages have not been evaluated.

Methods : Here, we used an in vitro model of cerebral ischemia and studied the effects of hydroalcoholic extract of persimmon (PHE) on cell viability (MTT assay) and markers of oxidative damages mainly intracellular reactive oxygen species (ROS), lipid peroxides (measured as malondialdehyde, MDA), oxidative DNA damage (the amount of DNA in the comet tail, % tail DNA, Comet assay) and immunoblotting assays following injury induced by glucose, oxygen and serum deprivation (GOSD) in PC12 cells.

Results : PHE at concentrations up to 500 µg/mL did not significantly affect PC12 cells viability .GOSD for 6 h produced significant cell death which accompanied by decreased cell viability and increased levels of ROS, MDA, DNA damages, increased levels of Bax and Caspase-3 proteins and decreased Bcl-2 level. Pretreatment with different concentrations of PHE (0-500 µg/ml) for 24 h, markedly restored these changes in a concentration dependent manner.

Conclusion : The experimental results suggest that persimmon protects the PC12 cells from GOSD-induced injury by inhibition of proapoptotic pathways. These effects of persimmon are, at least in part, attributable

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to its antioxidant property. Our findings might raise the possibility of potential therapeutic application of persimmon for managing cerebral ischemia and other neurodegenerative disorders.

Keywords : Apoptosis; Cerebral ischemia; Diospyros kaki (persimmon); glucose/serum/oxygen deprivation (GSOD); PC12 cells

Count: 65

Abstract ID: 496

Presentation Type: Oral

Safranal has promising effects on ischemic insult: evidence of in-vitro study

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Background and Aim : The discovery and development of natural products with potent antioxidant and anti-inflammatory properties has been one of the most interesting and promising approaches in the search for treatment of CNS injuries. Safranal (2,6,6-trimethyl-1,3cyclohexadiene-1-carboxaldehyde, C₁₀H₁₄O) is a monoterpene aldehyde, formed in saffron (*Crocus sativus* L.) by hydrolysis from picrocrocin during drying and storage. It has been previously reported that saffron extract and some of its active constituents (i.e. safranal) have anticonvulsant, anti-ischemic and antioxidant properties. Therefore, in this study we investigated the possible protective effects of safranal against SGD-induced cytotoxicity in PC12 cells.

Methods : MTT assay was used to determine cell viability in PC12 cells pretreated with different concentrations of safranal (1.5-800 µg/ml) for 24h and then deprived of serum/glucose (SGD) for 6h. DNA damage (the amount of DNA in the comet tail, % tail DNA) was detected by alkaline single cell gel electrophoresis (SCGE, comet) assay and intracellular reactive oxygen species (ROS) was measured by fluorimetry using 2',7'-dichlorodihydro fluorescein diacetate (H₂DCF-DA) as a probe.

Results : The IC₅₀ value of safranal in PC12 cells after 24h treatment was 595.9 µg/mL. SGD for 6h significantly decreased cell viability as compared with control cells (p<0.001). A significant increase in cell viability was seen following pretreatment with safranal (6.25-200 µg/mL, p<0.001) for 24h. There were also significant increases in % tail DNA in nuclei of PC12 cells and intracellular ROS production, following SGD insult (p<0.001). Safranal pretreatment significantly and dose-dependently decreased DNA damage and intracellular ROS production as compared with serum/glucose deprived cells (p<0.001).

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Conclusion : The present study demonstrated that safranal has protective effects against SGD-induced cytotoxicity in PC12 cells which suggests that this compound has the potential to be used as a new therapeutic strategy for neurodegenerative disorders.

Keywords : Safranal; *Crocus sativus*; serum/glucose deprivation (SGD); cytotoxicity; comet assay



Count: 66

Abstract ID: 193

Presentation Type: Poster

Blocking the ghrelin receptor type-1a in the rat dentate gyrus impairs memory consolidation

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Background and Aim : Recent studies indicate that ghrelin hormone affects learning and memory in different experimental models of learning. However, the effect of antagonism of ghrelin receptor type-1a (GHS-R1a) in various brain regions on memory consolidation has not been investigated. Dentate gyrus is a brain region which is involved in memory consolidation. In this study, the effect of intra-dentate gyrus injection of a GHS-R1a selective antagonist (D-Lys-3-GHRP-6) was examined on memory consolidation, using a passive avoidance task.

Methods : Adult male Wistar rats underwent stereotaxic surgery and cannulated in their dentate gyrus, bilaterally. One week after surgery, the rats received different doses of D-Lys-3-GHRP-6 (80 pM, 0.8 nM and 8 nM), immediately after training. The control group received solvent of the drug. Twenty four hours later in the test day, memory retrieval was assessed.

Results : Post-training injection of D-Lys-3-GHRP-6 decreased step-through latency, and increased time spent in the dark compartment and number of step-through into the dark compartment, significantly and in a dose-dependent manner.

Conclusion : The results indicate that blocking the ghrelin receptor type-1a in the rat dentate gyrus impairs memory encoding on consolidation stage of memory.

Keywords : Dentate gyrus, Ghrelin, Memory consolidation



Count: 67

Abstract ID: 263

Presentation Type: Poster

Antagonism of the ghrelin receptor type-1a in the rat ventral tegmental area impairs

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Background and Aim : Ghrelin hormone has a putative role on learning and memory. However, the effect of ghrelin signaling in various regions of the brain on memory consolidation has not been investigated. Ventral tegmental area (VTA) is a brain region which is involved in memory consolidation in the passive avoidance paradigm. In this study, the effect of intra-VTA injection of a GHS-R1a selective antagonist (D-Lys-3-GHRP-6) was examined on memory consolidation, using a passive avoidance task.

Methods : Adult male Wistar rats underwent stereotaxic surgery and cannulated in their VTA, bilaterally. One week after surgery, the rats received different doses of D-Lys-3-GHRP-6 (80 pM, 0.8 nM and 8 nM), immediately after training. The control group received saline. Twenty four hours later in the test day, memory retrieval was assessed.

Results : Post-training injection of D-Lys-3-GHRP-6 decreased step-through latency, and increased time spent in the dark compartment and number of step-through into the dark compartment, significantly and in a dose-dependent manner.

Conclusion : The results indicate that ghrelin signaling in the rat VTA has a central role for memory encoding on consolidation stage of memory.

Keywords : Ghrelin, Memory, Ventral Tegmental Area

Count: 68

Abstract ID: 451

Presentation Type: Poster

D1- and D2-like dopamine receptors in the CA1 region of the hippocampus are involved in the acquisition and reinstatement of morphine-induced conditioned place preference

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Background and Aim : The hippocampus plays a vital role in processing contextual memories and reward related learning tasks, such as conditioned place preference (CPP). Among the neurotransmitters in the hippocampus, dopamine is deeply involved in reward-related processes. This study assessed the role of D1- and D2- like dopamine receptors within the CA1 region of the hippocampus in the acquisition and reinstatement of morphine-CPP.

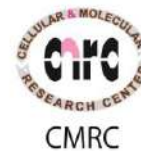
Methods : To investigate the role of D1 and D2 receptors in morphine acquisition, the animals received different doses of D1- and/or D2-like dopamine receptor antagonists (SCH23390 and sulpiride, respectively) into the CA1, 5 min before the administration of morphine (5 mg/kg, subcutaneously) during a 3-days conditioning phase. To evaluate the involvement of these receptors in morphine reinstatement, the animals received different doses of SCH23390 or sulpiride (after extinction period) 5 min before the administration of a low dose of morphine (1 mg/kg) in order to reinstate the extinguished morphine- CPP. Conditioning scores were recorded by Ethovision software.

Results : The results of this study showed that the administration of SCH23390 or sulpiride, significantly decreased the acquisition of morphine-CPP. Besides, the injection of these antagonists before the

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administration of a priming dose of morphine, following the extinction period, decreased the reinstatement of morphine-CPP in sacrificed rats. However, the effect of sulpiride on the acquisition and reinstatement of morphine-CPP was more significant than that of SCH23390.

Conclusion : These findings suggested that D1- and D2-like dopamine receptors in the CA1 are involved in the acquisition and reinstatement of morphine-CPP, and antagonism of these receptors can reduce the rewarding properties of morphine.

Keywords : Acquisition,Reinstatement,Conditioned place preference,Hippocampus,D1-like dopamine receptor,D2-like dopamine receptor



Count: 69

Abstract ID: 599

Presentation Type: Poster

A study of relationship between optimism and test anxiety with self - esteem among Ardabil city students

Submission Author: Roya Attar Madraki

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Background and Aim : The examinations in peoples' life are the contexts in which both the positive and negative psychological components are activated: the motivation to achieve is mixed with the fear of failure .optimism and self - esteem with doubts regarding their own worth. The aim of present study was to investigate relationship between optimism and exam anxiety with self - esteem among students.

Methods : Method of present study was descriptive – correlation. Statistical population were all high school students of Ardabil city who were studying in 2015-2016 academic year. We selected 200 students as sample and inform them about process of the study. They filled out three inventories in order to gathering data: 1. Rosenberg self-esteem scale (1965).2. Spielberger's Test Anxiety Scale (1979-1980).3. Life Orientation Test – Revised/LOT-R (Scheier et al., 1994). We also used mean, standard deviation and Pearson correlation coefficient and regression in order to analyzing data.

Results : Correlational analysis identified significant negative relationships of both self- esteem and optimism with exams' anxiety and a positive relationship between self- esteem and optimism. The Pearson correlation coefficients show that the relationship between optimism and exams' anxiety is stronger than the negative relationship between self- esteem and exams' anxiety.

Conclusion : The results support the idea that students' perceptions of their educational environment and their personality characteristics are linked with test anxiety.

Keywords : optimism , test anxiety, self-esteem, adverse life events



Count: 70

Abstract ID: 397

Presentation Type: Poster

The antinociceptive effect of 17 β -estradiol in the paragigantocellularis lateralis nucleus of male rats is mediated by NMDA receptors

Submission Author: Maryam Azaddar

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Background and Aim : NMDA receptors participate in the development of formalin-induced nociception. The NMDA receptors are expressed within the central and peripheral endings of nociceptors. In addition to their hormonal mode of action, estrogens such as 17 β -estradiol also influence brain function by direct effects on neuronal membranes. The steroid 17 β -estradiol, is a neuroactive steroid found in several brain areas such as the paragigantocellularis lateralis nucleus (LPGi). The LPGi nucleus is a reticular nucleus in the ventral portion of rostral medulla oblongata. Beside of its autonomic functions, LPGi plays a key role in the processing of pain information related to descending pain modulation. Since the LPGi nucleus plays a key role in the modulation of pain, and considering the interaction between 17 β -estradiol and NMDA receptors in the modulation of pain, the present study was designed to assess the involvement of the membrane-bound NMDA receptors in the pain modulatory effect of intra-LPGi injection of 17 β -Estradiol in the male rats.

Methods : Experiments were performed on 36 adult male Wistar rats weighing 200–270 g. Animals were randomly divided into the six groups (n= 6): the control (intact animals), sham (just cannulation of the LPGi nucleus without intra-LPGi injections), saline, estradiol (E2; 0.8 μ mol), AP5 (0.5 μ mol; the NMDA receptor antagonist) and estradiol/AP5 (E2/AP5) groups. In order to study the effect of 17 β -estradiol on both acute and persistent pain modulation and its mechanisms, a guide cannula (23 gauge) equipped with a stylet was stereotaxically implanted into the right LPGi. After recovery period, 500 nl of saline, E2 and AP5 were unilaterally administered into the right LPGi by Hamilton syringe; and 15 min later, 50 μ l of 4% of formalin was injected into the left hind paw of male rats and the animal was returned to the test chamber. Formalin-induced flexing duration was recorded for 60 min after injection of formalin. In addition, for investigating the role of the NMDA receptors in the 17 β -estradiol-induced analgesia, 17 β -estradiol was injected into the LPGi nucleus 15 min after the administration of AP5 and formalin test was done. The data collected between 0 and 7 min post-formalin injection were considered as the acute phase and the data collected between 15 and 60 min post-formalin injection were considered as the chronic phase. One-way

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analysis of variance (ANOVA) followed by post hoc Tukey's test was used to compare differences between treatments. $P < 0.05$ was considered statistically significant.

Results : The results of this study showed that intra-LPGi injection of $0.8 \mu\text{mol}$ of 17β -estradiol attenuated both the acute phase and the chronic phase ($P < 0.001$) of flexing behaviour. AP5 -the NMDA receptor antagonist- significantly prevented the antinociceptive effect of intra-LPGi 17β -estradiol both in the acute and in the chronic phase ($P < 0.001$) of formalin test.

Conclusion : According to the results of the present study, it may be concluded that the analgesic effect of intra-LPGi injection of 17β -estradiol on the formalin-induced inflammatory pain might be mediated via NMDA receptors.

Keywords : 17β -Estradiol; Paragigantocellularis lateralis nucleus; NMDA receptor; Pain



Count: 71

Abstract ID: 306

Presentation Type: Oral

Allosteric activation of AMPA receptors of paragigantocellularis lateralis nucleus by 17β -estradiol induces analgesia in male rats

Submission Author: Maryam Azaddar

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Background and Aim : The paragigantocellularis lateralis (LPGi) nucleus is a medullary reticular nucleus, located in the rostral ventrolateral medulla (RVLM). Beside of its autonomic functions, paragigantocellularis lateralis nucleus (LPGi) is involved in the control of sleep-wake cycle, sexual behavior, consciousness, dependence and addiction as well as pain modulation. 17β -Estradiol is a neuroactive steroid that modulates nociception by binding to the estrogen receptors and also by allosteric interaction with other membrane-bound receptors like glutamate and GABAA receptors. Intra-LPGi microinjection of 17β -estradiol has been shown to elicit the analgesic responses. Therefore, this study was designed to assess the effect of blockade of AMPA receptors of LPGi nucleus on the 17β -estradiol-induced pain modulation on formalin test as an acute and chronic pain model in rats.

Methods : 36 Male Wistar rats (200-270 g) were randomly divided into the six groups (n= 6): the control (intact animals), sham (just cannulation of the LPGi nucleus without intra-LPGi injections), saline, estradiol (E2; 0.8 μ mol), CNQX (30 nmol; the AMPA receptor antagonist) and estradiol/CNQX (E2/CNQX) groups. In order to studying the pain modulatory effect of intra-LPGi microinjection of 17β -estradiol in the male rats, cannulation of the LPGi nucleus was performed. After recovery period, 500 nl of saline, E2 and CNQX were unilaterally administered into the right LPGi by Hamilton syringe. In addition, for assessing the role of the AMPA receptors in the pain modulation by 17β -estradiol, E2 was injected 15 min after the intra-LPGi administration of CNQX. One week after cannulation of LPGi nucleus, Then, 50 μ l of 4% formalin was subcutaneously injected into the plantar surface of contralateral hind paw (left) and the animal was returned to the test chamber. After that, formalin-induced paw jerking behaviour was recorded for 60 min. The data collected between 0 and 7 min post-formalin injection were considered as the acute phase and the data collected between 15 and 60 min post-formalin injection were considered as the chronic phase. One-way analysis of variance (ANOVA) followed by post hoc Tukey's test was used to compare differences between treatments. $P < 0.05$ was considered statistically significant.

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Results : Animals belonging to the control and sham groups did not show any significant differences with the vehicle group (intra-LPGi injections of saline). The results of present study showed that intra-LPGi injection of 0.8 μmol of 17β -estradiol significantly reduced paw jerking frequency only in the chronic phase ($P<0.001$). Intra-LPGi injections of CNQX significantly prevented the antinociceptive effect of intra-LPGi 17β -estradiol both in the acute phase ($P<0.05$) and in the chronic phase ($P<0.001$) of formalin test.

Conclusion : Based on the results of this study, it may be concluded that the intra-LPGi injection of 17β -estradiol is sufficient to produce strong analgesia on the formalin-induced inflammatory pain; and this analgesic effect of 17β -estradiol might be mediated via AMPA receptors.

Keywords : 17β -Estradiol; Paragigantocellularis lateralis nucleus; AMPA receptor; Male rat.



Count: 72

Abstract ID: 241

Presentation Type: Poster

Opiate Exposure in Male Adolescent Rats Increases Naloxone Induced Morphine Withdrawal Sign and Conditioned Place Aversion in Offspring

Submission Author: Maryam Azadi

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Background and Aim : Rationale and objective: Adolescence is an important developmental period with high susceptibility to drug of abuse that has strong physiological basis. Opiate use and abuse has increased noticeably over the past two decades among adolescence. Long-term adverse effect of chronic opiate exposure not only involve the individuals themselves but also their offspring. The motivational aspect of drug withdrawal may related to drug seeking. Conditioned place aversion (CPA) induced by naloxone-precipitated morphine withdrawal is one of the most sensitive indices to measure the aversive effects of this state. We examined the influence of paternal morphine exposure during adolescence, on the expression of naloxone precipitated withdrawal sign induced conditioned place aversion in male offspring.

Methods : Method: Male wistar rats were injected subcutaneously (s.c.), twice daily, with either morphine or saline during early adolescence (PND 30-39) using an escalating dosing regimen. The first morphine dose of 2.5 mg/kg was increased by 2.5 mg/kg daily for a total of 10 days. Animals then remained drug free till adulthood (PND 60) then they were mated with naïve females. Their adult male offspring were made dependent on morphine and tested for naloxone precipitated withdrawal signs and opioid withdrawal-induced conditioned place aversion.

Results : Results: Adult male offspring of sire exposed to morphine during puberty displayed a significant increase in some somatic withdrawal symptoms. These mainly included head tremor, teeth chattering, sniffing, penis licking, grooming, writhing. Rats also demonstrated a significant enhancement in expression of opioid withdrawal-induced conditioned place aversion. In addition, animals displayed less exploratory manifestations in a novel environment. Conclusions: Chronic morphine exposure during adolescence elicits significant trans-generational effects on adult offspring. However, further studies are required to determine the cellular mechanisms underlying the observed effects.

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Conclusion : Conclusions: Chronic morphine exposure during adolescence elicits significant trans-generational effects on adult offspring. However, further studies are required to determine the cellular mechanisms underlying the observed effects.

Keywords : Keywords Adolescence; Transgeneration; Conditioned place aversion; Naloxone-induced morphine withdrawal; Rats



Count: 73

Abstract ID: 671

Presentation Type: Poster

The compare of personality traits among individuals with benzodiazepine addiction and not addicted individuals

Submission Author: Amir Azarbara

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Background and Aim : Several studies reported social and psychological factors contributing to substance abuse and addictions. Benzodiazepines are used commonly as anxiolytics, hypnotics, muscle relaxants, anesthetics and alcohol withdrawal medication. The aim of present study was to the compare of personality traits among individuals with benzodiazepine addiction and not addicted individuals.

Methods : Participants were 120 (N=120) who divided into two groups: the “investigated group” of 60 individuals with a diagnosis of benzodiazepine dependence and “the control group” of 60 individuals without such diagnosis. We used the Five Factors Personality Inventory (NEO-FFI), Trait – State Anxiety Scale (STAI 1–2) and Barratt Impulsiveness Scale (BIS) in order to gathering data. In order to compare any possible differences in the investigated personality dimensions Whitney–Mann's and t-Students tests used.

Results : Results indicated that a statistically significant correlation was found between a high level of neuroticism and benzodiazepine dependence ($p < 0,05$) ,The level of extraversion was significantly lower in the group of benzodiazepine addicts than that in the control group. The addicts were also less conscientious than the control group. No significant differences between both groups were found regarding such traits as agreeableness and openness to experience.

Conclusion : In the present study Several psychological and situational factors which may increase the risk of developing benzodiazepine addiction were identified. The research contributes to the understanding of benzodiazepine addiction as multifactorial phenomenon

Keywords : Personality traits , Addiction ,Benzodiazepine



Count: 74

Abstract ID: 535

Presentation Type: Poster

The effect of histamine H1 receptor antagonists on the morphine induced antinociception in the trigeminal models of nociception in rats.

Submission Author: Farzin Azarpey

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Background and Aim : In this study, the effect of different classes of histamine H1 receptor antagonists (chlorpheniramine, cetirizine and fexofenadine), μ opioid receptor agonist (morphine) and opioid receptor antagonist (naloxone) in separate and combined treatments were investigated on the acute trigeminal model of pain in rats.

Methods : Eye wiping test used for induction of acute trigeminal pain by putting a drop of NaCl, 5 M solution (40 μ l) on the corneal surface of the eye and the number of eye wipes counted during the first 30 second.

Results : Intraperitoneal (IP) injection of both chlorpheniramine and cetirizine at doses of 10 and 20 mg/kg significantly inhibited the acute trigeminal pain. However, fexofenadine did not change corneal pain response. Morphine at doses of 1.25, 2.5 and 5 mg/kg reduced eye wipe responses. Administration of both chlorpheniramine and cetirizine before morphine enhanced morphine analgesic activity, also pretreatment of animals with naloxone inhibited morphine, chlorpheniramine and cetirizine induced analgesia in the acute corneal pain.

Conclusion : Our result showed that chlorpheniramine as a histamine H1 antagonist that efficiently penetrate blood brain barrier (BBB) and cetirizine with less penetration of BBB but not fexofenadine (an H1 receptor antagonist with a negligible brain-accessibility) could induced analgesia in the acute corneal pain via opioidergic mechanisms and the antinociception induced by morphine was enhanced by these H1 receptor antagonists in the acute trigeminal model of pain.

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Keywords : Trigeminal pain, Morphine, Histamine H1 receptor antagonists, Naloxone, Rats



Count: 75

Abstract ID: 83

Presentation Type: Oral

Intra-arterial Delivery of Melatonin Reduces the Volume of Cerebral Infarction in a Rat Middle Cerebral Artery Occlusion Stroke Model

Submission Author: Fereshteh Azedi tehrani

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Background and Aim : Today, research about intra-arterial drug delivery for acute ischemic stroke is attractive for basic scientists and clinicians. One of these drugs is Melatonin that is a neurohormone secreted by pineal and extra pineal tissues responsible for various physiological processes. Melatonin is both lipid- and water-soluble and readily crosses the blood–brain barrier (BBB) and has been implicated in various neurological diseases because of its antioxidative, antiapoptotic, and anti-inflammatory properties. Recent studies showed that in animal stroke models, intraperitoneal administration of melatonin significantly reduces infarct volume, edema, and oxidative damage and improves electrophysiological and behavioral performance. However research about efficacy of intra-arterial administration of melatonin is limited. The goal of this study is to evaluate efficacy of melatonin in a rat model of middle cerebral artery occlusion (MCAO) by intra-arterial route.

Methods : Adult male wistar rats (270-300 gr) were randomly divided into 3 groups: Sham group, vehicle group and MCAO+Melatonin (5 mg/kg). After placing microfilament to induce infarction for 20 min, Melatonin was administrated via catheter placed in internal carotid before reperfusion. The cerebral infarct volume was determined by TTC, H&E and immunofluorescence staining. To assess functional outcome, Bederson, Elevated Body Swing (EBST) and Cylinder test were used.

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Results : The cerebral infarct volume and brain edema in MCAO+Melatonin group was significantly reduced compared to sham and vehicle groups ($p<0.05$). Expression of MAP2 positive cells was increased however expression of GFAP positive cells was reduced in MCAO+Melatonin group. The assessment of functional outcomes with Bederson, EBST and Cylinder test indicated that intra-arterial delivery of melatonin could improve functional deficits after acute ischemic stroke.

Conclusion : Intra-arterial delivery is a promising clinically translatable and minimally invasive transplant paradigm for stroke therapies. These findings suggest that intra-arterial delivery of melatonin can improve histological and functional deficits in experimental ischemic stroke. There is need to design efficient clinical trials to explore the clinical aspect of protective role of Intra-arterial delivery of melatonin in detail.

Keywords : Melatonin, Intra-arterial delivery, ischemic stroke model, cerebral infarct volume



Count: 76

Abstract ID: 723

Presentation Type: Poster

investigating expression of VEGF-A in Iranian multiple sclerosis patients

Submission Author: Ghazaleh Azimi

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Background and Aim : Multiple sclerosis is a demyelinating autoimmune inflammatory disorder of central nervous system (CNS) with unknown etiology, which afflicts more than 2.5 millions of the world's population. histological analysis of human MS samples has shown that angiogenesis and altering in blood-brain-barrier(BBB) is prevalent in and around the demyelinating plaques.in as much as VEGF-A has a critical role in angiogenesis and formation of blood-brain-barrier(BBB),so changing the expression of VEGF-A may influence CNS and conduce MS disease. The aim of this investigation was to evaluate expression level of VEGF-a in whole blood from patients with Relapsing-Remitting (RR) form of MS.

Methods : In this study 50 MS patients and 50 ethnically,age,and sex matched healthy controls were selected .blood samples of all individuals were collected in EDTA tubes,then RNA extraction with GeneAll kit,primer, and probe designed by Allele ID software for TaqMan realtime PCR.finally analyse data by LinReg,Rest,SPSS18 software.accordingly, the expression levels of VEGF-A in patients compered to control group.

Results : Our results demonstrated increasing more than 2 fold in expression of VEGF-A gene in MS patients comparing with controls, but it is not statistically significant. (value: 0.117, 95% C.I : 0.008 - 2,679.814 , Std. Error: 0.129 - 16.918)

Conclusion : There was no correlation between VEGF-A gene expression and multiple sclerosis diseases. Since these results were obtained for the first time in MS disease, we recommend further studies using a larger sample size and patients category to further subgroups may change these current results.

Keywords : VEGF-A; Expression; Multiple Sclerosis;Real-Time



Count: 77

Abstract ID: 419

Presentation Type: Oral

Protective effects of donepezil on PKA inhibitor (H-89) –induced spatial memory deficit

Submission Author: Leila Azimi

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Background and Aim : Positive effects of donepezil (an acetylcholinesterase inhibitor) on cognitive function have been reported in previous studies. In this study, the effects of donepezil on the spatial learning and memory impairment in the presence of the H-89 were evaluated.

Methods : Adult male Wistar rats were divided into three groups which received different doses of H-89 (1µl/side of 5 or 20µM) and H-89 plus donepezil (1mg/kg). The Morris water maze test was used for evaluation of spatial learning and memory.

Results : Donepezil reduced the escape latency in training days, increased percentage of time spent in the target quadrant during the probe trial and reversed the inhibitory effects of H-89 in the process of spatial learning and memory.

Conclusion : Inhibition of PKA by H-89 decreases CREB phosphorylation and expression of other proteins involved in formation of memory such as vesicular acetylcholine transporter (VAcHT) and choline acetyltransferase (ChAT). It has been shown that donepezil increases non- $\alpha 7$ and $\alpha 7$ nicotinic acetylcholine receptor ($\alpha 7$ nAChR) levels in the cortex and hippocampus of rats. These receptors increases both ERK1/2 and CREB phosphorylation. So, donepezil reversed the effects of H-89 via increasing the cellular cAMP levels and pCREB.

Keywords : Donepezil, PKA, CREB, learning and memory



Count: 78

Abstract ID: 553

Presentation Type: Oral

VRK2 gene in neurological disorders: Schizophrenia , Epilepsy and Multiple sclerosis

Submission Author: Tahereh Azimi

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Background and Aim : Neurological disorders consist of wide range of common and chronic disease. Schizophrenia, epilepsy and multiple sclerosis have high prevalence and burden. They have extensive clinical symptoms with unknown etiology. They are multifactorial disorders with presence of environment and genetic susceptibility. VRK2 gene, encode a tyrosine kinase and involve in important pathways like apoptosis , signaling , brain development and etc. VRK2 express in many tissue such as brain and blood. According to VRK2 functions and pathophysiology of these disease, we aim to Investigating the expression of VRK2 gene in the patients with schizophrenia, epilepsy and multiple sclerosis compared to healthy individuals

Methods : In this case-control study, 50 patients with paranoid Schizophrenia, 50 patients with generalized Epilepsy, 50 patients with relapsing remitting MS and 50 healthy controls according to gender and age distribution selected. A blood sample was taken from the participant with consent for the study. First total RNA was extracted and then cDNA synthesis was done. Primers and probe were done. VRK2 gene expression was compared to reference gene, HPRT1, through Taqman Real-Time PCR. At last the results analyzed by Rest and SPSS18 software.

Results : The results showed that VRK2 gene expression is significantly downregulate in all groups of patients (Schizophrenia $p < 0.0001$ Epilepsy $p = 0.001$ Multiple sclerosis $p = 0.029$) compared to healthy group.

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Conclusion : Based on important roles of VRK2 genes, it may play essential role in pathophysiology of neurological disease through apoptosis regulation, signaling pathways and stress responses such as schizophrenia, Epilepsy and multiple sclerosis.

Keywords : Schizophrenia, epilepsy, Multiple sclerosis, VRK2 gene, Real time PCR



Count: 79

Abstract ID: 40

Presentation Type: Poster

Is motor imagery ability the same in different gender in multiple sclerosis patients?

Submission Author: Mahdieh Azin

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Background and Aim : Motor imagery (MI) recruits neurocognitive mechanisms involved in motor planning and preparation. There are similarities between executed movement and mentally simulated actions in terms of temporal characteristics, physical rules, and neural mechanisms. Gender difference, in favor of males, exist in motor skills and MI ability. MI deficit has been reported in multiple sclerosis (MS) patients but so far the difference between the genders has not been evaluated. We therefore sought to test whether gender difference is evident in MS patients.

Methods : Previous studies have shown that changes in the movement ability are accompanied by motor imagery changes, therefore patients with the same cognitive and motor abilities enrolled. For this purpose a neurologist determined MS patients' disability according to the EDSS. Box and block test (BBT) and nine hole peg test (9HPT) were utilized to assess the manual dexterity. Thirty-five right-handed patients with relapse-remitting MS (17 men) and also 30 healthy subjects (15 men) participated in this study. MI ability can be measured by questionnaires and mental chronometry as well as mental rotation task. Kinesthetic and Visual Imagery Questionnaire (KVIQ-20) that assesses on a five-point ordinal scale the clarity of the image and the intensity of the sensations, examines MI ability. Also MI ability was assessed by mental chronometry on the BBT. Three trials of imagery and execution were carried out randomly for both hands. MI ability was indicated by the time difference between imagination task and execution task. Moreover, patients expressed imagery vividness on a visual analogue scale (VAS), ranging from 1 to 7. MI ability was measured by mental rotation in which a subject judge the laterality of human body presented in different orientations. Reaction time (the time between the appearance of the stimulus on monitor and onset of the correct response) and response accuracy rate (% correct response) were recorded.

Results : There are no significant differences in term of manual dexterity (for BBT; $p=0.8$, for 9-HPT; $P=0.2$) between MS men and women that indicates similar hand motor function. Similar to other studies, our



findings showed that healthy men performed MI task better than healthy women. Unlike healthy subjects, no sex differences were observed in scale of the KVIQ-20 ($p= 0.6$), time duration of mental chronometry ($p= 0.9$), VAS of mental chronometry ($p= 0.7$) and response accuracy rate of mental rotation ($p= 0.1$). Only MS men responded to hand stimuli significantly faster than MS women ($p= 0.01$).

Conclusion : Our findings showed that MS men exhibit MI ability similar to MS women. While our research and other studies demonstrated that healthy men have stronger MI ability. Although the same as healthy men, MS men had less reaction time than MS women. The findings point out that movement of MS men are influenced by neurocognitive impairment more than MS women. Perhaps in MS men with respect to MS women, MI technique of mental practice could better improve their physical performance. Future studies are needed to investigate neural evidence related to MI ability in MS men and women.

Keywords : Motor imagery; Multiple sclerosis; Gender



Count: 80

Abstract ID: 194

Presentation Type: Oral

The role of orexin-1 receptor within the ventral tegmental area in forced swim stress - induced reinstatement of conditioned place preference

Submission Author: Ronak Azizbeigi

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Background and Aim : The orexin system projects widely throughout the CNS, so there are many possible targets where orexin might be acting during drug seeking and reinstatement. Based on evidence gathered using the CPP test, it becomes evident that orexin signaling, particularly in the VTA, is important for the processing of drug-associated stimuli. However, some evidence suggests that orexin's involvement in reinstatement of extinguished drug seeking may be mediated by a stress component. Thus, in the present study, we investigated the effect of orexin-1 receptor antagonist in the ventral tegmental area (VTA) in stress-induced reinstatement of morphine.

Methods : The conditioned place preference (CPP) paradigm was done in adult male Wistar rats weighing 220 – 280 g, and conditioning score and locomotor activities were recorded by Ethovision software. Animals received effective dose of morphine (5 mg/kg) daily, during the 3-day conditioning phase and the next day (post-test; day 5) animals tested for CPP score. In extinction phase rats were daily put in the CPP box for 30 min until the CPP score in two continues days become similar to those on the pre-test; extinction happened on day 13. On reinstatement day (day 14), animals were microinjected bilaterally into the VTA by different doses of orexin-1 receptor antagonist, (0.3, 1 , 3 nM/0.3 µl DMSO per side), then exposed to forced swim stress (FSS) for 6 min before subcutaneous injection of ineffective dose of morphine (0.5 mg/kg) to order to reinstate the extinguished morphine-CPP.

Results : The results revealed that FSS induced reinstatement of extinguished morphine-CPP and orexin-1 receptor antagonist, SB334867 decreased the FSS-induced reinstatement at the higher doses.

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Conclusion : Our findings suggest that intra-VTA orexin receptors have a role in reinstatement of morphine and it can be proposed that stress partially exerts its effects on the reinstatement of morphine via orexin receptors in the VTA.

Keywords : Orexin-1 receptor antagonist, Reinstatement, Forced swim stress, Ventral tegmental area, Conditioned place preference



Count: 81

Abstract ID: 375

Presentation Type: Poster

A review of the executive function assessment tests in healthy adult bilinguals

Submission Author: Jamileh Azizbeigi Boukani

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Background and Aim : bilingualism changes structure and function of brain so we can say that the brain of bilinguals is different rather than monolinguals. Executive function is a family of top- down mental processes required to concentrate and pay attention. The aim of this article is review of executive function tests in bilinguals.

Methods : this research is a review study of executive function assessment tests in healthy adult bilinguals. We performed search in databases like: Google scholar, science direct, Scopus, pub med and Farsi databases like: Magiran and SID from 2000 to 2016 with related key words. In total 12 articles had our intended information.

Results : we found 10 tests .these tests use for assessment three principle domains of executive function like: inhibition, working memory, cognitive flexibility and higher levels like reasoning. In most of articles in general executive function was assessed by some of these tests.

Conclusion : bilinguals use different brain sources rather than monolinguals. Selecting intended language in bilinguals accomplished by executive control system. So in order to more precise assessment of executive function and related domains, we should use specific tests that related to bilinguals.

Keywords : test;executive function;bilingual;healthy adult



Count: 82

Abstract ID: 391

Presentation Type: Oral

Combined Treatment of SCI by Chondroitinase ABC –loaded Nanoparticles and OM-OECs

Submission Author: Monireh Azizi

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Background and Aim : After spinal cord injury (SCI), reactive gliosis occurs, and followed by the glial scar formation which has been considered as a potent barrier to axonal regrowth. ChABC is a promising strategy for SCI therapy due to glial scar degradation ability which is detrimental to regrowth and repair. However, the classic administration is invasive, infection-prone and clinically problematic. Furthermore, thermal instability of ChABC, complicate its delivery. Encapsulation of enzyme in polymeric device could overcome all these obstacles. Furthermore, Research in the past three decades has provided several potential solutions. One of these important strategies with good efficacy has included cell implantation. So, in current study, effects of chABC loaded nanoparticles (NPs) in combination with olfactory ensheathing cells (OECs) on axonal regeneration and functional recovery of spinal cord injured rats was investigated.

Methods : chABC loaded nanoparticles were prepared by double emulsion/ evaporation method and characterized. Biocompatibility of Nanoparticles was assessed by MTT. Contusion injury was induced by the weight drop on the T10 spinal cord segment. OECs isolated from olfactory mucosa (OM-OECs) of 7-day old rat pups. OECs purity confirmed by flowcytometry. The contused animals divided in 3 experimental groups including OECs transplanted, chABC NPs and combined treatment groups. One week post injury, chABC NPs, OECs or their combination were injected into the injured area. Locomotor behavior of animals in all groups was evaluated by BBB test in the first 48 hours daily and then weekly for eight weeks post treatment. At the end of study, the contusion site isolated, embedded and were cut into 10 um thick sections followed by Luxol fast blue and bielschowsky staining.

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Results : MTT test confirmed NPs Viability. Purity of OECs were 89% by flowcytometry. BBB score of animals in combined treatment group had significant difference with OECs group, but there was no significant differences between it and chABC NPs treatment group. Histological results demonstrated more axonal regeneration in the combined treatment group as well.

Conclusion : Based on our finding, it can be concluded that combined strategy will probably more effective than single treatment by chABC NPs treatment or cell therapy.

Keywords : PLGA nanoparticle, chondroitinase ABC, SCI, OM-OECs.



Count: 83

Abstract ID: 606

Presentation Type: Poster

Investigation of the presence and changes in level of BDNF-AS Non-coding RNA in plasma of people with Alzheimer's disease

Submission Author: Roghayeh Azizi aghaali

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Background and Aim : One of the consequences of population aging phenomenon is the increase in neurodegenerative diseases that Alzheimer's disease is the most common. The prevalence and incidence of Alzheimer's disease is according to the age and structure of the population in different regions of the world. Due to an increase in the absolute number and the percentage of older people in general population, the importance of Alzheimer's disease is more specific and therefore early detection of the disease seems so important. Biomarkers with important roles can be used as an early and useful detectors of diseases. An increase in serum BDNF levels in early stages and its reduction in more advanced stages of Alzheimer's disease highlights the role of BDNF in the disease. BDNF gene expression is regulated by one of LncRNAs called BDNF-AS, so a change in level of this LncRNA can be used as a biomarker for diagnosis of Alzheimer's disease. The aim of this study is to investigate the presence and changes in level of BDNF-AS Non-coding RNA in plasma of people with Alzheimer's disease.

Methods : 30 control and 30 case, plasma isolation, RNA extraction, cDNA synthesis, quantitative real-time PCR, statistical analysis

Results : BDNF-AS lncRNA can be in human blood plasma

Conclusion : BDNF-AS lncRNA can be a biomarker of Alzheimer's disease

Keywords : Alzheimer's disease, Bio-marker, BDNF-AS lncRNA



Count: 84

Abstract ID: 702

Presentation Type: Poster

Contribution of *Toxoplasma gondii* dynamic activities in proconvulsant effect of this parasite

Submission Author: Jalal Babaie

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Background and Aim : One-third of world's population is infected with *T. gondii*. *T. gondii* has high tendency to excitable cells including neurons. Epilepsy is one of the most common neurologic disorders worldwide. There is no distinguishable cause for epilepsy in 60% of patients. We assessed seizure susceptibility in mice with acute and chronic *T. gondii* infection and involvement of dopaminergic system in this facet.

Methods : Mice were infected by intraperitoneal injection of cysts of *T. gondii* Tehran strain. Quantitative real-time PCR assay was developed to measure transcripts of SAG1 and BAG1 -acute and chronic phase specific antigens of *T. gondii*, respectively- and level of repetitive REP-529 sequence in brain of the infected mice. Threshold of clonic seizures was measured by tail vein infusion of pentylenetetrazole. Moreover, the seizure threshold was determined after treatment of the infection by combination of sulfamethoxazole and trimethoprim (Co-trimaxazole).

Results : SAG1 transcript level reached the maximum at week 2 after cysts injection and then declined. The maximum level of BAG1 transcript was observed at the third week and preserved till the week 8 (end of the study). The REP-529 sequence was detected at first week after infection, reached maximum at the week 3 and kept at this level till the eighth week. The threshold of seizures significantly decreased in both acute and chronic phases of infection. Chemotherapy vastly inhibited parasite growth and multiplication, and returned seizure susceptibility to the level of non-infected mice.

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Conclusion : T. gondii dynamic activities in the brain during acute and chronic infection participates in the proconvulsant effect of T. gondii infection. The effect of parasite on neuronal excitability is not irreversible; rather it is eliminated even in latent infection by antibiotic therapy.

Keywords : Toxoplasmosis; Seizure threshold, Pentylentetrazole, Co-trimaxazole, RT-PCR



Count: 85

Abstract ID: 434

Presentation Type: Poster

The effect of knee braces on the kinetic and kinematic gait parameters in subjects with medial compartment knee osteoarthritis

Submission Author: Roshanak Baghaei roodsari

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Background and Aim : Background: Various treatments are used for osteoarthritis of the knee including surgical procedure, medicine and conservative treatment. Orthotics management as a conservative treatment consists of insoles outer and valgus brace. Aim: The aim of this review was to evaluate the knee orthoses on kinetic and kinematic parameters in medial compartment knee osteoarthritis Methods: The search strategy was based on the Population Intervention Comparison Outcome (PICO) and included all the articles published from 1998 to 2015. A search was performed in Science Direct, Google scholar, PubMed and ISI web of knowledge databases and relevant articles were identified. Result: 23 articles were selected from final evaluation. The procedure following that was recommended by the Preferred Reporting Items for Systematic Review and Meta Analyses (PRISMA) method. Results: The results of the analysis demonstrated that there is a low level of the evidence to show that knee orthoses improve the walking parameters in medial compartment knee osteoarthritis. Conclusions: The effect of knee braces on the osteoarthritis medial compartment knee is very effective. This is due to the nature of biomechanical osteoarthritis knee. Basic mechanical brace with a three -point -load continual causes compensation alignment knee but the patients don't use the brace for a long time. The main reason is non concurrence axis motion joint brace with

Methods : The search strategy was based on the Population Intervention Comparison Outcome (PICO) and included all the articles published from 1998 to 2015. A search was performed in Science Direct, Google scholar, PubMed and ISI web of knowledge databases and relevant articles were identified. Result: 23 articles were selected from final evaluation. The procedure following that was recommended by the Preferred Reporting Items for Systematic Review and Meta Analyses (PRISMA) method

Results : The results of the analysis demonstrated that there is a low level of the evidence to show that knee orthoses improve the walking parameters in medial compartment knee osteoarthritis

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Conclusion : The effect of knee braces on the osteoarthritis medial compartment knee is very effective. This is due to the nature of biomechanical osteoarthritis knee. Basic mechanical brace with a three -point - load continual causes compensation alignment knee but the patients don't use the brace for a long time. The main reason is non concurrence axis motion joint brace with joint knee. Therefore, there is a need to design a new brace for osteoarthritis medial compartment knee.

Keywords : Medial knee osteoarthritis– knee orthoses - Pain- Function - gait parameters- kinetic and kinematic parameters



Count: 86

Abstract ID: 25

Presentation Type: Poster

Affective Norms for 362 Persian Words

Submission Author: Mahdi Bagheri

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Background and Aim : In the past two decades, a great deal of research into developing affective norms for words in various languages shows that there is an urgent need to creating such norms in Persian. The current study is intended to develop a set of 362 Persian words rated according to their emotional valence, arousal, imageability, and Familiarity so as to prepare the ground for further research on emotional word processing. Our study was the first attempt to set affective norms for Persian words.

Methods : Prior to the study, a multitude of words had been gathered from Persian dictionary and academic books in Persian literature. In the second place, three independent proficient in the Persian literature were asked to extract the suitable words from the list and to choose the best (defined as grammatically correct, most often used, best form of the word). The database normalization process were based on ratings by a total of 88 participants using a 9-point Likert scale. Each participant evaluated about 120 words on four different scales using a paper-and-pencil group survey procedure.

Results : Statistical Analyses demonstrated that there were significant relationships between affective dimensions and some psycholinguistic variables. Further analyses also were carried out to investigate the possible relations between different features of valences (positive, negative, and neutral) and other variables included in the dataset.

Conclusion : These affective norms for Persian words creates a useful and valid dataset which will provide researchers with applying standard verbal materials as well as the materials applied in other languages (English, German, French, Spanish, Portuguese, Dutch, etc.).

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Keywords : Affective ratings, Valence, Arousal, Imageability, Familiarity



Count: 87

Abstract ID: 688

Presentation Type: Poster

The effect of the Attention Bias Modification training on depressive symptoms

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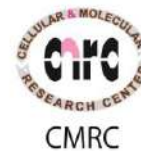
Background and Aim : Negative attentional biases are often considered to have a causal role in the onset and maintenance of depressive symptoms. This suggests that reduction of such biases may be a plausible strategy in the treatment of depressive symptoms. The present randomized trial examined effects of a computerized Attention Bias Modification (ABM) procedure on individuals with depressive symptoms.

Methods : 76 individuals with ongoing mild to severe symptoms of depression were randomly assigned to one of six conditions. Participants underwent ABM or Attention Bias (AB) training using Visual Dot Probe (VDP) either images or words, each of which encompasses three conditions: 1) ABM training from negative to neutral stimuli. 2) ABM training from negative to positive stimuli. 3) AB training from neutral to positive stimuli. Participants completed ten sessions of 216-trials (2160 in total) during a 2-week period. Assessments were conducted at pre-training and post-training.

Results : In the both ABM and AB, significant reductions in depressive symptoms were found at post-training. Importantly, the dot-probe training procedure could effectively modify biases in attention in 4 out of 6 conditions.

Conclusion : These results suggest that ABM may be a useful tool for the reduction of depressive symptoms and modifying attention biases.

Keywords : Depression, Attention Bias, Attention Bias Modification, Cognitive Biases



Count: 88

Abstract ID: 701

Presentation Type: Poster

The prevalence of vitamin D deficiency in patients with Multiple sclerosis Vali-Asr Hospital in Zanjan

Submission Author: Mostafa Bagheri

Mostafa Bagheri¹

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Background and Aim : MS, an autoimmune disease and the most common neurological disease in which the insulating covers of nerve cells in the brain and spinal cord are damaged. This damage disrupts parts of the nervous system in communicate together. Although There is no known cure for multiple sclerosis, but genetic and environmental factors also seem to play an important role in susceptibility to the disease. Vitamin D one of the vitamins necessary for the body and the fat-soluble vitamins, which control the balance of calcium and phosphorous growth and helps strengthen bones through. According to Vitamin D deficiency may be a risk factor for multiple sclerosis, but no evidence indicates vitamin D has any clinically significant benefit as a treatment. The aim of this study was to investigate the relationship between vitamin D deficiency in patients with MS in Vali-Asr hospital in Zanjan

Methods : In a cross-sectional study information such as age, gender, and type of MS was determined confirmed by neurologist . In this study, patients who had received vitamin D were excluded from the study. Serum levels of vitamin D in patients using chemiluminescence immunoassay was measured LIAISON and then the data were analyzed with SPSS-19 software.

Results : A total of 62 patients with multiple sclerosis were enrolled with a mean age of 31 years with a standard deviation of 6 years. Also, the total 62 patients, 43 patients were female and 19 were male patients. 5 persons of men (26.31%) as well as 28 persons of women (65.11%) with MS have low levels of vitamin D.

Conclusion : According to the results obtained in this study, serum levels of vitamin D deficiency in women with MS were more than men. In addition, it seems that further studies with higher sample size, patients diet control, the prevalence of vitamin D deficiency and the time of testing can be helpful in this study.

Keywords : vitamin D, Multiple sclerosis, autoimmune disease, immunoassay.



Count: 89

Abstract ID: 215

Presentation Type: Poster

Could the Von_Restorff effect increase the short term memory in children?

Submission Author: Zahra Bagheri

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3. Institutionen för juridik, psykologi och socialt arbete

Background and Aim : Since the diagnosis and incidence of learning disability and attention deficit- hyper activity disorder occur in pre- school ages, it seems to be necessary to find a way that enhances the level of educational skills; therefore, in this study we asses effectiveness of Von_Restorff effect in reminding learned items.

Methods : This study was cross-sectional with available sample included groups of children 6 to 8 years old with learning disability disorder and attention deficit hyper activity disorder (N = 16) and normal children (N=20). Each group is divided into two sub-groups which one of them was offered the Von_Restorff effect and another one did not. A collection of 15 images were presented to all subjects randomly. Each image was presented for 1 second and internal between the images presentation was one second. The collection includes 15 images of an equal number of three groups of clothing, school supplies and fruits. The experiment groups were told “images of three categories of fruits, school supplies and clothing will be shown to you, immediately after the end of presentation you should remind and say their names”. The control groups were told “some images will be shown to you, immediately after the end of presentation you should remind and say their names”. the subjects were allowed to approve the name of each slide through presentation if the need it, for example:(is it an eraser?).

Results : we use t_test via SPSS to evaluate the Von_Restorff effect in reminding items from short term memory and analysis results showed that there is no statistical difference between experiment group who were offered Von_Restorff effect compared to control group who did not receive any method in reminding items. But groups were offered the Von_Restorff effect could remind items in details.

Conclusion : This results create this important question that if this method could improve the subject’s attention to items? forasmuch as Previous studies showed that this method can improve remembering skills; It seems this results from the little sample size; that is most important limitation of this study.

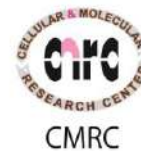
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Keywords : Von_Restorff effect, short term memory, attention, category, learning disability, attention deficit hyper activity



Count: 90

Abstract ID: 125

Presentation Type: Oral

Computer Assisted Cognitive Rehabilitation therapy on craving of opiate users

Submission Author: Zahra Bagheri

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Background and Aim : The aim of this study was examine the efficacy of computer assisted cognitive rehabilitation (CACR) as a complementary treatment of opiate craving on patient with substance use disorder.

Methods : Thirty opiate users who received outpatient methadone therapy were randomly assigned in two groups: Methadone treatment plus CACR for Group A and only standard methadone treatment for group B. In group A participants received 15 sessions of CACR via Caption's log software. All participants in both groups were assessed on measures of craving, impulsivity, delay discounting and risky decision making at base line and after treatment completion.

Results : Statistical analysis showed improvement of memory in group A in addition to craving reduction which lead to positive effect on impulsivity and delay discounting but in measure of risky decision making we did not found any effect.

Conclusion : These results suggest improvement of memory has positive effects on impulsivity, delay discounting ability and reduction of craving.

Keywords : computer assisted cognitive rehabilitation; substance use disorder; opiate; craving



Count: 91

Abstract ID: 195

Presentation Type: Poster

Subacute administration of tramadol modulates anxiety like behavior in rats

Submission Author: Farideh Baghishani

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Background and Aim : Tramadol hydrochloride is a synthetic opioid which is used as analgesic medicine. In the present study, the effect of subacute administration of tramadol on anxiety like behavior was investigated in rats.

Methods : 21 adult rats were divided into three groups in clouding control, saline and treatment. Animals in the treatment group received tramadol (50 mg/kg, 28 days) via gavage and the animals of saline group were received normal saline in the same period. Whereas animals in the control group were permitted free access to food and water and did not receive any medication. At the end of treatment, open - field (OF) and elevated plus maze (EPM) tests were performed to examine anxiety.

Results : In OF, the crossing number and the traveled distance in the central zone by the animals of tramadol group were higher than that of control and saline groups ($P < 0.05$). In EPM, the number of entries to and the time spent in the open arm by the animals of tramadol group was significantly higher than that of control and saline groups ($P < 0.05$ - $P < 0.001$). Treatment by tramadol also decreased the time spent in the closed arms ($P < 0.05$).

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Conclusion : The results of present study showed administration of tramadol can suppress the anxiety like behavior in rats. Moreover, further investigations are required in order to better understanding the responsible mechanism(s).

Keywords : Tramadol; Anxiety; elevated plus maze; open - field



Count: 92

Abstract ID: 296

Presentation Type: Poster

Effect of ethanol extracts Anise (*Pimpinella anisum*) on pain and morphine-induced analgesia in male mice

Submission Author: Elham Bakhtiyari

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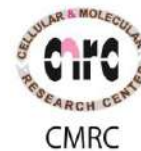
Background and Aim : Due to the side effects of chemical drugs and their prices, nowadays medicinal plants are of great interest, Anise is one of these plants. The aim of the present study is evaluating analgesic effect of ethanol extract Anise in male mice by using formalin test in the presence and absence of injection morphine.

Methods : In this study, 28 mice were used, in 4 groups: control, morphine, Anise, Anise + morphine. Ethanol extract dill was used by 300 milligrams per liter in drinking water for 30 days was given to the animals. In positive control group, morphine 10mg/kg was injected with a single dose subcutaneously. To obtain pain scores using formalin test with injection of formalin 2/5 % to the fourth finger of the animals' right hand.

Results : The results of this study showed that ethanol extract Anise by oral method decreased pain scores in the acute and chronic phases of formalin-induced pain. Concurrent using of ethanol extract of Anise and morphine had dramatic analgesic effect.

Conclusion : The results of this study confirm the analgesic effects for compounds present in Anise plant and also increase the analgesic effects of morphine.

Keywords : Pain, Formalin test, Ethanol extract, Anise



Count: 93

Abstract ID: 490

Presentation Type: Poster

Boswellia serrata Has Promising Impact on Glutamate and Quinolinic Acid-Induced toxicity on Oligodendroglia Cells: In-Vitro Study

Submission Author: Vafa Baradaran Rahimi

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Background and Aim : Excessive release of glutamate and quinolinic acid (QA) lead to neuronal inflammation and death, and can also cause many acute and chronic neurological disorders including multiple sclerosis (MS). *Boswellia serrata* (BS) has been reported to exert anti-oxidant and anti-inflammatory activities. In this study, we investigated the oligoprotective effect of BS on oxidative OLN-93 cells injury induced by glutamate and QA.

Methods : The protective effect of different increasing concentrations of BS was evaluated using cell viability, malondialdehyde (MDA) as lipid peroxidation index, and the assessment of intracellular reactive oxygen species (ROS) in OLN-93 cells.

Results : Different concentrations of BS (0-40 µg/ml) had no significant effect on OLN-93 cell viability. The increasing concentrations of glutamate and QA (more than 4 mM) led to cell death in a concentration dependent manner ($P<0.01$) and significantly increased ROS and MDA levels ($P<0.001$ for both). Different concentrations of BS (10-40 µg/ml) significantly improved cell viability and mitigated MDA and ROS generation following glutamate and QA oligotoxicity ($P<0.05$ and $P<0.001$, respectively).

Conclusion : Our results provide the first evidence of oligoprotective effects of BS against glutamate and QA-induced toxicity in OLN-93 cells through diminishing oxidative stress. Therefore, it may be a promising feature in the treatment of many neuroinflammatory disorders such as MS.

Keywords : Glutamate; quinolinic acid; oligotoxicity; *Boswellia serrata*; oxidative stress; OLN-93 cells



Count: 94

Abstract ID: 491

Presentation Type: Oral

Ocimum basilicum Improves Sleep Duration and Latency through GABA-A Receptors

Submission Author: Vafa Baradaran Rahimi

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Background and Aim : Sleep disorders may lead to serious complications in the body such as poor memorizing, slower reactions, emotional disturbances and changes in the immune response and currently used soporific drugs can induce unwanted effects such as psychomotor impairment, tolerance, amnesia, and rebound insomnia. Therefore, studies for findings new hypnotic agents with lesser side effects and more effectiveness have continued. Herbal agents always have been a good source for developing new therapeutics for treatment of diseases. *Ocimum basilicum* (*O. basilicum*), In traditional medicine, is used to treat many disorders like anxiety, diabetes, cardiovascular diseases, headaches, neurological pain and seizure. However, there is no pharmacological evidence on sedative-hypnotic effect of *O. basilicum* macerated extract.

Methods : This work was an experimental study on 72 mice which randomly divided into 9 groups: saline (control); diazepam (3 mg/kg, positive control); hydro-alcoholic extract (HAE) of *Ocimum basilicum* (25, 50 or 100 mg/kg); ethyl acetate fraction (EAF, 50 mg/kg); n-butanol fraction (NBF, 50 mg/kg); water fraction (WF, 50 mg/kg); and saline containing 10% DMSO (vehicle for EAF and NBF). To follow up the mechanism, Flumazenil (1 mg/kg) was administrated 30 min before diazepam or HAE. All the test compounds were injected intraperitoneally 30 min before pentobarbital administration (30 mg/kg). Duration and latency of pentobarbital-induced sleep were recorded. Also, LD50 of HAE was determined and the cytotoxicity of HAE was tested on neural and fibroblast cells using MTT assay.

Results : The HAE increased duration of pentobarbital-induced sleep at doses of 25, 50 and 100 mg/Kg ($P < 0.001$). The hypnotic effect of HAE was comparable to that of induced by diazepam. Similarly WF, EAF and NBF at 50 mg/kg could increase sleep duration. The sleep latency was decreased by HAE ($P <$

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0.01 - $P < 0.001$) and NBF ($P < 0.001$), but not by WF and EAF. Moreover, flumazenil reversed sleep prolonged by HAE. The LD50 value for HAE was found to be 2.4 g/Kg. HAE had no effect on viability of neuronal PC12 cells and L929 fibroblast cells.

Conclusion : The present data demonstrated that *Ocimum basilicum* potentiates sleeping behaviors through GABA-A receptors without any cytotoxicity. The main component(s) responsible for the hypnotic effects of this plant is most likely non-polar agent(s) which found in NBF. Isolation of the active constituents may yield novel sedative drug.

Keywords : L929; Pentobarbital; *Ocimum Basilicum*; PC12; Sleep



Count: 95

Abstract ID: 315

Presentation Type: Poster

Internet pornography addiction: from fantasy to reality

Submission Author: Amir Abbas Barzegari Sorkheh

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1. University of Maragheh

Background and Aim : During the last decades, public access to explicitly sexual materials, nowadays known as pornography, is on the rise. One of the biggest reasons for the prevalence of pornography in public is the appearance of new media especially high speed internet. Some researchers consider the over-consuming the sexually explicit materials through internet as internet pornography addiction. Here we discuss some neuroscience evidences that may support the idea of internet pornography addiction.

Methods : Pub Med, EMBASE, PsychINFO and Google Scholar were searched for combinations of the following words: Behavioral addiction, Internet Pornography addiction, Pornography and brain, Pornography and neurotransmitters, Neurobiology and pornography, pornography and neuroscience. The combinations of the words were searched in the websites since 1990 as in the year public access to internet made possible.

Results : Nowadays, the concept of addiction has a broader meaning and in addition to drug addiction behavioral addiction has entered to the field of addiction. New evidences indicate that dopaminergic system of brain mediates both kind of addiction. DeltaFosB is a transcription factor that increases sensitivity in the reward pathway and promotes positive reinforcement of addictive behaviors. It has been well established that drugs of abuse elevate the levels of DeltaFosB in the reward system. It leads to an enhanced response to rewards, reward related cues and increased sensitivity to addiction. Recent studies showed that not only the drugs of abuse but also natural rewards like sex increase the level of DeltaFosB in the nucleus accumbens. Naltrexone is one of the medications that have been prescribed for many years in treatment of opioid addiction. The drug decreases the dopamine release in response to rewards. Bostwick J.M. and Bucci J.A. reported a case that a male person with internet sex addiction treated with naltrexone successfully. Since the drug commonly used for treatment of opioid addiction, it can be concluded that there are some common pathways between pornography addiction and drug addiction. Furthermore, other evidences indicate that hypo-frontal syndrome is a common point between drug addiction and behavioral addiction. Internet pornography addiction like other kinds of addiction is some kinds of learning as like rats that pushing the lever to receive more cocaine in experimental skinner boxes, pornography addicted persons clicking the mouse for more pornography materials in internet. Finally, there are some signs of pornography

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addiction that are common with drug addiction: inability to stop porn viewing despite attempts to do so, continuing the use of porn despite negative consequences, having a secret life, become angry, hostile and irritable if asked to stop porn, losing a lot of time for viewing porn and tolerance to viewing pornography, because, each time, porn addicted persons need to consume more time and more hard core pornography to be satisfied.

Conclusion : From this review it can be concluded that internet pornography can be an addictive behavior and it have some common basic mechanisms with substance addiction. Thus, the fantasy of sex act by seeing pornography can lead to a real addictive behavior.

Keywords : Pornography, Addiction, Neuroscience

Count: 96

Abstract ID: 180

Presentation Type: Poster

Investigating the Microinjection Effect of Curcumin-Linoleic Acid on Spatial Memory in Multiple Sclerosis Model of Male Rats

Submission Author: Behnaz Barzegarzadeh

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Background and Aim : Multiple sclerosis (MS) is a chronic inflammatory disease of the central nervous system (CNS) in which the myelin sheath of the nerve fibers is destroyed. One of the most common symptoms of MS is cognitive deficit. It has been documented that in multiple Sclerosis disease spatial memory get disrupted. Polyunsaturated fatty acids (PUFAs) have potential anti-inflammatory and neuroprotection effects in multiple sclerosis and other autoimmune inflammatory disorders. Curcumin (the main pigment of *Curcuma longa*) through its antioxidant and anti-inflammatory properties plays an important role by blocking oxidative stress and neuroinflammation in neurodegenerative diseases such as Multiple sclerosis. The aim of this study is to investigate the effect of intracerebroventricular injection (ICV inj.) of synthetic substance curcumin-linoleic acid (Cur-LA) in two doses on spatial memory in Ethidium bromide (EtBr) model of MS in male rats.

Methods : 35 male Wistar rats (250±10g) were divided into five groups: control, sham (receive DMSO as solvent), lesion (receive EtBr, 4 µg/rat; 2 µg per lateral ventricle) and two treat groups (EtBr, 4 µg/rat + Cur-LA, 5 and 10 µg/rat). Animals were anaesthetised, undergone stereotaxic operation, and cannula were positioned in the lateral ventricles using stereotaxic co-ordinates. All intracerebroventricular administrations were bilaterally done for a period of 5 days. The spatial memory parameters was determined using the Morris water maze (MWM) test.

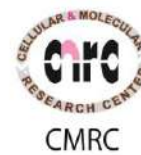
Results : Animals were tested for 5 consecutive days (each day, four trials) and data were analyzed using one-way ANOVA. The swim speed showed no significant difference among the groups, while the mean latency time and distance traveling in finding the hidden platform was decreased during test trial on day 3,4 and 5 in treat(EtBr + Cur-LA) groups (5 and 10 µg/rat) in comparison with lesion (EtBr) group ($p < 0.01$).

Conclusion : It seems that using curcumin-linoleic acid in these two doses is able to improve spatial memory in MS model for a short time.

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Keywords : Multiple Sclerosis, Curcumin-Linoleic Acid, Stereotactic Operation, Spatial Memory, Male Rat



Count: 97

Abstract ID: 294

Presentation Type: Poster

Effect of P-CREB expression in the basolateral amygdala on nicotine-induced angiogenesis in rats

Submission Author: Hamide Bashiri

Hamide Bashiri¹, Hamideh Bashiri², Mohammad-Reza Zarrindast³, Ameneh Rezayof⁴, Mousa Sahebgharani⁵, Seyed Mohammad Tavangar⁶, Amene Omid⁷

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Background and Aim : Nicotine as an addictive drug has numerous negative health effects. A large body of evidence suggests that the risk of anxiety disorders may be increased in nicotine abuse. It is well known that several mechanisms in different brain regions are involved in mediating drug-induced anxiety-like behaviours. The cAMP response element-binding protein (CREB) as a cellular transcription factor can bind to the promoter sequence of cAMP responsive genes. The activation of the cAMP–protein kinase A pathway results in the phosphorylation of CREB (P-CREB). P-CREB may ultimately modulate emotional behaviours via transcription of some sensitive genes. The present study was designed to clarify whether P-CREB expression in the basolateral amygdala (BLA) is involved in nicotine-induced angiogenic-like behaviours.

Methods : The experiments were performed on male Wistar rats weighing 200–250 g at the time of behavioural testing. An elevated plus maze (EPM) apparatus was used for the assessment of the anxiety-like behaviours. After completion of the behavioural test, rats were deeply anaesthetized and then transcardially perfused with 4% paraformaldehyde. The brain of rats was removed and post-fixed in 4% paraformaldehyde for 24 hours. After that, they were sliced coronally and the BLA region was recognized using Paxinos and Watson's atlas. In order to identify the mechanisms involved in nicotine-induced anxiety-like behaviours, P-CREB expression was evaluated by immunohistochemistry.

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Results : The findings of the current study showed that systemic intraperitoneal (i.p.) administration of nicotine (0, 0.3 and 0.7 mg/kg) dose-dependently decreased open arm time (%OAT) and open arm entry (%OAE), indicating the anxiogenic-like effect of nicotine. The second result worth commenting is that Kruskal-wallis analysis revealed a significant change in P-CREB expression between treated groups. In the home cage group, P-CREB expression in the BLA was higher than EPM exposure groups. Nicotine (0.3 mg/kg, i. p.) reduced P-CREB levels in the BLA, however it did not significantly alter.

Conclusion : considering that P-CREB expression in the BLA altered in the EPM exposure and treated groups, further studies, which take this variable into account and better elucidate the molecular mechanisms involved in nicotine-induced anxiety-like behaviours, will need to be undertaken in the future studies.

Keywords : Nicotine; Basolateral amygdala; P-CREB; Anxiety-like behaviours



Count: 98

Abstract ID: 311

Presentation Type: Poster

Involvement of the basolateral amygdala c-Fos in nicotine-induced anxiogenesis in rats

Submission Author: Hamide Bashiri

Hamide Bashiri¹, Hamideh Bashiri², Mohammad-Reza Zarrindast³, Ameneh Rezayof⁴, Mousa Sahebgharani⁵, Seyed Mohammad Tavangar⁶, Amene Omid⁷

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Background and Aim : The present study was designed to clarify whether c-fos expression of the basolateral amygdala (BLA) are involved in nicotine-induced anxiogenic-like behaviours. In order to identify the mechanisms involved in nicotine-induced anxiety-like behaviours, c-Fos Bexpression was evaluated by immunohistochemistry.

Methods : Adult male Wistar rats were studied. Anxiety-like behaviours were assessed in an elevated plus maze (EPM) task. c-Fos and P-CREB expression were evaluated by immunohistochemistry.

Results : Our findings showed that intraperitoneal administration of nicotine (0.3, 0.7 mg/kg) dose-dependently decreased open arm time (%OAT) and open arm entry (%OAE). It should be considered that the drug treatments had no effect on locomotor activity in all experiments. One way Anova analysis revealed a significant change in c-Fos expression between treated groups. We found that saline-treated animals exposed to the EPM had higher levels of cFos in the BLA than rats handled in the same manner but not subjected to the test (home cage). In the nicotine-treated groups, c-Fos levels significantly decreased.

Conclusion : Taken together, it can be concluded that nicotine produces anxiogenic-like behaviours which may be mediated through the BLA c-fos mechanism.

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Keywords : Nicotine; Basolateral amygdala; c-Fos; Anxiogenic-like behaviours; Rat



Count: 99

Abstract ID: 428

Presentation Type: Poster

Atorvastatin potently suppresses inflammation in human glioblastoma spheroids tumor cultured in three-dimensional in vitro model: possible relevance to glioblastoma treatment

Submission Author: Neda Bayat

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Background and Aim : Glioblastoma multiform (GBM) is highly aggressive and the most common primary malignant brain tumor. Because few therapeutic targets are available for GBM, better understanding of the molecular mechanisms of GBM progression and therapy resistance is important. Understanding how the immune system and glioma interact could lead to novel therapeutic approaches to fight glioma.

Methods : In this study, we investigated the in vitro anti-inflammatory and apoptotic activity of atorvastatin in different concentrations 1, 5, 10 μ M on glioma spheroids cells in three-dimensional model in fibrin gel that exactly indicate the complex in vivo microenvironment better than simple two-dimensional cell culture. A mechanistic insight into the role of IL-17RA, TRAF3IP2 and apoptotic genes in glioma progression would provide important avenues for studies on therapeutic manipulation of this novel inflammatory axis in malignant tumors and may improve outcome. To reach for these aims, After 24 and 48 hours exposing with different concentrations of atorvastatin caspase-8, caspase-3, Bcl-2, TRAF3IP2 and IL-17RA genes expression were assayed. TUNEL assay and cell cycle assay were used for evaluating the cell apoptosis and proliferation.

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Results : The results showed that atorvastatin has potent apoptosis inducing effect and inflammation inhibiting effect against glioma spheroids. Atorvastatin induced the expression of caspase-3 and caspase-8, and down-regulated the expression of Bcl-2, TRAF3IP2 and IL-17RA especially at 10 μ M concentration. These effects are dose dependent.

Conclusion : The most likely mechanisms are the inhibition of inflammation by IL-17RA interaction with TRAF3IP2 and NF- κ B signaling pathway. Finally these results suggest that atorvastatin could be used as anticancer agent for glioblastoma treatment.

Keywords : Inflammation; Apoptosis; Glioblastoma; Atorvastatin

Count: 100

Abstract ID: 557

Presentation Type: Oral

The beneficial effect of hydro-alcoholic extract of *Nigella sativa* seeds and thymoquinone on scopolamine-induced memory impairment and acetylcholinesterase activity in rats

Submission Author: Farimah Beheshti

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4. Department of Physiology, School of Medicine, Mashhad, University of Medical Sciences, Mashhad, Iran

Background and Aim : Neuroprotective, antioxidant, anticonvulsant and analgesic effects of *Nigella sativa* (NS) and its major component thymoquinone (TQ) has been previously reported. In the present study, the effect of hydro-alcoholic extract of NS and TQ on memory performance and acetylcholinesterase (AChE) activity was evaluated in a scopolamine-induced memory impairment model

Methods : Seventy male Wistar rats were divided into seven groups and treated: group 1): control, group (saline), group 2): Scopolamine-treated (2 mg/kg, ip, 30 min before retention test), Groups 3 and 4: scopolamine with 200 or 400 mg/kg hydro-alcoholic extract of NS (Sco-NS200 and Sco-NS400). Groups 5-7: scopolamine with 5, 10 or 20 mg/kg TQ (Sco-TQ5, Sco-TQ10 and Sco-TQ20). Injection of NS extract and TQ was 2 weeks before passive avoidance test (PA). After PA the brains of animals were removed for the assay of AChE activity.

Results : Sco decreased latency time for entering to the dark room compared to control group. NS200 increased latency time for entering to the dark room compared to Sco group. All three doses of TQ increased latency time for entering to the dark room compared to Sco group in 1, 24 and 48h after shock. AChE activity in both hippocampus and cortex of Sco group was significantly higher than control group. In Sco-NS400 group, the AChE activity in hippocampal tissues was lower than Scopolamine group. Treatment by NS 200 and 400 decreased the AChE activity in cortical tissues compared to Scopolamine group. In TQ 5, 10 and 20 groups, the AChE activity in both hippocampal and cortical tissues was lower than Scopolamine group.

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Conclusion : The results of the present study showed that hydro-alcoholic extract of NS and TQ prevents scopolamine- induced memory deficits and decreases the AChE activity in rats. Our results support the traditional belief about the beneficial effect of NS on nervous system.

Keywords : Nigella sativa; Thymoquinone; Memory; Scopolamine; Acetylcholinesterase



Count: 101

Abstract ID: 178

Presentation Type: Poster

Ghrelin signaling in the rat amygdala is crucial for memory consolidation

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Background and Aim : Studies have shown that intracerebral administration of ghrelin hormone affects learning and memory in different experimental models of learning. However, the effect of ghrelin signaling on different stages of memory has not been investigated. In this study the effect of intra-amygdala injection of a GHS-R1a selective antagonist (D-Lys-3-GHRP-6) was examined on memory consolidation in the passive avoidance task.

Methods : Adult male Wistar rats underwent stereotaxic surgery and cannulated in their amygdala, bilaterally. One week after surgery, the rats received different doses of D-Lys-3-GHRP-6 (80 pM, 0.8 nM and 8 nM) immediately after training. The control group received solvent of the drug. Twenty four hours later in the test day, memory retrieval was assessed.

Results : Post-training injection of D-Lys-3-GHRP-6 decreased step-through latency and increased time spent in the dark compartment and number of step-through into the dark compartment, significantly and in a dose-dependent manner.

Conclusion : The results indicate that ghrelin signaling in the rat amygdala is crucial for memory encoding on consolidation stage of memory.

Keywords : Amygdala, Ghrelin, Memory, Passive avoidance task



Count: 102

Abstract ID: 597

Presentation Type: Poster

The effect of 6 week exercise on seizures induced by Pentylenetetrazole in rats

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Background and Aim : There is significant relationship between physical activity and convulsion. But the effect of type and duration of physical activity is not clear. In this study the effect of 6 week exercise on seizures induced by Pentylenetetrazole in rats were investigated.

Methods : In this experimental study, 40 rats were placed in 4 groups. Kindled and non-kindled groups in which the former received Pentylenetetrazole injections until the animals were kindled. The other groups only received once PTZ (before and after a 6 weeks period). One of each before mention groups was getting 6 weeks period of physical activity. Other groups were not given any physical activity.

Results : Six week physical activity in non-kindled animals increase stage 4 latency (S4L) and decrease stage 5 duration ($P < 0.001$). The physical activity in kindled rats increament stage 2 latency and S4L ($P < 0.001$). Also these treatment decrease stage 5 duration and seizure duration in kindled rats ($P < 0.001$).

Conclusion : The results showed 6 weeks physical activity reduce seizures induced by PTZ .

Keywords : Kindling, Pentylenetetrazole, Seizure, Physical activity, Rat

Count: 103

Abstract ID: 544

Presentation Type: Oral

2-Deoxy glucose protects hippocampal neurons against Kainic acid-induced neurotoxicity in a dose dependent manner

Submission Author: Rafie Belali

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Background and Aim : 2-Deoxy glucose is a glucose analoge which can transport by glucose transporters into the cells, where it disrupts glycolysis. Blocking glycolysis, induces a compensatory rise in alternative components like ketone bodies and Ketone bodies production, promotes neuron survival in many neurodegenerative diseases and epilepsy. However, as severe glucose deprivation can induce seizure, in this study, we sought to determine if 2-deoxyglucose protects neurons in a dose dependent manner.

Methods : 48 male Wistar rats were divided into 7 groups: 1- Temporal lobe epilepsy induction by microinjection of 0.5 µg/µl of Kainic Acid i.cv (KA group) 2- KA + 2-DG 125 mg/kg , 2-Deoxy glucose (2-DG) was injected i.p, half an hour before epilepsy modeling and was repeated daily for the next 4 days following modeling) 3- 2-DG alone, with three doses 125, 250 and 500 g/kg 4- Control/ vehicle 5-sham operated 96 hours after KA injection, the animals were sacrificed and perfused transcardially. The brains were paraffin embedding and after microtom sectioning, CA3 and Hilar regions of the hippocampus were stained by Cresyl violet and Fluoro-Jade B to count the number of necrotic and degenerative neurons.

Results : Animal behavioral monitoring showed that none of 2-DG doses in 2-DG alone groups, could induce epilepsy per se, also none used doses could attenuate the seizure severity or the frequency of tonic-clonic phases in epileptic animals. However, the dosage of 125 mg/kg reduced the latency time to onset the epileptic behavior. Histological analysis showed that 2-DG 125mg/kg, reduced significantly the number of necrotic and degenerative neurons in CA3 and Hilar areas (P<0.001). In comparison, between three doses of 2-DG, 125 mg/Kg was the best protective dose and 250 mg/kg was the least effective one.

Conclusion : The previous studied showed an anticonvulsant and pro-convulsant action of 2-DG, in this stdy, we showed that the neuro-protective role of 2-DG is dose dependent. It seems that lower doses by

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inhibiting glycolysis are more protective than higher doses which promote severe glucose reduction. Altogether we conclude that 2-deoxyglucose acts strictly in a dose dependent manner.

Keywords : Temporal lobe epilepsy, monocyte- derived macrophages, 2 Deoxyglucose, Progranulin



Count: 104

Abstract ID: 158

Presentation Type: Poster

Testosterone destroys spatial learning in Morris Water Maze and decreases the number of BrdU-positive cells in dentate gyrus in male rats

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Background and Aim : Densely expression of androgen receptors in rat hippocampal cells, indicates the effects of androgens on cognitive processes. Also, the hippocampus contains many steroid receptors including androgen receptors, which suggests that gonadal hormones may directly modulate hippocampal neurogenesis in adulthood.

Methods : In the current study, adult male rats were bilaterally cannulated into the CA1 region of hippocampus. Testosterone groups received 3 different doses (10, 50, and 100 µg/side) in a total volume of 1 µL/side through the cannula, 30 min before training in Morris water maze (MWM) for 4 consecutive days. Control group received dimethyl sulfoxide (DMSO).

Results : The behavioral findings of this study, showed significant increases in escape latency and traveled distance parameters to reach the hidden platform, also significant decrease in time spent in target quadrant in probe test (day 5) in testosterone (100 µg/side) – treated animals compared to control group. In addition, in neurogenesis studies, the numbers of BrdU-positive cells were counted in testosterone - treated groups. Immunohistochemical findings of this study showed that the number of BrdU-positive cells in dentate gyrus of the hippocampus were decreased in testosterone (100 µg/side) – treated animals in comparison to control group. In addition, open-field locomotor activity assessments showed that there were no significant differences in open-field parameters (crossing and rearing) in testosterone –treated animals in comparison with control group.

Conclusion : Findings of this study suggest that a destructive effect of testosterone on spatial memory probably is because of decrease in neurogenesis in the dentate gyrus of the hippocampus.

Keywords : Testosterone, Hippocampus, Spatial learning, Dentate gyrus, Neurogenesis



Count: 105

Abstract ID: 240

Presentation Type: Oral

Effects of 10 or 20 Milligram per Day Dosage of Fluoxetine on Mini Mental Status Examination Score in Patients with Mild Cognitive Impairment

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Background and Aim : Mild cognitive impairment (MCI) is considered to be a prodromal status for dementia. Research has shown that some neuronal systems such as hypofunction of glutamatergic, monoaminergic and cholinergic dysfunction, induce age-related cognitive impairment. There are many studies that indicate the roles of neurotransmitters (like serotonin) on regulation of cognitive processes. Hippocampus neurons have the ability to regenerate themselves, so selective serotonin reuptake inhibitors can promote neurogenesis in hippocampus. In current study, we aim to investigate the effects of fluoxetine on MMSE score improvement as a standardized procedure to evaluate mental status of patients with mild cognitive impairment.

Methods : Fifty-eight patients with MCI were randomly selected for fluoxetine or placebo treatment. The Structured Clinical Interview for DSM-IV (Diagnosis and Statistical Manual for Mental Disorders, Fourth Edition) Disorders and the Mini-Mental Status Examination (MMSE) was performed on patients who are not suffer from depression. Fluoxetine was administered with dose of 10 to 20 mg per day. Finally Forty-four out of fifty-eight patients were succeeded to complete the 8- week trial. MMSE was done at first, fourth, sixth and at the end of eighth week and Therapeutic response was determined by increasing the MMSE scores.

Results : In the case of patients who received fluoxetine MMSE score improvement was observed (in average: three) and the patients who received placebo no significant changes in the MMSE score wasn't observed.

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Conclusion : Taking fluoxetine had remarkable improvement in MMSE score, in other words, it could enhance cognition performance. The patients who received fluoxetine were satisfied with treatment, which indicates that even an increase of 2 to 3 in scores of MMSE, can dramatically improve the life quality of these patients. Fluoxetine is a cost effective and available drug with positive impact on curing of the above mentioned patients. Our study was conducted in small scale, Certainly further examination with larger scale of double-blind placebo controlled studies and also more studies on other selective serotonin reuptake inhibitors are needed to confirm these findings.

Keywords : Fluoxetine, MMSE Score, Cognition



Count: 106

Abstract ID: 202

Presentation Type: Poster

Oxytocin and Trust

Submission Author: Ali Bozorgmehr

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Background and Aim : Researchers have shown that oxytocin can cause attachment among different nonhuman mammalian. Such a phenomenon, has encouraged neuroscientists to investigate the role of oxytocin in various aspects of human behavior, especially trust.

Methods : For this purpose, several studies have been conducted that can be put into three main groups: The effect of exogenous oxytocin on trust, the correlation between plasma levels of oxytocin and trust and, the relationship between various oxytocin receptor gene variants and trust.

Results : Unfortunately, the effect of exogenous oxytocin on trust is still not well defined. On the other hand, further investigations have shown that the second group study results depend on the method used to measure peripheral oxytocin. Also, although several studies have found a positive relationship between oxytocin receptor gene variants and trust in people, recent studies on large samples, have rejected such relationship.

Conclusion : Our conclusion is that there is no significant relationship between oxytocin and trust.

Keywords : Oxytocin, Trust, OXTR, OXTR gene



Count: 107

Abstract ID: 592

Presentation Type: Poster

Anticonvulsant effect of dextrometorphane on pentylenetetrazole-induced seizure in mice: involvement of nitric oxide and N-methyl-D-aspartate receptors

Submission Author: Mohsen Chamanara

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Background and Aim : Dextrometorphane (DM), widely used as an antitussive, has recently generated interest as an anticonvulsant drug. Some effects of dextrometorphane are associated with alterations in several pathways, such as inhibition of nitric oxide synthase (NOS) enzyme and N-methyl D-aspartate (NMDA) receptors. In this study, we aimed to investigate the anticonvulsant effect of acute administration of dextrometorphane on pentylenetetrazole (PTZ)-induced seizures and the probable involvement of nitric oxide (NO) pathway and NMDA receptors in this effect.

Methods : For this purpose seizure was induced by intravenous PTZ infusion. All drugs were administered by intraperitoneal (i.p.) route before PTZ injection.

Results : Our results demonstrate that acute DM treatment (10-100 mg/kg) increased the seizure threshold. In addition, the non-selective NOS inhibitor L-NAME (10 mg/kg) and the neural NOS inhibitor, 7-nitroindazole (40 mg/kg), at doses that had no effect on seizure threshold, augmented the anticonvulsant effect of DM (3mg/kg), while the inducible NOS inhibitor, aminoguanidine (100 mg/kg), did not affect the anticonvulsant effect of DM. Moreover, the NOS substrate L-arginine (60 mg/kg) blunted the anticonvulsant effect of DM (100 mg/kg). Also, the NMDA antagonists, ketamine (0.5 mg/kg) and MK-801 (0.05 mg/kg), augmented the anticonvulsant effect of DM (3 mg/kg).

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Conclusion : In conclusion, we demonstrated that anticonvulsant effect of DM in might be due to a decline in neural nitric oxide activity and inhibition of NMDA receptors.

Keywords : Dextrometorphane; Pentylentetrazole; Nitric oxide; Neuronal nitric oxide synthase; N-methyl-D-aspartate



Count: 108

Abstract ID: 559

Presentation Type: Oral

The effect of restraint stress on morphine sensitization in rats: involvement of D2-like dopamine receptors within the nucleus accumbens

Submission Author: Elham Charmchi

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Background and Aim : Nucleus accumbens (NAc) plays an important role in morphine sensitization and suppression of pain. Repeated exposure to stress and morphine increases dopamine release in the NAc and may cause morphine sensitization. In the current study, we investigated the effect of stress and low dose of morphine together on development of morphine sensitization; focusing on the role of D2-like dopamine receptors in the NAc. To investigate the effect of stress, animals were exposed to restraint stress (RS), as a predominantly psychological stressor prior to morphine administration.

Methods : Adult male Wistar rats were bilaterally implanted with cannulae in the NAc and different doses of sulpiride (0.25, 1 and 4 µg/0.5 µl DMSO per side) as a D2 receptor antagonist were microinjected into the NAc, during 3 days of sensitization period, 5 min before the induction of RS, and After 10 min, animals received subcutaneous morphine injection (1 mg/kg). The procedure was followed by 5 days free of antagonist, morphine and stress; then on 9th day, the nociceptive response was evaluated by tail-flick test.

Results : The experiment showed that paired administration of RS and low dose of morphine induced sensitization. Our findings revealed that the microinjection of sulpiride (at 1 and 4 µg/0.5 µl DMSO) prior to RS and morphine disrupts the antinociceptive effects of morphine and morphine sensitization.

Conclusion : Our findings suggest that RS can potentiate the effect of morphine and causes morphine sensitization which induces antinociception. It seems that D2-like dopamine receptors in the NAc play an important role in this phenomenon.

Keywords : Pain; Morphine sensitization; Nucleus Accumbens; D2-like dopamine receptor; Restraint stress



Count: 109

Abstract ID: 695

Presentation Type: Poster

The effect of VEGF and PDGF growth factors in olfactory regeneration

Submission Author: Fatemeh Chehrehasa

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Background and Aim : The olfactory system has a unique ability to regenerate throughout life. The nerve cells that detect odours are directly exposed to bacteria, viruses and toxic chemicals which cause an estimated 1-3% of nerve cells dying each day. Luckily stem cells that reside in the olfactory epithelium within the nasal cavity produce new olfactory neurons which send long fibres up through the cribriform plate of the ethmoid bone and terminate within the olfactory bulb to make new connections. However, when extensive damage to the olfactory nerve occurs such as skull base surgery, regenerating olfactory axons cannot find their targets and are unable to make functional connections to the olfactory bulb which causes anosmia. This is due to axonal mis-targeting in the forebrain or scar tissue formations which make a physical barrier and prevent axons reach the target tissue. Loss of smell (anosmia) can be devastating for patients. Smell dysfunction significantly influences physical wellbeing, quality of life, nutritional status as well as everyday safety and is associated with increased mortality. Currently there is no effective treatment to restore olfaction (sense of smell). One of the major causes of anosmia is skull base surgery which uses the intranasal transsphenoidal approach to remove tumors. Despite care to minimise damage to the olfactory region during surgery, patients can suffer permanent reduction or complete loss of olfaction. It has been shown that anosmia can reduce life-expectancy of individuals by up to 5 years. Therefore, there is a need to find a treatment for anosmia.

Methods : We have investigated the effects of combined two growth factors (VEGF) and (PDGF) in regeneration of the olfactory neurons and restoration of sense of smell in mice animal models. The degeneration of olfactory neurons was induced by surgical removal of the olfactory bulb which mirrored



the skull base surgery. The animals were divided into two groups: the treatment animals group received 0.5 μg of the combined growth factors over three days; however the control group only received PBS. The animals were harvested at different time points post- injury and histology was used for analysis of neuronal and astrocytes cells.

Results : We have found that olfactory regenerating axons significantly projected deeper to the brain in the treatment group compared to the control group at day 10 and 14 ($P < 0.05$) and regeneration of the olfactory receptor neurons significantly increased in the treatment group ($P < 0.05$). Our results also showed that the growth factor treatments changed the morphology of astrocytes which improved axonal regeneration (identified by GFAP immunohistochemistry).

Conclusion : Our results indicated that the combined delivery of VEGF and PDGF growth factors treatment has a therapeutic potential for anosmia and restoration of sense of smell

Keywords : Growth factors; regeneration, anosmia, astrocytes



Count: 110

Abstract ID: 268

Presentation Type: Poster

Investigation the serum levels of the IL-27 and TNF α in Parkinson patients

Submission Author: Ehsan Dadgostar

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Background and Aim : IL-27, new cytokine of IL-12 family and tumor necrosis factor alpha (TNF α) have some key roles in the pathogenesis of autoimmune and inflammatory diseases. The aim of this study is to evaluate serum level of those factors in patients with Parkinson Disease (PD).

Methods : Our case control study was performed on 83 patients with PD and 83 healthy subjects. The serum levels of IL-27 and TNF α in the peripheral blood samples of all participants were measured by ELISA. The severity of PD was evaluated using the modified Hoehn and Yahr staging (H and Y). Finally, we evaluated the correlation between serum levels of those cytokines with disease severity.

Results : Our findings showed that the serum level of IL-27 significantly were reduced and TNF α were increased in patients with PD compared to healthy subjects ($P < 0.0001$). Also, there was a significant correlation between serum levels of two factors with disease severity according to H and Y ($P < 0.0001$).

Conclusion : Our study showed that the serum levels of IL-27 reduce in patients with PD. In addition, the serum levels of TNF α elevate in patients with PD. Also, these changes in serum levels of cytokines in patients with PD are correlated to disease severity.

Keywords : IL-27, TNF α , Parkinson Disease, Hoehn and Yahr



Count: 111

Abstract ID: 23

Presentation Type: Oral

Color of clothings modulates high-level social impressions

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Background and Aim : Attractiveness is one the factors explored from various aspects including clothing, similarity and physique. This study has investigated the effect of color of clothing on five factors of attractiveness: age, intimacy, passion and commitment.

Methods : The sample size included 40 subjects (14 men, ranging from 20 to 35 years of age). The computerized test was designed using Psychopy software. Photos of 8 individuals with 8 different colors of clothing (a total of 64 photos) were presented. The subjects rated the five above – mentioned factors in a scale of 1 to 10.

Results : Results were analyzed using repeated measures ANOVA. There was significant difference between at least two factors in the colors in perceiving individual attributes at the significance level of 0.05. Scheffe post hoc test revealed a significant difference between red color and passion perception ($p=0.01$); black color and attractiveness perception ($p=0.01$); red color and attractiveness ($p=0.01$); black color and age perception ($p=0.01$); black color and intimacy perception ($p=0.01$); purple color and intimacy perception ($p=0.02$); black color and commitment perception ($p=0.01$); and purple color and commitment perception ($p=0.04$).

Conclusion : There was significant difference between at least two factors in the colors in perceiving individual attributes at the significance level 0.05. There was no significant difference between the two genders.

Keywords : clothing color, attractiveness, age determination, commitment, passion, intimacy.



Count: 112

Abstract ID: 35

Presentation Type: Poster

A model for working memory, considering attention and prospective memory

Submission Author: Asiyeh Daneshi

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Background and Aim : Short-term memory (STM) is a temporary storage for information that holds about seven (± 2) items for less than 30 seconds. STM also plays the role of control center or a working buffer that manipulates information for many cognitive activities. In this study, we introduce a model for STM that considers the role of attention in storage and retrieval of the information.

Methods : The most popular operation of STM is short-time storage of the information that comes from sensory memory (SM) or retrieving the stored information from long-term memory (LTM) for the time interval that a task is being done. Assuming that a key controls the entrance of information to each unit of working memory, we can consider that the attention is in charge of closing this keys and controlling the stream of information from SM or LTM to these units. When attention is directed to an object, information related to that object enter the STM. These information decay through the time, and if not refreshed, disappear in 30 seconds or less, and their place is filled with new information. Frequent refreshing is necessary to keep information in STM. At each moment, only one key could be closed and allow its corresponding unit to fill, so attention should close and open the keys constantly to keep the information of all units up to date. The more important an object be, or the more its rate of change be, the more will be the frequency of closing the key in its entrance.

Results : The other role of STM that is less considered, is its contribution to prospective memory (PM). PM is the ability to remember future intentions. We could discuss it in two categories: (1) time-based PM, and (2) event-based PM. In time-based case, one should do a specific task in a certain time; like going to the dentist on Wednesday. In event-based case, the specified task should be done after a determined event happens. The event-based PM has two strategies. In the first strategy, top-down attention keeps SM alert, to search sensory information in accordance with the intended pattern. If SM finds such information, transfers it to STM immediately, and allocates a great attention to it, until the task is done. In the second strategy, when the sensory information related to intended task is received, system alerts and initiates the

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task. In this strategy bottom-up attention plays the key role. As mentioned above, the role of attention is controlling the stream of sensory information to working memory units, and alerting the SM when the person intends to do a task sometime in the future. So, we propose that attention does not have essential role in chunking (grouping STM units into chunks).

Conclusion : We introduced a model for STM that conforms the previous models, and explains the role of attention and prospective memory in STM and proposed that attention does not have essential role in chunking.

Keywords : working memory, attention, prospective memory



Count: 113
Abstract ID: 378
Presentation Type: Oral

An obstacle avoidance model based on motion detection in the hippocampus

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Background and Aim : Obstacle avoidance is an important requirement for animals' survival. There is a lot of evidence confirming the existence of an obstacle avoidance system in animals' brains. In this study, we propose a model for obstacle avoidance using the time to collision (TTC) and motion detection based on hippocampal function.

Methods : The time to contact is usually expressed in terms of the relative speed and the distance of the considered obstacle. The classical equation to compute the TTC is $\tau = \alpha / (d\alpha/dt)$ Where α is the visual angle subtended by the object. When an object approaches the animal, the visual angle grows constantly and the object's image on the animal's retina becomes larger. Animals can estimate the size of the objects with an excellent accuracy. But, how they understand that an object is stationary or moving, and if it is moving how they can calculate its speed (the derivative of visual angle over time)? Here, We introduce a model based on the neuronal propagation in the hippocampus to detect motion. The hippocampus consists of two principal regions: the dentate gyrus, and the cornu ammonis. It has been clarified that the neuronal propagation through these regions contributes to the memory function. This kind of propagation may preserve some information for a while as a spatiotemporal pattern, and may contribute to sequence coding. Cornu ammonis (CA) can anatomically be divided into CA1, CA2, and CA3. Physiological researches have indicated that neurons in Dentate gyrus (DG) receive inputs. In addition, CA2 neurons receive inputs in parallel with DG. According to other researches, information propagates between CA3 and CA1 in two pathways: 1) fast pathway including CA3 and CA1 neurons, and 2) slow pathway including CA3, CA2, and CA1 neurons. When CA3 neurons receive a firing signal, immediately initiate firing and set the neighboring CA1 neurons to decay from their previous value to zero. CA2 neurons play an important role in motion detection. If CA2 neurons are inhibited, their corresponding CA1 unit can remain decaying, otherwise that CA1 unit turns to be inhibited and stops decaying and holds its value for motion detection through this way. Finally, if the value saved in two pools of CA1 neurons differs through time, it can be understood that the object is moving (towards the animal or away from it). The amount of this difference in time determines the speed of the moving object.

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Results : TTC can be calculated using this relative speed and the distance to the obstacle. If the TTC is smaller than a specific threshold, the probability of collision is high, and the animal should take an action to prevent this.

Conclusion : We proposed a model for obstacle avoidance system in animals. This model detects moving objects based on neuronal propagation in the hippocampus in the brain.

Keywords : obstacle avoidance; time to collision; motion detection; hippocampus; visual angle



Count: 114
Abstract ID: 114
Presentation Type: Oral

Creatine Effects on the Induction and Differentiation of Adipose Tissue-Derived Stem Cells into GABAergic-like Neurons

Submission Author: Shahram Darabi

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Background and Aim : There are many studies about differentiation of Adipose derived stem Cells (ADSCs) into Neuron-Like Cells (NLCs) and their application in neurodegenerative disorders. While deficit of GABAergic neurons as a part of Central Nervous System (CNS) was reported in aging and neurodegenerative disorders, ADSCs was shown to be a feasible option as a transplant in cell therapy in neuronal disorders. CNS function is based on an exquisite balance between excitatory and inhibitory neurotransmission. GABAergic neurons provide the major inhibitory control in mammalian brain. In this article, ADSCs transdifferentiated into GABAergic-like Neurons (GLNs).

Methods : Under sterile conditions ADSCs were obtained from pararenal fat of adult rats. Following third passages of cell culture, ADSCs were preinduced into NLCs using 1 mM β -mercaptoethanol (β ME) and 10 μ M retinoic acid (RA), and then NLCs were induced by creatine in different doses and time course. In induction stage, the effects of creatine on differentiation were studied by immunocytochemistry

Results : Immunocytochemical studies on ADSCs using CD49d indicated that cultured cells were ADSCs. Preinduction stage results showed that RA after 2 days, has the best effect on differentiating the ADSCs to NLCs. Immunostaining after induction stage showed high percentage of neural and GABAergic markers (GABA) using 10 μ Mol creatine after 5 days.

Conclusion : In the present study, we have demonstrated that ADSCs can be efficiently induced into NLCs under appropriate conditions. Moreover, these NLCs induced by creatine and differentiated into GLNs that could expressed and neural markers.

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Keywords : GABAergic-like cell, Adipose derived stem Cells, creatine.



Count: 115

Abstract ID: 52

Presentation Type: Oral

Nitric oxide modulate the anticonvulsant effect of 8-OH-DPAT on PTZ-induced seizure in mice

Submission Author: Shima Davoudi

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Background and Aim : Serotonin is a key regulatory neurotransmitter in the CNS which plays an important role in the seizure through different receptors, especially 5HT1A subtype. The role of 5HT1A receptor and NO interaction on PTZ- induced seizure threshold was investigated in this study.

Methods : In this study, 49 white male mice were randomly divided into 7 groups, including intact control, sham-controls (vehicle) and five experimental groups receiving 8-OH-DPAT, L-NAME, WAY100635(5HT1A receptor antagonist), combination of WAY100635 and 8-OH-DPAT and combination of L-NAME and 8-OH-DPAT. After 14 days of treatment in different groups, PTZ-induced seizure threshold assessment and measurement of nitric oxide metabolites in the brain tissue was done with Greiss method.

Results : Seizure threshold was significantly increased in 8-OH-DPAT group compared to vehicle ($P<0.001$). In the presence of WAY100635, the effect of 8-OH-DPAT in raising the seizure threshold was more prominent ($P<0.001$). On the other hand, in the presence of L-NAME, increase in anticonvulsant effect of 8-OH-DPAT was observed, while L-NAME in alone had no effect on seizure threshold ($P<0.001$). NOX concentration was significantly decreased in 8-OH-DPAT-treated group ($P<0.01$), while WAY100635 reversed it. Combination of 8-OH-DPAT with L-NAME reduced the NOX levels ($P<0.001$).

Conclusion : These findings support anticonvulsant effect of selective 5HT1A receptors, although other serotonin receptors than 5HT1A subtype may be involved. Also, it is probable that some anticonvulsant effect of 8-OH-DPAT is through modulation of nitrergic system.

Keywords : 8-OH-DPAT, Seizure, 5HT1A receptor, Nitric oxide, L-NAME, Pentylene tetrazole



Count: 116
Abstract ID: 359
Presentation Type: Oral

Serum Levels of Glucose-6-Phosphate Dehydrogenase in Multiple Sclerosis and Devic's Disease Patients

Submission Author: Leila Dehghani

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Background and Aim : Multiple sclerosis (MS) and devic's disease (NMO) are demyelinating diseases that oxidative stress might play a role in their pathogenesis. Glucose 6 phosphate dehydrogenase is an important enzyme that produces NADPH via pentose phosphate pathway. NADPH is not only involved in the synthesis of fatty acids necessary for myelination but also is involved in defense against oxidative stress. Vitamin D supplementation which is part of treatment intervention for MS patients can increase the expression of G6PD gene. Serum levels of G6PD in MS and NMO and their relationship with vitamin D have not been investigated yet.

Methods : Study subjects were divided into 4 groups, control group containing 65 members, 50 MS patients treated with vitamin D, 50 MS patients not treated with vitamin D, 50 NMO patients. Serum levels of G6PD were measured and compared among these groups.

Results : No significant differences were seen between G6PD levels in MS patients and patients with Devic's disease. But these measurements were significantly lower comparing to control group. Serum levels of G6PD were significantly higher in MS patients treated with vitamin D supplementation comparing to those not consuming vitamin D.

Conclusion : G6PD deficiency was observed in patients with MS and NMO and vitamin D supplementation has the positive effect on the G6PD level.

Keywords : Multiple sclerosis, vitamin D, G6PD, oxidative stress, NMO



Count: 117

Abstract ID: 300

Presentation Type: Poster

Do Neural Avalanches Indicate Criticality After All?

Submission Author: Mohammad Dehghani habibabadi

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Background and Aim : The brain is a complex dynamic system and brain activities including neuronal membrane potentials, noninvasive electroencephalography (EEG), magnetoencephalography (MEG), and functional magnetic resonance imaging (fMRI) signals observed at many spatiotemporal patterns exhibit power-law behavior. Neural avalanches in size and duration exhibit a power law distribution illustrating as a straight line when plotted on the logarithmic scales. The power-law exponent is interpreted as the signature of criticality and it is assumed that the resting brain operates near criticality. However, there is no clear evidence that supports this assumption, and even there are extensive research studies conflicting one another. We show that use the discrete noise in the model with a Gaussian noise and continuous time solution of the equation leads to coincidence of temporal complexity and spatiotemporal patterns of neural avalanches at a control parameter which is assumed to be the critical value of the model.

Methods : We used the leaky integrate-and fire model (LIFM) to model the behavior of neurons. We treat the time continuously and then consider the noise to be a continuous Gaussian white noise with zero mean and unit variance. We assume that the neurons are residing on the nodes of a two-dimensional square lattice with periodic boundary condition with the the size $N = L \times L$, where L is the linear size of the lattice. We calculate the size and duration of the neuronal avalanches creating as the results of our LIFM. For this purpose, we count the number of firing neurons in time bins of 5, 8, 10, 12 and 16 simulation steps ($\Delta T = 0.05, 0.08, 0.1, 0.12$ and 0.16). We consider cumulative distribution function (CDF) to fit the power-law exponents of waiting time distributions and avalanche profiles. We fit the temporal complexity distributions with ML function that settles a bridge between the stretched exponential and inverse power law survival probabilities as important signs of complexity.

Results : Our results provide compelling evidence that temporal complexity and neural avalanches both are consistent and robust indicators of criticality at which information processing, information storage, dynamic response, and computation is maximized. We emphasize that the exponents of avalanche data collapses on scaling exponents that are model independent and identical for all systems in the same

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university class. On the other hand, the results of the paper indicate that a simple model using a regular lattice successfully sheds light into cooperation-induced criticality in neural system and establishes a connection between criticality and neural avalanches. Therefore, we conclude that neural avalanches are indicators of criticality.

Conclusion : Here, by applying two modifications to our previous model, we explored if at the critical point indicated by temporal complexity, avalanche data collapses onto universal scaling function as predicted by the theory of dynamic critical phenomena.

Keywords : Neuronal avalanche, Criticality, Temporal Complexity, power-law distribution



Count: 118

Abstract ID: 425

Presentation Type: Poster

Aberrant Expression of SKP2 mRNA in Multiple Sclerosis Patients

Submission Author: Reyhaneh Dehghanzad

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Background and Aim : Multiple sclerosis (MS) is an inflammatory disease of central nerve system (CNS) which is caused by environmental and genetic factors. Immune system plays a critical role in MS pathogenesis and previous studies determined the effects of many of cytokines in the progression of MS. SKP2 is a member of F-box protein family and reduced in TH-17 cells which play important roles in the pathogenesis of MS. SKP2 helps to the ubiquitination of some proliferative proteins such as TOB1 and FOXO1 and subsequently keep survival of TH-17 cells. The aim of this study was the evaluation of SKP2 mRNA expression in MS patients in comparison with healthy controls.

Methods : Total RNA samples obtained from peripheral blood mononuclear cells (PBMCs) of 20 Remitting-Relapsing MS (RR-MS) and 20 healthy controls. cDNA was synthesized and quantitative real time PCR was performed using specific primers for amplification of SKP2.

Results : the expression level of SKP2 was significantly different between patients and healthy controls in total and in stratification for gender.

Conclusion : these findings can be helpful to understanding the molecular pathways involving in TH-17 activation and survival in pathogenesis of MS. More functional studies is needed to determine the precise mechanisms underlying the reduced expression of SKP2 in TH-17 cells.

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Keywords : Multiple Sclerosis, PBMCs, SKP2, TH-17



Count: 119

Abstract ID: 171

Presentation Type: Oral

Early versus late surgery for traumatic spinal cord injury in the thoracic or thoracolumbar area – secondary results of a randomized controlled trial at one-year follow-up

Submission Author: Pegah Derakhshan

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Background and Aim : Our aim was to conduct a randomized controlled trial (RCT) evaluating the efficacy of early (less than 24 hours) versus late (24-72 hours) decompressive surgery in patients with T1-L1 traumatic spinal cord injury (TSCI).

Methods : An RCT was conducted using blocked-sample-randomization in the neurosurgery department of Shahid Rajaei Hospital, Shiraz University of Medical Sciences from September 2010 to September 2016. Pre- and postoperative American Spinal Injury Association (ASIA) Impairment Scale (AIS) was assessed, as were ASIA motor/sensory scores, length of hospitalization and mortality. Independent t-test analysis was used to compare ASIA sensory and motor progress at 1, 3, 6 and 12-months follow-up between the early and late groups. To compare the complete and incomplete groups, the repeated measures ANOVA with covariate analysis was utilized. $P < 0.05$ was assumed for evaluation of significant differences.

Results : Sixty-nine patients met the inclusion/exclusion criteria and consisted of early (n=31) and late (n=38) surgery groups. There were 1 deaths in the early and 2 deaths in the late group at 1-year follow up. Twenty-two cases (31.8%) had complete TSCI with no upgrading in AIS scale. For cases with incomplete



TSCI, 4, 14, 8 and 1 patients had no, one, two and three level upgrading in AIS scale, respectively, and one patient died. At 1-year follow up, the mean ASIA motor score improved from 66 ± 20.8 to 78 ± 23 in the early group ($P=0.001$), and from 58 ± 14.5 to 67 ± 20.6 in the late group ($P=0.001$). The mean ASIA sensory score improvements were 5 ± 11.7 and 7 ± 12.7 for the early and late groups, respectively. Both ASIA sensory ($P<0.001$) and motor scores ($P<0.001$) had significant improvement from baseline time to 1-year follow-up. In the complete group, a significant improvement in ASIA sensory score was observed at the 12-month follow-up visit (95%CI=1.8-11.4; $P=0.009$) although there was no significant difference in ASIA motor score (95%CI=-0.5 -2.7; $P=0.186$). In the incomplete group, both ASIA sensory (95%CI=1-11.7; $P=0.020$) and motor scores (95%CI=12.7-23.5; $P<0.001$) had significant improvements at 12-months follow-up. However, there was no statistically significant difference in ASIA motor ($P=0.93$) and sensory ($P=0.20$) score between early and late groups. On the contrary, there was a significant difference between complete and incomplete groups in motor improvement scale after decompression surgery at one-year follow-up ($F(1.32)=8.208$, $P=0.007$). Although there was no statistically significant difference in ASIA motor and sensory score between the two groups, one patient experienced a three-grade AIS scale improvement in the early group. There were 3 and 5 patients with two-grade improvement in AIS scale in the early and late groups, respectively.

Conclusion : These results demonstrate overall AIS and motor score improvements in both the early and late surgical intervention groups after traumatic spinal cord injury in the thoracolumbar region. No motor improvements were observed in complete TSCI. There were no significant differences between the early and late groups in ASIA sensory and motor scale at 1, 3, 6, and 12-month follow-ups.

Keywords : Spinal cord injury, Decompressive surgery, Timing, Randomized controlled trial, Thoracolumbar



Count: 120

Abstract ID: 227

Presentation Type: Oral

Effect of Subcutaneous Granulocyte-Colony Stimulating Factor for Neurological Changes in Traumatic Subacute Spinal Cord Injuries: A Double Blind Randomized Clinical Trial

Submission Author: Nazi Derakhshanrad

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Background and Aim : Granulocyte-colony stimulating factor (G-CSF) is a major growth factor in the activation and differentiation of granulocytes. This cytokine has been widely and safely employed, in different conditions over many years. In this study we tried to administer the drug for spinal cord injury.

Methods : Thirty four patients with traumatic spinal cord injury with 1-6 month duration were included in this study. Patients were assessed by ASIA, SCIM III and IANR-SCIFRS just before intervention and at six month after subcutaneous administration of 5µg/kg per day of G-CSF (Filgrastim) for 7 consecutive days in the case group and placebo in the control group. Randomization was performed with random block design, the patients and evaluators were blinded in regard to the treatment group.

Results : This study was conducted on 34 traumatic SCI patients. Nineteen patients were studied in GCSF group and 15 patients in placebo group. The mean (SD) age of the patients was 38.4 year (14) in GCSF group and 34.0 (10) in placebo group. There were 29 male and 5 females in our case. After 6 months of intervention ASIA Impairment Scale (AIS) in control group remained unchanged while in GCSF group 2 AIS B patients improved to AIS C and 4 AIS C patients improved to AIS D. The mean improvement in ASIA motor score in GCSF group was 15.2 scores that was higher than control group (1.6 scores)

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($P=0.009$). The mean light touch and pin prick sensory scores increased by 6.6 and 7.2 scores in GCSF group and by 2.2 and 0.4 s scores in control group ($p= 0.073$, $p=0.003$). Evaluation of functional improvement by FRS instrument revealed significantly higher improvement in GCSF group (8.4 scores) compared to the control group (1.6 scores), ($p= 0.01$). Also significant difference in functional improvement between two groups observed by SCIM-III instrument (25.4 vs. 3.7, $P = 0.004$).

Conclusion : Subcutaneous Granulocyte-colony Stimulating Factor administration in subacute incomplete spinal cord injuries is associated with significant motor, sensory (pinprick) and functional improvement and borderline significant light touch improvement. Full report of RCT will be given in the final report.

Keywords : Spinal Cord Injury, Granulocyte-Colony Stimulating Factor, Neurological Regeneration



Count: 121

Abstract ID: 536

Presentation Type: Poster

Evaluation of cold allodynia by thermal place preference test in the Streptozotocin induced diabetic neuropathy in mice: Effect of chronic endogenous opioid receptor inhibition

Submission Author: Mahdi Dolatyari

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Background and Aim : The aim of this study is to clarify whether chronic μ Opioid receptor inhibition could affect the severity of cold aversion in the diabetic neuropathy (DN) in male Swiss mice.

Methods : Before DN induction, basic locomotor activity of animals and thermal place preference were determined. Mice received an intraperitoneal injection of STZ at 150 mg/kg to induce diabetes. Animal activity and thermal place preference behavior determined by double plate technique (thermo-neutral plate: 24 °C and cold plate: 14 °C) equipped with a digital video tracking system. Six groups of mice were tested: (a) Intact animals, (b) DN + Saline (200 μ , i.p.), (c) DN + Naltrexone (7.5 mg/kg, i.p.), (d) DN + Naltrexone (15 mg/kg), (e) DN + Naltrexone (30 mg/kg), (f) DN + Metformin (100mg/kg, p.o.), (N=6/group).

Results : DN significantly decreased animal activity, time spent in cold plate (as the result of cold allodynia) and increased escape index from the cold plate (E.I) in comparison with intact animals. Administration of naltrexone deteriorates cold allodynia, decreased animal activity and decreased E. I, 14 days after induction of diabetes. Injection of metformin as positive control did not prevent from the sing of cold aversion and allodynia in the STZ induced diabetes model in mice.

Conclusion : Our results suggest that endogenous opioid receptors have beneficial regulatory activity in the modulation of cold allodynia in the diabetic model of neuropathy in mice.

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Keywords : neuropathy;Streptozotocin;cold allodynia;mice



Count: 122

Abstract ID: 705

Presentation Type: Poster

The neurocognitive effects of frontal cortex in inhibition of guilt and stimulation of repentance

Submission Author: Ahmad Ebadi

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Background and Aim : Introduction :The frontal cortex ,performs diverse functions that loosely called cognition. Neocortical associational areas facilitate attention to incoming stimuli from the primary sensory regions, recognition of related features of stimuli ,identification of relevant features of each stimulus ,and planning of appropriate cognitive and motor responses. Neural inputs to the frontal cortex come from the sensory and motor cortices, other regions of the cortex, the thalamus, and the brainstem; outputs are directed to the hippocampus, basal ganglia, cerebellum, thalamus, and other associational cortices .Functional guilt-repentance loop is very important for religious people and finding a way for breaking of this circle by targeted attention and control of frontal cortex inputs , cause effective concentration on good subjects that getting free of guilt will be its fruit.

Methods : Methods: In this study we reviewed books and related articles in the field of subject from 2000 to 2016.

Results : Results: Cognitive functions as parts of thinking such as attention and concentration to incoming guilt stimuli in throughout the day can conducted to the positive direction if early bad thinking blocks and stimuli change by intention. In this case autoregulation of mind prevents the start of a guilt cascade and also stimulates formation of an initial repentance simultaneously , that both are good results in human life.

Conclusion : Conclusion: The spiritual view of guilt and repentance of them are very importante for guidance and perfection in many of religions .The human beings which control neural inputs to the frontal cortex are very capable in not doing every vice and doing probable repentance for penitence and this is identical to regard of piety.

Keywords : Neurocognitive; inhibition; guilt ; stimulation ; repentance



Count: 123

Abstract ID: 177

Presentation Type: Poster

Modeling the auditory working memory response to the noise using neural networks and adaptive filters theory

Submission Author: Aida Ebadi

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Background and Aim : Working memory (WM) is the ability to keep the information accessible, while prioritizing, manipulating and protecting it from interferences. It is an essential feature of the brain that facilitates focusing by filtering out redundant information entering the brain. It makes learning and paying attention easier. The brain filters information either based on physical characteristics or semantic features. We suggested a computational model of WM response to auditory noises based on a combination between the theories of artificial neural network and adaptive filters.

Methods : This model consists of 4 blocks: The first block receives the sensory information; the second block filters the noise; the third block is the controller that changes the filter's weights adaptively; and the fourth block detects the target. The model was designed and evaluated using the results of an experiment that included detecting an auditory target combined with a noise. Two kinds of noise (i.e., humming sound and white noise) presented with different levels. It is expected that the controller can change the filter's weights in order to reduce the error of detecting the target sound.

Results : The results showed the relation between the robustness of the WM functions and the noise level. The analyses of behavioral indexes demonstrated that this robustness was so case sensitive. That is, the robustness of two subjects to one level of noise was not the same. It was also shown that white noise had less destructive effect than humming sounds on the WM performance.

Conclusion : This model can be used to predict the probable response of the brain to some kinds and levels of noise. Outcomes can also be used in designing the educational environment or in tuning the level of a target sound intensity in the environments that include different kinds of noise with variety of intensity levels such as airport.

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Keywords : Working Memory; Noise Cancellation; Adaptive Filters; Neural Networks



Count: 124
Abstract ID: 551
Presentation Type: Oral

Compare visual perceptual skills based on the intensity of gross motor function of children with cerebral palsy

Submission Author: Mostafa Eghlimi

Mostafa Eghlimi¹

1. Corresponding author

Background and Aim : Visual perception is one of the cognitive functions that damage in children with cerebral palsy (CP) who have a motor and developmental disability. This study aimed to assess the visual perception skills of children with CP based on gross motor function levels

Methods : This research was a cross sectional study that performed on 67 children 6-12 years old with CP from the rehabilitation clinics in the city of Karaj. They were selected by simple sampling. Clinical tests were Test of Visual Perception Skills- Revised (TVPS-R) for the evaluation of visual perception skills, Gross Motor Measure Function Classification System Expanded & Revised (GMFCS E&R) to assess the severity of gross motor function lesions and Cognition Sparkle Test to determine the IQ. The data were analyzed by statistical tests such as Kolmogorov-Smirnov and Kruskal-Wallis

Results : The total mean scores of visual perception skills in the children with mild moderate and sever levels were priority: $74/83 \pm 27/4$, $63/36 \pm 16/4$ and $75/69 \pm 21/02$. There were no significant differences in seven item of visual perception skills in three areas of CP severity GMFCS (mild, moderate and severe levels) ($p > 0/05$).

Conclusion : The results showed that the visual perception skills is not depends on the gross motor function levels in children with CP. It means that more damage in gross motor function has no impact on visual perception skills in these children

Keywords : Visual perception skills, visual perceptual quotient, Cerebral palsy children, Gross Motor Function



Count: 125

Abstract ID: 58

Presentation Type: Poster

Differential effects of primary motor cortex and cerebellar transcranial direct current stimulation on motor learning in healthy individuals: A randomized double-blind sham-controlled study.

Submission Author: Fatemeh Ehsani

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Background and Aim : The purpose of study was to compare the effect of primary motor cortex (M1) and cerebellar anodal transcranial direct current stimulation (a-tDCS) on online and offline motor learning in healthy individuals.

Methods : Fifty-nine healthy volunteers were randomly divided into three groups (n=20 in two experimental groups and n=19 in sham-control group). One experimental group received M1a-tDCS and another received cerebellar a-tDCS. The main outcome measures were response time (RT) and number of errors during serial response time test (SRTT) which were assessed prior, 35 minutes and 48 hours after the interventions. Reduction of response time (RT) and error numbers at last block of the test compared to the first block was considered online learning. Comparison of assessments during retention tests were considered as short-term and long-term offline learning.

Results : Online RT reduction was not different among groups ($P>0.05$), while online error reduction was significantly greater in cerebellar a-tDCS than sham-control group ($P<0.017$). Moreover, a-tDCS on both M1 and cerebellar regions produced more long-term offline learning as compared to sham tDCS ($P<0.01$), while short-term offline RT reduction was significantly greater in M1 a-tDCS than sham-control group ($P<0.05$).

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Conclusion : The findings indicated that although cerebellar a-tDCS enhances online learning and M1a-tDCS has more effect on short-term offline learning, both M1 and cerebellar a-tDCS can be used as a boosting technique for improvement of offline motor learning in healthy individuals.

Keywords : motor learning, transcranial direct current stimulation, cerebellum, primary motor cortex, serial reaction time test.



Count: 126

Abstract ID: 725

Presentation Type: Poster

Selective Attention Hypothesis in Iranian Patients with Depressive Disorder

Submission Author: Elham Eskandari

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Background and Aim : The present study aimed to investigate the selective attention hypothesis in a group of Iranian outpatients with depressive disorder.

Methods : Causal-comparative and correlation methods were used to analyze the data. A total of 60 subjects participated in this study. Of them, 31 patients diagnosed with depression were assigned in the depressive group and 29 nondepressed individuals were observed as control (normal) group. Participation in this study was completely voluntary. Participants were screened by the structured clinical interview for the DSM-IV (SCID), answered to Beck depression inventory-II (BDI-II), and took part in the Visual Dot-Probe (VDP) task. The data were analyzed by correlation analysis and t test.

Results : The results showed that the depressed group got higher score in BDI compared to the control group and this difference was statistically significant. But the differences between two groups regarding attention biases were not large enough to be significant.

Conclusion : The following results could be because of the different reasons such as culture. Furthermore, there were several limitations to the current study which are discussed.

Keywords : Depression, Attention, Culture



Count: 127

Abstract ID: 47

Presentation Type: Oral

The application of a Virtual Reality-Based method to assess Executive Functions in Children and Adolescents

Submission Author: Elham Eskandari

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Background and Aim : Cognitive development occurs mainly throughout childhood and adolescence. Executive function is a crucial cognitive functioning that could be assessed by neuropsychological tests. Standard neuropsychological tests of executive function have suffered from ecological validity and the ability to discriminate between constructs of executive function. A virtual reality performance assessment (Jansari assessment for Executive Function for Children, JEF-C: Jansari, 2012) was developed to tackle these problems. In a similar vein, the current study was intended to translate and validate JEF-C into Persian, also intended to investigate whether Persian JEF-C can provide ecological validity and reliability to identify stages of executive function development and its individual cognitive constructs in typically developing children from 8 to 16 years old.

Methods : 146 Iranian children and adolescences participated in this study falling into two age groups: 8-12 year olds; 13-16 year olds. All participants had been evaluated by the Vocabulary and Matrix reasoning subscales of the Wechsler Intelligence Scale for Children (WISC). After that they completed JEF-C and the computer-based form of Wisconsin Cards.

Results : MANOVA and Pearson's correlation coefficients revealed a significant effect of age groups on JEF-C performance showing increased ability with age. Further, analysis of the sub-components of JEF-C revealed significant effects of age on four out of the eight constructs. Lastly, the current research demonstrated that Persian JEF-C was more sensitive to differentiate the age groups than Wisconsin Cards.

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Conclusion : By providing a considerably more sensitive measure of executive function in typically developing children, Persian JEF-C is likely to have utility for use in clinical and educational settings.

Keywords : Executive Functions, Assessment, Children and adolescents

Count: 128

Abstract ID: 369

Presentation Type: Poster

The effects of lovastatin on the spatial memory after lesion of NBM by using 8 radial arm-maze task in male rats model of Alzheimer's disease

Submission Author: Azade Eskandary

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Background and Aim : Statins are a class of lipid-lowering agents that act by inhibiting the second enzyme in the cholesterol synthetic cascade, 3-hydroxy-3-methylglutaryl-coenzyme A (HMGCoA) reductase. Many studies have shown that statins exert neuroprotective actions rather than simply lowering cholesterol. Statins are implicated in stroke, alzheimer's disease and multiple sclerosis. Clinical trials have reported that statins treatment slow the development of cognitive decline in Alzheimer patients and reduce the risk of dementia in the elderly. here, the effect of lovastatin on the spatial learning and memory in 8-radial arm maze of alzheimer's rats were investigated

Methods : twenty-eight male rats were randomly allocated into 4 groups: control group(intact), lesion group were received lesion whit electrically method: 0.5 m A,3S (bilaterally lesion of nucleus basalis magnocellularis (NBM) to create alzheimer's model), sham group (entering the electrode into the NBM without lesion), lovastatin group(lesion+ 20 mg/kg lovastatin i.p for five days). One week after, acquisition and retention testing was done an eight-radial arm maze, in which, the patterns of arm entries in each group was recorded for calculating working memory error, reference memory error and latency.

Results : for reference and working memory errors, one way ANOVA test showed bilateral NBM lesion cause the reduction of spatial memory acquisition in the form of increased working and reference memory errors ($p<0.05$). it further reduced these functions in retention testing compared to the control group ($p<0.05$). post-lesion treatment with 20 mg/kg lovastatin improved the parameters of spatial memory errors in the acquisition and retention tasks comparing to the control group

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Conclusion : The analysis of the influence of treatment with statins on learning and memory performance give us a reason to conclude that the mutual lesion of NBM has reduced the spatial learning. Lovastatin therapy in a dose 20 mg/kg body weight improve learning performance and retention in the 8-arm radial maze test.

Keywords : alzheimer's disease, NBM, radial maze, lovastatin



Count: 129

Abstract ID: 445

Presentation Type: Poster

Effects of Marsh Mallow extract on cognitive impairments

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Background and Aim : Cognitive impairments are the most prevalent neurodegenerative disorder. In this regard, the neuroprotective effect of Marsh Mallow (*Althaea officinalis*) extract has already been reported. This study aimed to examine the effects of the Marsh Mallow on protecting neuronal function.

Methods : Male Wistar rats were pretreated with Marsh Mallow extract at doses of 0, 10, 50, 100, 250 mg/kg for 6 days before and continued until weeks, followed by bilateral intracerebroventricular injection Beta-amyloid (1-40). Finally, rats were sacrificed and brain sections were prepared for cresyl violet staining.

Results : The Marsh Mallow extract eliminates A β plaques in a dose dependent manner especially in 100 mg/kg. The overall results implicated that the Marsh Mallow extract was effective for improving degeneration of neuron and showed potential for clinical application.

Conclusion : The overall results implicated that the Marsh Mallow extract was effective for improving degeneration of neuron and showed potential for clinical application. The exact mechanism by which the herbal medicine removes the A β aggregates needs to be elucidated.

Keywords : Cognitive impairments, Marsh Mallow, β amyloid peptide



Count: 130

Abstract ID: 690

Presentation Type: Poster

A review of the effect of Fingolimod on histone deacetylases in reducing the rate of memory corruption due to Alzheimer's disease

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Background and Aim : Alzheimer's disease is the most common age-related neurodegenerative disease that today someone is diagnosed with the disease for every 66 seconds. fingolimod, analog of Sphingosine, is an immune system modulator prodrug that were presented as the first oral medication for patients with multiple sclerosis.

Methods : Since some studies have relationship between fingolimod with memory, in this review article, decided utilizes the latest electronic articles in journals "ScienceDirect, Springer, OVID" as well as information search database "Web of Science, Scopus, Google scholar "on the effect of fingolimod on the memory and Alzheimer's disease, the results are evaluated carefully.

Results : Histone acetylation plays an important role in memory formation and the stabilization of short-term memory into long-term memory. Fingolimod works by inhibiting histone acetylation and eventually prevent a variety of histone deacetylase cause neuronal death due to amyloid beta and thereby improve memory impairment in Alzheimer's disease. Since that fingolimod reduces the level of mature lymphocytes without specific effect on their activities, unlike other immune system suppressants, administrated long-term fingolimod helps prevent the progression of Alzheimer's disease. In addition, by deactivating acid sphingomyelinase and decreased production of amyloid-beta via signaling pathway independent of Sphingosine 1-phosphate receptor acts as a neuroprotective agent in Alzheimer's disease.

Conclusion : Fingolimod is a drug may be approved as an anti-Alzheimer's disease that is expected in the not too distant future.

Keywords : Alzheimer's disease, Fingolimod, Histone deacetylase, Sphingosine 1-phosphate



Count: 131

Abstract ID: 173

Presentation Type: Poster

Feedback connections enhanced performance of feedforward object-vision models in small image variations compared to human

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Background and Aim : Invariant object recognition is a considerable ability of primates' visual system that its underlying mechanism has constantly been under intense investigations. Development of computational models is a valuable tool toward understanding the processes involved in invariant object recognition. Although recent computational models have shown outstanding performances on challenging image databases, they fail to perform well in image categorization under more complex image variations. Studies have shown that making sparse representation of objects by extracting more informative visual features through a feedforward sweep can lead to higher recognition performances. Here, we want to show poor performance of these models compared to humans and enhancement of performance with feedback connections.

Methods : To assess the performance of models and humans in invariant object recognition tasks, we used published parametrically controlled image database consisting of several object categories varied in different dimensions and levels .

Results : Comparing the performance of several object recognition models with human observers shows that only in low-level image variations the models perform similar to humans in categorization tasks. Results of our behavioral experiments demonstrate that, even under difficult experimental conditions human observers performed really well, but the models are still far from resembling humans in invariant object recognition. We show that feedback connections helped in achieving a higher performance (about 4 %).

Conclusion : We show that feedback approach is significant help in object recognition (i.e., invariant object recognition) when the identity-preserving image variations become more complex

Keywords : Invariant object recognition , Feedforward , computational modeling , Feedback .



Count: 132

Abstract ID: 392

Presentation Type: Poster

Effects of Glibenclamide on memory retention of passive avoidance learning in rats

Submission Author: Mohammad hossein Esmaeili

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Background and Aim : Peripheral and central injections of glucose enhance learning and memory in rats, and block memory impairments produced by morphine. One mechanism by which glucose might act on memory is by regulating the ATP-sensitive potassium channel. This channel may couple glucose metabolism and neuronal excitability, with channel blockade increasing the likelihood of stimulus-evoked neurotransmitter release. The aim of present study, was to investigate the effects of the ATP-sensitive potassium channel blocker Glibenclamide (Gla) on memory retention of passive avoidance learning in rats.

Methods : 40 male wistar rats were divided into: control, DMSO and Gla groups. All rates were trained in a passive avoidance task (50Hz, 1mA, for 3sec). DMSO (0.2ml) or Gla (1, 2, 5 mg/kg, i.p.) were injected for 10 days before training. Retention test was done 48h later. Memory retention of each animal was measured as latency takes to enter the dark chamber of the task.

Results : Pre-training injection of Gla impaired memory retention in a dose-dependent manner, So that the time spent in the light chamber area before entering to the dark area and Total time spent in the light chamber in the Gla groups were less than control group. These times in the Gla (5 mg/kg) group was significantly lower than control group ($p < 0.05$) Conversely Total time spent in the dark chamber in the Gla groups were higher than control group.

Conclusion : Gla as an ATP-sensitive potassium channel blocker, probably through increasing Plasma insulin levels and thus decrease blood glucose, leads to memory loss in a dose dependent manner.

Keywords : Glibenclamide, passive avoidance learning, memory retention



Count: 133

Abstract ID: 305

Presentation Type: Poster

Ultrastructural characterization of identified synapse formation between neurons differentiated of Epidermal Neural Crest Stem Cells (EPI-NCSC) In vitro

Submission Author: Banafshe Esmaeilzade

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Background and Aim : Neural Crest Stem Cells are one of population of cells in bulge of hair follicle. EPI-NCSC are pluripotent and have high affinity to differentiate to neurons that generate synapse with each other in vitro. Aim of the current study was to show ultrastructural characterization of identified synapse formation between differentiated neurons.

Methods : The bulge region of the rat whisker was isolated from and cultured in DMEM/F12 supplemented with epidermal growth factor (EGF). Biological features of cultured cells were evaluated with flowcytometry by using Sox10 and nestin markers. Cell differentiation was assessed by immunocytochemistry using β III-tubulin antibody. For evaluation of synapse generation between new differentiated neuron immunohistochemistry was done using synapse proteins antibody Synaptophysin, Synapsin I. Then differentiated cells re-embedded for electron microscopic examination.

Results : Fluorescent cell sorting at passage 1 in Flowcytometry demonstrated that the cells were positive for nestin and Sox10 and negative for β III-tubulin at this stage (8 days post-explanation). These data suggested that these cells were primitive stem cells. But in day 21, cultured cells after 4 passages presented β III-tubulin. This depicted cells differentiated to neuron like cells. Positive reaction of synapse proteins after 3 week , showed that synapse generated between new differentiated neuron. The ultrastructural features demonstrated synapse formation in vitro.

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Conclusion : The results showed differentiated neurons of EPI-NCSCs in vitro can generate synapse and ultrastructural features and synapse proteins demonstrated it.

Keywords : Hair follicle, EPI-NCSCs, synapse, ultrastructure



Count: 134

Abstract ID: 731

Presentation Type: Poster

The effectiveness of neuropsychological rehabilitation treatment on the performance of sustained attention in patients with neuro-developmental learning disabilities in math

Submission Author: Sudabe Esmaili

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Background and Aim : One of the major problems in the field of learning is learning disorders. This study also aims effectiveness of neuropsychological rehabilitation for people with learning disabilities in math performance was sustained attention.

Methods : This study is a quasi-experimental design with the two groups. That a group of 10 people, including people with learning disability in math and 10 in the control group was also included. This means that people with a learning disability but did not intervene for them. Instruments included neuropsychological rehabilitation program and the Continuous Performance Test. Data analysis using SPSS version 19, using multivariate analysis of covariance was performed.

Results : Data analysis showed that, between mean scores of pre-test and post-test experimental and control groups there was a significant difference ($P < 0/01$), so that neuropsychological rehabilitation improves sustained attention on people with disabilities is learning math.

Conclusion : Considering the positive effect of this method is of interest to people with disabilities learn math, This study showed that neuropsychological rehabilitation can be an effective way to achieve optimum performance in people who have a math learning disability can be used.

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Keywords : Rehabilitation Neuropsychology, sustained attention, cognitive, mathematical learning disability



Count: 135

Abstract ID: 726

Presentation Type: Poster

Effect of Crocin on mitochondrial biogenesis in the Striatum of Cholestatic male wistar rats

Submission Author: Mohammadreza Eteqadi

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Background and Aim : Oxidative Stress and particularly the increased Mitochondrial Reactive Oxygen Species (ROS) production that occurs in cholestasis and links oxidative stress to the development of neurological diseases. cholestasis effects on striatum and striatum is center of movement learning in the mind. the mitochondrial numbers and the expression of Proliferator-activated receptor Gamma Coactivator-1 α (PGC-1 α) are decrease during cholestasis. PGC-1 α is the master regulator of mitochondrial biogenesis and function. Attenuation Of PGC-1 α expression levels results in increased mitochondrial biogenesis including increased mitochondrial mass, protein import complexes, mitochondrial respiratory and fatty acid oxidation. In the present study we investigate the protective effect of crocin against defects in striatum due to cholestasis in male wistar rat

Methods : Adult Male wistar rats weighing 200- 250g were randomly divided into five groups (eight each). which include:Group 1: Normal-control (non operation) . Group 2:Sham-control(underwent laparotomy without bile duct ligation). Group 3: BDL- control (underwent laparotomy with bile duct ligation) and all of three groups weren't received drug. Group 4:Sham- crocin and Group 5:BDL- crocin were treated with Crocin. Rats were injected with a daily dose of crocin (30 mg/kg IP) for 30 days, Striatum homogenates were obtained For Real Time PCR examination

Results : Our results showed that the mean change in PGC-1 α expression of BDL- crocin group there is a significant difference ($p < 0.05$) as compared with BDL- control. The results interventions were improved mitochondrial biogenesis in the Striatum of Cholestatic male wistar rats.

Conclusion : The present findings provide evidence that crocin by blockade of ROS generation and biogenesis improved may have beneficial effects in the mitochondrial dysfunction and a therapeutic strategy of neurodegenerative diseases such as Alzheimer and Parkinson diseases

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Keywords : crocin; striatum; cholestasis; oxidative stress; PGC-1 α ; mitochondrial biogenesis



Count: 136

Abstract ID: 681

Presentation Type: Poster

Different role of 5HT₃ serotonin receptors in Hippocampus Region on memory acquisition deficit induced by sleep deprivation

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Background and Aim : Background and aim: Impairment of sleep and/or wake processes can be basis of numerous diseases such as memory disorders. Investigations have indicated that 5HT₃ serotonin receptor induced an important role in regulation of sleep and wake cycle and also in process of memory formation. This receptor is expressed widely in human brain such as hippocampus as main area for memory process. According to previous evidence, the present study aims to investigate the effects of activation and deactivation of 5HT₃ serotonin receptors by M-Chlorophenylbiguanide (Mchl) and Y25130 respectively, on memory acquisition deficit induced by TSD(for 24 hour).

Methods : Modified water box apparatus were used to induce TSD, respectively. Passive avoidance were used for assessment of memory acquisition

Results : pre-training, intra-CA1 microinjection of Mchl at doses of 0.01 and 0.001 µg/rat and Y-25130 at dose of 0.1 µg/rat reduced memory acquisition and higher in the normal rats. TSD reduced memory acquisition. The amnesia induced by TSD restored by subthreshold dose of Y25130 (0.001 µg/rat) but not Mchl (0.0001 µg/rat) in the rats.

Conclusion : Based on our findings, CA1 5HT₃ receptors seem to play critical role in cognitive and non-cognitive behaviors induced by TSD.

Keywords : Sleep; Hippocampus; CA1; 5HT₃; Memory



Count: 137

Abstract ID: 303

Presentation Type: Poster

Influence of Polyoxometalates (POMs) on glioblastoma cancer cells

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Background and Aim : Polyoxometalates (POMs) are stable metal-oxide inorganic compounds which have shown a great potential of antitumor and antiviral activities. The aim of this study was to investigate the effects of POMs on U87mg glioblastoma cancer cell line viability.

Methods : , we treated the cells with different concentrations of several POMs such as H3PW12O40, H3PMo12O40, and H4SiW12O40 in 24, 48 and 72 hours and then determined the viability of the cells using MTT assay.

Results : Our results indicated that POM compounds have different effects on the glioblastoma cancer cells. It was found that H3PMo12O40 and H3PW12O40 are able to lower the survival of cancer cells; H3PW12O40 and H3PMo12O40 showed a dose-dependent inhibition of the cell viability in the range of 50-600 μ M with IC₅₀ ~477 μ M for 24 hrs, and no significant difference was observed in cell viability after 48 and 72 hrs for both materials. H4SiW12O40 did not show any effect on these cells in the range of 10-500 μ M.

Conclusion : We concluded that POMs might be effective compounds in cancer therapy for glioblastoma.

Keywords : Polyoxometalates (POMs), Glioblastoma, Cell viability, Cancer



Count: 138

Abstract ID: 71

Presentation Type: Oral

A Three- Step Procedure to Differentiate Human Umbilical Cord Blood-derived Mesenchymal Stem Cells into Motor Neuron- Like Cells

Submission Author: Faezeh Faghihi

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Background and Aim : Many people suffer from traumatic spinal cord injuries, annually. These deficits usually threaten the quality of life of patients. As a postpartum medically waste product, human Umbilical Cord Blood (UCB) is a rich source of stem cells with self- renewal properties and neural differentiation capacity which made it useful in regenerative medicine. Since there is no report on potential of human umbilical cord blood-derived mesenchymal stem cells into motor neurons, we set out to investigate the differentiation properties of these cells into motor neuron-like cells through synergistic administration of RA and Shh using a three- step in vitro procedure

Methods : The results were evaluated using Realtime- PCR, Flowcytometry and Immunocytochemistry for two weeks

Results : . Our data showed that the cells changed into bipolar morphology and could express markers related to motor neuron- like cells; including Hb-9, Pax-6, Islet-1, NFH and ChAT at the level of mRNA and protein. We could also detect the upregulation of Islet-1, ChAT and NFH at 14 day of induction, quantitatively

Conclusion : We could also detect the upregulation of Islet-1, ChAT and NFH at 14 day of induction, quantitatively. As a whole, it is concluded that human UCB-MSCs could be a suitable cell candidate for regeneration of motor neurons in spinal cord injuries.

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Keywords : Human Umbilical Cord Blood Mesenchymal Stem Cells, Motor neuron, Spinal Cord Injury, Retinoic Acid, Sonic Hedgehog



Count: 139

Abstract ID: 104

Presentation Type: Poster

Attenuation of major necroptosis markers along with apoptosis and autophagy in global cerebral ischemia-reperfusion pretreated with Cyclosporine-A

Submission Author: Farinoosh Fakharnia

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Background and Aim : Opening of mitochondrial permeability transition pore (mPTP), a mega-channel complex in the inner mitochondrial membrane, upon continuing incitement such as ischemia-reperfusion (I/R) injury disrupts the permeability barrier of the inner mitochondrial membrane and leads to mitochondrial swelling, dissipation of mitochondrial membrane potential (MMP) and promotion of cell death. However, the role of this channel in induction of a form of regulated necrosis, necroptosis, is not still clear. Therefore, the present study aimed to clarify the importance of mPTP opening in induction of necroptosis along with apoptosis and autophagy beyond the global cerebral I/R by intracerebroventricular (i.c.v.) administration of CsA, as a potent inhibitor of the mPTP.

Methods : Inhibition of mPTP opening on different types of programmed cell death was investigated using 30 min four-vessel occlusion (4VO) model. CsA was administered by i.c.v. injection 15 min before the onset global cerebral ischemia in ischemic groups. The amount of major necroptosis associated proteins and enzymes along with apoptosis and autophagy markers were measured 24 h after reperfusion in hippocampus.

Results : Pre-treatment with this compound partially alleviated the amount of necroptosis markers, receptor interacting protein 1 (RIP1) and RIP3 as well as activity of downstream enzymes of RIP3; glutamate-ammonia ligase (GLUL) and glutamate dehydrogenase (GLUD1). Autophagy associated proteins also partially decreased by administration of CsA. Furthermore, our findings revealed a notable decrease in

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cleaved caspase-8 and Bax/Bcl-2 ratio along with caspase-3 activation, as the executioner of apoptosis, using CsA.

Conclusion : Taken together, our study indicates that mPTP opening in global cerebral I/R injury is a common event leading to necroptosis, apoptosis and autophagy, though its involvement seems to vary among different cell death.

Keywords : mPTP, Cyclosporin A, Necroptosis, Autophagy, Apoptosis, Cerebral ischemia-reperfusion



Count: 140

Abstract ID: 290

Presentation Type: Poster

Object Recognition and Categorization Processing in the Rapid Visual Analysis of Natural Scenes

Submission Author: Fatemeh Fallah

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Background and Aim : There are a lot of objects around us that identifying and categorizing them are such a complex tasks, whereas it is performed by human visual system accurately and effortlessly. Generally, reaction time and accuracy of subjects in objects categorization experiments depend on three factors of duration of stimulus, information processing time in visual system and the complication of pictures. Despite extensive research in cognitive neuroscience, vision processing mechanisms for object categorization are still a mystery.

Methods : To investigate the object recognition (recognizing an image among other images) and categorization (animal/non-animal) in visual system a behavioral experiment has been implemented and done. In categorization task 1000 natural images (500 animal images and 500 non-animal images) were divided to 10 different blocks where the animal images should be chosen by subjects as target and each image was presented only once, whereas in recognition task subjects responded to 15 blocks that each block of 100 images. In other words, the target images assigned to a given block was seen 50 times among 50 non-target images and subjects instruct to select the target images which were flashed at the initial of each block. Target and non-target images were shuffled and stimulus presentation time was 20ms in both tasks.

Results : Here we achieve similar accuracies like the previous study [Delorme, A., Rousset, G. A., Macé, M. J. M., & Fabre-Thorpe, M. (2004). Interaction of top-down and bottom-up processing in the fast visual analysis of natural scenes. *Cognitive Brain Research*, 19(2), 103-113] with same image database and experimental setup. We also compare median RT and mean RT between two tasks. We show that not only the accuracy is higher in recognition task but the reaction times also differ significantly. Subjects are preformed the recognition task faster than categorization task.

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Conclusion : The results of this study are important to identify the features of the categorization processing and object recognition to investigate processing time in the visual system. Also, identifying and collecting these features will be helpful to extract and providing the neural mechanism of the brain cortex.

Keywords : Reaction time ; Accuracy ;Natural images ; Psychophysics ; Neurosciences.



Count: 141

Abstract ID: 331

Presentation Type: Poster

Socialization improves performances in sucrose preference test, force swim test and salt test with improving neurogenesis in addiction period in male rats

Submission Author: Hamidreza Famitafreshi

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Background and Aim : Relapse to Addiction can happen through two main causes 1) co morbid condition 2) maladaptive response of reward center. Improve in neurogenesis is associated with a decline in co morbid condition and may be reward center. The purpose of this study is to reduce relapse with increasing neurogenesis with socialization.

Methods : 60 male Sprague-Dawley rats were randomly divided into four groups: 1) social 2) isolation 3) addicted socialized 4) addicted isolated. After fourteen days of BrdU (50 mg/kg/rat/day) and morphine injection (0.75 mg/rat/day), behavioral tests including force swim test, sucrose preference test, and salt appetite were performed. Serum was collected for MDA assessment. Then rats were sacrificed for neurogenesis.

Results : Rats in isolated group drank more sucrose and salt in addiction period. Also, time of immobility was a higher addicted isolated group. MDA was higher in addicted isolated rats. Neurogenesis was lower in addicted isolated rats.

Conclusion : Socialization seems to reduce relapse through two independent mechanisms 1) reduction of co morbid psychiatric disorder 2) improving reward center function.

Keywords : Sucrose, salt, force swim test, morphine, isolation and socialization



Count: 142

Abstract ID: 144

Presentation Type: Poster

Interactive involvement of hippocampal cAMP/PKA and cyclooxygenase-2 signaling pathways in spatial memory acquisition in Morris water maze

Submission Author: Sahar Fanoudi

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Background and Aim : In the present study, the four-day bilateral intra-hippocampal infusions of H-89 as a protein kinase AII inhibitor (10 μ M/side), celecoxib (0.1 M/side) as a selective cyclooxygenase-2 (COX-2) inhibitor, celecoxib/H-89 and bucladesine (10 μ M/side)/celecoxib/H-89 on spatial memory acquisition in Morris water maze (MWM) were investigated.

Methods : Control animals received bilateral intra-hippocampal infusion of dimethyl sulfoxide (DMSO). Rats were trained for 4 days; each day included one block of four trials. Post-training probe trial tests were performed on day 5.

Results : Bilateral intra-hippocampal infusion of H-89 and celecoxib led to a significant impairment in spatial learning compared to the control. But, combination of celecoxib/H-89 or bucladesine/celecoxib/H-89 reversed celecoxib or H-89 – induced spatial memory acquisition impairments in MWM

Conclusion : Taken together, these results showed the probable regulatory effects of cAMP/PKA and cyclooxygenase-2 signaling pathways on each other in co-administrations on spatial memory acquisition in MWM.

Keywords : COX-2, cAMP/PKA, Morris water maze, Spatial memory acquisition, Hippocampus



Count: 143
Abstract ID: 145
Presentation Type: Oral

Intrahippocampal co-administration of nicotine and O-Acetyl-L-Carnitine prevents the H-89 –induced spatial learning deficits in Morris water maze

Submission Author: Sahar Fanoudi

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Background and Aim : It has been shown that bilateral intrahippocampal infusion of nicotine and H-89 (a protein kinase AII (PKA II) inhibitor) led to spatial memory acquisition and retention alterations in the Morris water maze (MWM) task in rats.

Methods : In the present study, we wished to study the effects of bilateral intrahippocampal administration of nicotine (1 µg/µl), O-acetyl-L-carnitine (100 µM/side) and H-89 (10 µM/side) alone and in combination, on spatial learning in MWM task. Control Groups received saline, deionized water and DMSO, respectively

Results : Bilateral intrahippocampal infusion of nicotine and O-acetyl-L-carnitine led to significant improvements in spatial learning compared to their related controls. H-89 -treated animals showed a significant increase in time and distance of finding the hidden platform and also a significant decrease in time spent in the target quadrant compared to DMSO -treated animals. On the other hand, in combination studies, nicotine or O-acetyl-L-carnitine had no significant effect on H-89 -induced spatial learning impairments, but bilateral intrahippocampal co-administration of nicotine and O-acetyl-L-carnitine prevented the H-89 -induced spatial learning deficits

Conclusion : Taken together, these results showed the probable synergistic effect on increasing PKA levels and improvement of cholinergic synaptic transmission.

Keywords : Nicotine, O-Acetyl-L-Carnitine, Protein kinase AII, Spatial learning, Morris water maze



Count: 144

Abstract ID: 312

Presentation Type: Poster

Fractal Analysis of Eye tracking Data During Reading Persian Texts

Submission Author: Hamed Farahani

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Background and Aim : Reading is highly complex skill that is prerequisite to success in many societies where a great deal of information is communicated in written form. Therefore it is important to investigate this essential behavior. Reading is the process by which reader extracts visual information from a piece of written text. Throughout human physiology and behavior, power-law scaling behavior has been widely observed, but its origins and meaning remain a matter of debate. Some argue that it is a byproduct of ongoing processes in the brain or body and therefore of limited relevance to psychological theory. Others argue that it reflects a fundamental aspect of all physiological and cognitive functions, namely, that they emerge in the balance of independent versus interdependent component activities. This study aims to identify the multifractal nature of reading through theoretical study. Series of eye-tracking experiments were used to track the reading task complexity of Persian texts in terms of changing font and content in terms of familiarity to the readers with three different situations including not-goal-oriented, goal-oriented and reading out load. In order to quantitatively measure the complexity of the task, multifractal analysis was used from statistical mechanics approach. Multifractals indicate nonlinear characteristics of time series and multifractal processes are usually characterized by their highly irregular behavior. In other words, time functions exhibit abrupt and varying levels of instantaneous transitions in time.

Methods : Participants: 39 student participants were recruited from Shahid Beheshti University, Psychology Department, all had normal or corrected vision. Apparatus. An IBM PC computer running Windows ... was used. The experiment-running software used Microsoft DirectX for timing, stimulus presentation, and keyboard input. ray tube monitor running at a 120-Hz refresh rate was used to present stimuli. Procedure. Each participant was seated in a quiet experimental room about 30 feet (9) in front of a computer monitor placed on a table. For each trial, a text written either in Lotus or Pen font appeared on the monitor. Familiarity was defined as a psychology student reads the material related to their field of study and not familiar if the student receives a text out of the scope of their field. Participants were instructed to read the text. Trials included not-goal-oriented, goal-oriented and reading out load.

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Results : For each trial, and each experimental set up, multifractal analysis was studied. The results indicate that task complexity and consequently cognitive load in reading out aloud is higher than not-goal-oriented and goal-oriented trials. However, cognitive load is higher than goal-oriented compared to not-goal-oriented. Also, cognitive load of reading unfamiliar texts is higher than familiar texts, and the pen font is also higher than the Lotus font.

Conclusion : Our results could contribute for generation of educational content in order to achieve the highest efficiency in transferring information via reading.

Keywords : Power-law behavior, eye-tracking device, multifractality, cognitive load



Count: 145

Abstract ID: 169

Presentation Type: Oral

Ghrelin attenuates hyperalgesia and light aversion-induced by nitroglycerin in male rats

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Background and Aim : Migraine headache is a common neurological disorder that imposes high costs of treatment. Chemical activation of trigeminovascular system (TS) by the administration of nitroglycerin is a reliable and standard model for studying migraine. The aim of the present study was investigation the effect of exogenous ghrelin on pain-related behaviors, light aversive and anxiety-like behaviors, serum levels of cortisol, and histology of satellite cells of trigeminal ganglion (TG) in a rat model of nitroglycerin-induced migraine.

Methods : Forty adult male Wistar rats weighing 220 to 250 g were randomly divided into 4 groups (10 in each group) as follow: Control (i.p injection of 0.9% saline); NTG (10mg/kg, i.p); NTG + sumatriptan (1mg/kg. s.c), and NTG + ghrelin (150µg/kg, i.p). For induction of migraine, animals were received i.p. injections of 10 mg/kg NTG. For Assessment of mechanical and thermal sensitivity we used Von Frey hair and tail immersion tests respectively. In all cases, immediately before NTG injection, baseline mechanical or thermal responses were determined. Post-drug thermal and mechanical sensitivity tests were performed at 30, 120, 180 minutes after administration of NTG. Light aversive behaviors were assessed in the light/dark box and modified elevated plus maze. Also concentration of cortisol in the serum was measured using enzyme-linked immunosorbent assay (ELISA) method. Additionally, trigeminal ganglia tissues were stained with hematoxylin and eosin (H&E) for assessment of the number of satellite glial cells (SGCs) in TG.

Results : Our results revealed that NTG produced widespread thermal ($p < 0.01$) and mechanical ($p < 0.001$) hyperalgesia, and increased photophobia and anxiety-like behaviors and serum concentration of cortisol ($p < 0.01$). In addition, single dose of NTG increased ($p < 0.01$) the number of satellite cells around neurons of the trigeminal ganglia. Administration of ghrelin effectively reversed thermal and mechanical hyperalgesia ($p < 0.01$), light-aversive and anxiety-like behaviors induced by NTG, which mimics the effects of sumatriptan, used as relevant positive therapeutic control in this study. On the other hand, treatment with

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ghrelin significantly ($p < 0.05$) decreased the number of SGCs around trigeminal neurons and serum concentration of cortisol.

Conclusion : These findings suggest that ghrelin may alleviate some of the negative emotional states associated with migraine and may hold therapeutic potential in treating migraine headache.

Keywords : Nitroglycerin, Ghrelin, Hyperalgesia, Light aversion, Cortisol

Count: 146

Abstract ID: 486

Presentation Type: Poster

Peripheral and central administration of T3 improved the histological changes, memory and the dentate gyrus electrophysiological activity in an animal model of AD

Submission Author: Yaghoob Farbood

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Background and Aim : The amyloid beta (A β) induced Alzheimer's disease (AD) is associated with formation the amyloid plaques, cognitive impairments and decline in spontaneous discharge of neurons. In the current study, we evaluated the effect of subcutaneous (S.C) and intrahippocampal (i.h) administrations of triiodothyronine (T3) on the histological changes, memory and the dentate gyrus (DG) electrophysiological activity in an animal model of AD.

Methods : Eighty adult male Wistar rats (250–300g) were divided randomly into five groups (Sh-O, AD+Veh (S.C), AD+Veh (i.h), AD+ T3(S.C), AD+T3(i.h). In order to induce an animal model of AD, A β (10 ng/ μ l, bilaterally) were injected intrahippocampally. Rats treated with T3 and/or normal saline for 10 days. Passive avoidance and spatial memory were evaluated in shuttle box apparatus and Morris water maze, respectively. Neuronal single unit recording was assessed from hippocampal DG.

Results : The percentage of total time that animals spent in target quarter, mean latency time (sec), the step through latency and average number of spikes/bin were decreased significantly in AD rats compare with

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the Sh-O group ($p < 0.001$) and were increased significantly in S.C and i.h injections of T3 in AD animals compared with the AD group ($p < 0.01$, $p < 0.001$). Also, formation of amyloid plaques induced by A β 1-42 decreased in AD rats treated with T3.

Conclusion : It appears that S.C and i.h injections of T3, improved memory deficits by reduction of neural damage and increment of neuronal spontaneous activity in A β -induced rats.

Keywords : Alzheimer's Disease; Triiodothyronine; Memory; Single-unit Recording; Rat



Count: 147
Abstract ID: 474
Presentation Type: Poster

Inhibitory control and risky decision making in adolescent offenders

Submission Author: Leila Farhadiasl

Leila Farhadiasl¹

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Background and Aim : Evaluation of neurocognitive mechanism involved in adolescent offenders can be helpful in the treatment. The aim of this study was to compare the inhibitory control and risky decision making in adolescent offenders and adolescent normal.

Methods : 25 adolescent offenders and 25 adolescent normal were selected from Rehabilitation centers in Tehran, Iran, with convenience sampling. In this retrospective study, Go/NoGo and Balloon Analogue RiskTaking (BART) Task were used for the evaluation of inhibitory control and risky decision making, respectively. Student's t-test was used for analysis.

Results : Findings showed that adolescent offenders and adolescent normal were similar in Go stage of Go/NoGo task ($P < 0.05$). In NoGo stage, adolescent offenders significantly had lower grade from adolescent normal ($P < 0.01$). adolescent offenders had higher risky decision in BART task ($P < 0.01$).

Conclusion : Deficit in risk taking and inhibitory control could be considered as predisposing and influencing factors for adolescent offenders. These factors should be considered in the prevention and treatment of adolescent offenders

Keywords : Inhibitory control, Risky decision making, adolescent offenders



Count: 148

Abstract ID: 167

Presentation Type: Poster

Monte Carlo approach for Generating the morphology of neurons

Submission Author: Roozbeh Farhoodi

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Background and Aim : Neurons are the basic unit for computation in the brain and improving current models of their function and structures is one of the main challenges in neuroscience. Current models for morphological structure typically build an engineered parametric generative model with a set of parameters which are optimized using the available dataset. However, since neuron morphology is complex, these models fail to predict new morphological features of the neuron and generally it's hard to update them based on them.

Methods : Here, we introduce a naive Monte Carlo method for generating neurons by starting from a stem neuron and applying basic growing operations. In each step, a new morphological operation is proposed and its acceptance is decided based on morphological features' statistics. All necessary code for our algorithm is in the <https://github.com/KordingLab>

Results : By quantifying the statistics of the generated neurons, we find that it significantly outperforms current state of the art models. Moreover, it can easily be extended to include new features and differentiate variety type of neurons.

Conclusion : Our results suggest that the complex structure of neurons can be learned, and used to dramatically improve the performance of neural segmentation algorithms ubiquitous in neuroscience and anatomy.

Keywords : Computational Morphology, Monte Carlo Markov Chain, Neurite growth, dendrite



Count: 149

Abstract ID: 666

Presentation Type: Poster

The effect of intra peritoneal injection of Methanolic extract of Ferula Pseudalliacea on formalin induced pain and morphine-induced analgesia in male rats

Submission Author: Somayeh Farmani

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Background and Aim : In the present study, we investigated the effect of intra peritoneal (i.p) administration of Methanolic extract of Ferula Pseudalliacea on formalin induced pain and morphine-induced analgesia in male rats.

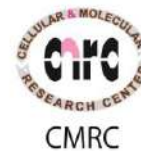
Methods : The plants were air dried in room temperature and then roots of F. Pseudalliacea were dissected and were roughly powdered and extracted with Maceration method. Rats were pretreated i.p with different doses of extract (25, 50 and 100 mg/kg) or morphine (5 ml/kg, i.p.) as positive controls or naloxone (0.4 mg/kg i.p.) as an opioid antagonist, 30 minute before formalin injection. Then rats were placed singly in plexiglass boxes for approximately 10 minutes before the start of the test for adaptation. Rats then received intraplantar injection into the right hind paw of a 50µl solution of 2.5% formalin using a 29G needle, and placed immediately back in the boxes. Pain-like behaviour (licking time) was recorded for 50 minutes. Data were also considered in either the Early or acute Phase (0-10mins) and the Late or chronic Phase (11-50mins).

Results : The result showed that Methanolic extract of F. Pseudalliacea (25, 50 and 100 mg/kg) significantly reduce pain (licking time periods) in acute phase ($P < 0/05$) and in chronic phase ($P < 0/001$), in a dose dependent manner. So licking time period in rats that received extract in dose 100mg/kg significantly more decrease ($P < 0/001$) than other doses in chronic phase. Injection of extract (25, 50 and 100 mg/kg) before

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morphine significantly decreased ($P < 0/05$) licking time period after injection of formalin, in compare to rats that received only extract or morphine, in chronic phase but not in acute phase. Furthermore, naloxone had no significant effect on the licking time resulted in injection of formalin after injection of extract (25, 50 and 100 mg/kg) in acute and chronic phase.

Conclusion : In conclusion, we found that injection of Methanolic extract of *F. Pseudalliacea* (25, 50 and 100 mg/kg) has antinociceptive effect in a dose dependent manner in the formalin test, so that extract significantly reduce licking paw subsequent to injection of formalin in both acute and chronic phase in an independent mechanism of opioid system. We suggest that extract of *F. Pseudalliacea* can be used as adjuvant therapy along with commonly used antinociceptive drugs. However, further clinical trial studies should be carried out to prove this hypothesis.

Keywords : *F. Pseudalliacea*, Formalin, Morphine, Chronic pain, Rat



Count: 150

Abstract ID: 624

Presentation Type: Poster

A novel expandable method to diagnosis many central nervous system disability in a single panel

Submission Author: Setare Farokhi Iarjani

Setare Farokhi Iarjani¹, Ehsan Zangene²

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Background and Aim : Central Nervous System diseases (Parkinson, Alzheimer, Epilepsy and Autism ...) are an important part of human disorders which must be diagnosed as soon as possible to prepare a preventive condition or to stop the progression

Methods : Purpose of this paper is to optimize a method to identify some of multi allele genes which are linked with those CNS diseases in a unique diagnostic panel based on their genetics background. Sequences of their alleles was extracted from NCBI/Nucleotide then a multiple sequence alignment by clustal-W method was done.

Results : . Due to resulted clades of distance matrix they were selected as candidate of specific primer designing. All probable PCR product fragments of alleles which are amplified by different primers put in a row of a matrix in front of their corresponding allele and columns are representative of probable PCR product fragments under their corresponding pair primers to form the monoplid or homozygote matrix for target genes matrix.

Conclusion : Because Homo sapience is a diploid species and has two sets of chromosomes so diploid matrix is form adding binary value of every row in front of every allele to others. Because of long length of the rows containing binary codes (zero and one) they converted to decimal codes and put in a holistic data base. Finally, a network of all probable situations (presence or absence of alleles) on all allele of target genes in Homo sapience was formed so the panel is formed and ready to use.

Keywords : CNS disease, multi allele genes, binary codes



Count: 151

Abstract ID: 192

Presentation Type: Poster

In vitro differentiation of human bone marrow mesenchymal stem cells into neuron-like cells

Submission Author: Asghar Farzi molan

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Background and Aim : Human mesenchymal stem cells (hMSCs) are the non- haematopoietic, multipotent stem cells with the capacity to differentiate into mesodermal lineage such as osteocytes, adipocytes and chondrocytes as well ectodermal (neurocytes) and endodermal lineages (hepatocytes). The majority of neurogenesis is terminated soon after birth and in adults new neurons generated only in the subventricular zone and the hippocampus accordingly neurodegenerative disorders like Alzheimer, Parkinson, Huntington and nerve damage are vital problem. In this regards, replacement of missing neurons in neurodegenerative disease has been a worthwhile, therefore, neural differentiation of MSCs can be reasonable approach for this goal.

Methods : BM MSCs cultured in low glucose DMEM media with 10% FBS. BM MSC in passage 4-5 were cultured to reach in 70% confluence then neural induction media contain of valproic acid, forskolin and insulin were replaced with culture media and induction media were renovated every 3 to 4 day for a total differentiation time of 8 days. Differentiation plate in day 6 were washed in PBS, treated with 0.3% Triton X-100 in PBS for 10 min and blocked with 3% BSA in PBS for 10 min. The cells were incubated with the following primary antibodies (anti-NSE and anti-map2) for 24 h at 4 °C then incubated for 1 hour with fluorescent-labeled secondary antibody, and then visualized in fluorescent microscope.

Results : As early as 3 days of neural induction, morphologic changes were noted. The MSC cells changed from flat, elongated, spindle-shaped cells to rounded cells with several branching extensions during total induction time (8 days) length and number of branches in each cell increased (figure1). Fluorescent-microscope images showed differentiated cells stained (red for map2 and green for NSE) with fluorescent-labeled anti bodies that validated existence of neural markers (map2 and NSE)

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Conclusion : In this study, the ability of human BM MSCs to differentiate into neural cells were investigated and our data proved the possibility of our approach however, further studies are required for uncovering other aspect of this approach.

Keywords : MSC, differentiation, neuron-like cells



Count: 152

Abstract ID: 157

Presentation Type: Poster

Evaluation of IL-4 level in Neuromyelitis optica disease

Submission Author: Ali Fazli

Ali Fazli¹, Azin Hamidavi², Negin Ghasemi³

1. immunology of isfahan
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3. immunology of isfahan

Background and Aim : Neuromyelitis optica (NMO), an autoimmune inflammatory demyelinating disorder, particularly targets spinal cord and the optic nerves. The disease was thought as a variant of Multiple Sclerosis for long but it can be distinguished due to the pathological and immunological characteristics. recent studies proved high levels of Interleukin 4 (a multifunctional cytokine regulating the immune responses) secretion in MS patients The aim of the study was to evaluate serum IL-4 levels in patients with NMO and control group.

Methods : The study involved 45 patients with NMO and 45 healthy controls. Serum IL-4 levels were determined by the enzyme-linked immunosorbent method (ELISA).

Results : The present study showed that there was significant different between IL-4 levels in the serum of patients with NMO compared with healthy controls($P < 0.05$). Serum level of IL-4 in patients were much higher than healthy controls (3.5x).

Conclusion : Overall, it seems inflammatory cytokine such as IL-4 level could be used as diagnostic or treatment marker for NMO patients in future.

Keywords : NMO disease; autoimmune disease; IL-4;



Count: 153

Abstract ID: 86

Presentation Type: Poster

The comparison of the effect of the chick cerebrospinal fluid and Amnion embryonic fluid on peripheral nerve regeneration of rat

Submission Author: Farzaneh Fazli

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Background and Aim : Peripheral nerve regeneration is a serious clinical problem. The use of neurotrophic factors in the care and survival of peripheral neuronal cells has been the topic of numerous studies. Chick cerebro-spinal fluid (CSF) and Amnion fluid (AF) has been reported to contain nerve growth factor, transforming growth factor alpha and fibroblast growth factor. The purpose of this experimental study was in comparison of the effect of chick embryonic fluids (CSF, AF) on a cross section of rat sciatic nerves.

Methods : Forty adult male Sprague-Dawley rats (275 to 300) were randomized into 4 groups: (1) Chick embryo CSF, (2) chick embryo AF, (3) Normal saline or NS, and (4) sham surgery. The left sciatic nerve was exposed and sharply transected. Immediate epineurial repair was then performed. The CSF treated animals were given 2 ml/kg of the chick embryo CSF inter peritoneal, once daily, five times a week for up to 2 weeks. The amnion treated animals were given 2 ml/kg of the chick embryo AF inter peritoneal, once daily, five times a week for up to 2 weeks. All animals were evaluated by sciatic functional index (SFI), electrophysiology, histology, and immunohistochemistry at days 28 and 56 after surgery.

Results : The SFI difference between CSF/AF and NS groups at days 21 and 28 after operation was statistically significant ($P < 0.05$). But there was no remarkable difference between CSF and AF groups. The number of myelinated fibers in the CSF and AF groups were significantly greater than that of the NS group at day 28 ($P < 0.05$). At days 28 and 56 after operation, the nerve conduction velocity (NCV) mean of the CSF and AF groups were faster than that of the NS group, but the difference was not statistically significant ($P > 0.05$).

Conclusion : The results of this study demonstrate that chick embryo CSF and AF can enhance peripheral nerve regeneration.

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Keywords : Cerebrospinal fluid, Chick embryonic, Amniotic fluid, Nerve regeneration, Rat



Count: 154

Abstract ID: 168

Presentation Type: Poster

The role of NMDA receptors in the pain modulatory effect of 17 β -estradiol in the nucleus paragigantocellularis lateralis of ovariectomized female rats

Submission Author: Hanieh Feizi

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Background and Aim : The paragigantocellularis lateralis (LPGi) nucleus is a medullary reticular nucleus involving in the autonomic regulation, control of sleep-wake cycle, sexual behavior, consciousness, dependence and addiction as well as pain modulation. Estradiol is a neuroactive steroid that modulates nociception not only by binding to its intracellular receptors but also by allosteric interaction with other membrane-bound receptors such as glutamate and GABAA receptors. It was shown that the antinociceptive effect of intra-LPGi 17 β -estradiol is mediated by the NMDA receptors in the male rats. There is evidence which suggests a hyperalgesic role for estrogen and a hypoalgesic role for testosterone. So, the present study was designed to assess the possible involvement of the membrane-bound NMDA receptors of LPGi nucleus in the pain modulatory effect of 17 β -estradiol in the ovariectomized female rats.

Methods : Forty-two female Wistar rats (200-270 g) were randomly divided into the seven groups (n= 6): the control (intact animals), sham/CAN (just cannulation of the LPGi nucleus without intra-LPGi injections), sham/OVX (just ovariectomy of female rats without the LPGi nucleus cannulation), saline, estradiol (E2; 0.8 μ mol), AP5 (0.5 nmol) and estradiol/AP5 (E2/AP5) groups. In order to investigate the pain modulatory effect of intra-LPGi microinjection of 17 β -estradiol in the ovariectomized female rats, cannulation of the LPGi nucleus was performed. Also, the rats were bilaterally ovariectomized to eliminate the sex hormone effects on the female rat pain perception. After recovery period, 500 nl of saline, E2 and AP5 were unilaterally administered into the right LPGi by Hamilton syringe. In addition, for assessing the role of the NMDA receptors in the pain modulation by 17 β -estradiol, E2 was injected 15 min after the intra-LPGi administration of AP5. Then, 50 μ l of 4% formalin was subcutaneously injected into the plantar surface of contralateral hind paw (left) and the animal was returned to the test chamber. After that, the number of paw jerking behavior was observed for 60 min. The data collected between 0 and 7 min post-

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formalin injection were considered as the acute phase and the data collected between 15 and 60 min post-formalin injection were considered as the chronic phase. One-way analysis of variance (ANOVA) followed by post hoc Tukey's test was used to compare differences between treatments. $P < 0.05$ was considered statistically significant.

Results : Animals belonging to the control, sham-CAN and sham/OVX did not show any significant difference with the vehicle group (intra-LPGi injections of saline). The results of the present study showed that the intra-LPGi injection of 17β -estradiol attenuated both acute and chronic phases of formalin-induced paw jerking behavior. Pretreatment of LPGi nucleus by the NMDA receptor antagonist (AP5), counteracted the anti-nociceptive effect of 17β -estradiol on this behavior in the both phases of formalin test.

Conclusion : Based on the results of this study, it can be concluded that the intra-LPGi injection of 17β -estradiol is sufficient to produce moderate analgesia on the formalin-induced inflammatory pain; and this antinociceptive effect of 17β -estradiol is probably mediated by NMDA receptors.

Keywords : 17β -estradiol, NMDA receptors, paw jerking behavior, ovariectomized female rats.



Count: 155

Abstract ID: 396

Presentation Type: Poster

Parallels, contrasts and interactions of hippocampal cholinergic and cannabinoid neurons on memory consolidation

Submission Author: Ensiyeh Forouzan mehr

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Background and Aim : The important role of hippocampus in memory and emotional responses may link with cholinergic and cannabinoid processes. Acetylcholine and cannabinoid have opposite effects on memory process. The current study was designed to examine the involvement of CA3 cannabinoid CB2 receptors in scopolamine-induced memory impairment in adult male NMRI mice.

Methods : The animals were bilaterally implanted with the cannulas in the CA3 and submitted to a step-down type inhibitory avoidance task to measure the memory consolidation. One-trial step-down was used to assess memory retention in adult male mice. Male albino NMRI mice weighing 25–30 g at the time of surgery were used. Animals were housed in groups of 10 in plastic cages and maintained at a constant temperature of $22 \pm 2^\circ\text{C}$ under a 12/12-h light/dark cycle with water and food freely available except during the limited periods of experiments. Drug was dissolved in sterile 0.9% saline and was injected into the intra-CA3 in a volume of 0.5 μl / mouse.

Results : The results of Kruskal–Wallis ANOVA analysis showed that intra-CA3 administration of scopolamine ($H(3)=10.848, P<0.01$) and AM630 ($H(3)=22.041, P<0.001$) immediately after the training phase (post-training) declined the step-down latency in the one-trial inhibitory avoidance task. The post hoc analysis by Mann–Whitney's U-test showed that sole administration of scopolamine (2 $\mu\text{g}/\text{mouse}$) and AM630 (10 and 100 ng/mouse) impaired memory consolidation, thus reveal an amnesic effect. In addition, one-way ANOVA exhibited that scopolamine [$F(3, 28)=1.078, P>0.05$] and AM630 [$F(3, 28)=0.612, P>0.05$] did not alter locomotor activity. The results also displayed that post-training intra-CA3 infusion of non-significant dose of AM630 (1 ng/mouse) had no meaningful effect on memory impairment caused by

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scopolamine (2 $\mu\text{g}/\text{mouse}$). Moreover, two-way ANOVA indicated that these interventions did not change locomotor activity [$F(7, 56)=0.288, P>0.05$].

Conclusion : In conclusion, the present findings indicate that sole administration of scopolamine and AM630 impaired memory consolidation whereas co-administration of them had no significant effect on memory response. It is possible that there is no interaction between scopolamine and AM630 on memory consolidation in the CA3.

Keywords : CA3, memory, scopolamine, AM630



Count: 156

Abstract ID: 358

Presentation Type: Poster

A scrutiny toward the existence and level of BACE1-AS lncRNA in blood serum samples of people with Alzheimer's disease

Submission Author: Seyedeh Nahid Fotuhi Bonab

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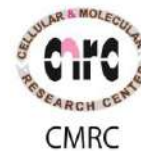
Background and Aim : Using bio-markers for detecting the initiation of dementia, especially Alzheimer's disease, and determination of disease development is a critical need to improve the clinical trials so that we could overcome the disease in an effective method and appropriate time. The alteration in BACE1 proteins level likely contribute in Alzheimers disease, being controled by BACE1-AS. Both of these factors show increased level in csf of Alzheimer's diseases, resulting in disturbance in neuron function, which the relative amount can be used as a detectable factor of Alzheimers disease. The intent of this study is to detect the BACE1-AS lncRNA in human blood plasma and to meseure the lncRNA level.

Methods : 30 control and 30 case, plasma isolation, RNA extraction, cDNA synthesis, quantitative real0time PCR, statistical analysis

Results : The intent of this study is to detect the BACE1-AS lncRNA in human blood plasma and to meseure the lncRNA level.

Conclusion : BACE1-AS showed increased level in human blood plasma

Keywords : Alzheimer's disease, Bio-markers, BACE1, BACE1-AS



Count: 157

Abstract ID: 316

Presentation Type: Oral

Effect of circadian rhythm disturbance on morphine consumption in male rats

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Background and Aim : It is claimed that disturbance of circadian rhythms caused by factors such as change of normal light-dark cycle can lead to the development and progression of addiction. Here we have studied the effect of constant light on morphine voluntary consumption and withdrawal symptoms and also investigated the involvement of Per1, Per2 and dopamine D1 receptor in these processes.

Methods : Male wistar rats were kept under standard (LD) or constant light (LL) conditions for one month. The concentration of melatonin in plasma was evaluated by ELISA. Real-time PCR was used to determine the mRNA expression of Per1, Per2 and dopamine D1 receptor in the striatum and prefrontal cortex. Morphine preference was tested in a two-bottle-choice paradigm for 10 weeks and withdrawal symptoms were recorded after administration of naloxone (3mg/kg).

Results : One month exposure to constant light resulted in a significant decrease of melatonin concentration in LL group. In addition, mRNA levels of Per2 and dopamine D1 receptor were up-regulated in both the striatum and prefrontal cortex of LL group. However, expression of Per1 gene was only up-regulated in the striatum of LL rats in comparison to LD animals. Furthermore, after one month exposure to constant light, morphine consumption and preference ratio and also severity of the naloxone-induced withdrawal syndrome were significantly greater in LL animals.

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Conclusion : It is concluded that exposure to constant light by up-regulation of Per2 and dopamine D1 receptor in the striatum and prefrontal cortex and up-regulation of Per1 in the striatum makes animals vulnerable for morphine preference and addiction.

Keywords : Circadian rhythm, Constant light, Morphine, Per1, Per2, Dopamine D1 receptor



Count: 158

Abstract ID: 299

Presentation Type: Poster

Study the role of PKC γ in morphine tolerance in male wistar rats

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Background and Aim : Chronic morphine exposure produces morphine tolerance. The mechanisms involves in morphine tolerance are still vague. The aim of this study was to investigate the possible role of PKC γ in morphine tolerance

Methods : Experiments were performed on adult male wistar rats. In a series of experiments to induce morphine tolerance, morphine (10mg/kg, s.c) administrated daily up to 14 days. Then paw withdrawal latency (PWL) was assessed by means of a Hargreaves test on day 14th. In another set of experiments metformin (100mg/kg, i.p) co-administrated with morphine daily up to 14 days. To study the expression of PKC γ by western blotting method, on day 14 animals were killed under isoflurane anesthesia, and the spinal cords rapidly removed.

Results : The results showed that paw withdrawal latency decreased significantly in morphine tolerated group in compare to control group. Co-administration of metformin and morphine for 14 days increased paw withdrawal latency and enhanced pain threshold. The molecular results also indicated that the expression of PKC γ increased in morphine tolerated group but its expression reduced after co-administration morphine and metformin.

Conclusion : These results demonstrated that PKC γ is probably involved in morphine tolerance

Keywords : morphine tolerance , metformin, PKC γ



Count: 159

Abstract ID: 398

Presentation Type: Poster

Muscimol and cannabinoids: Parallels, contrasts and interactions on memory consolidation

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Background and Aim : Many investigations have demonstrated a close relationship between cannabis and GABAergic systems in hippocampal CA1. The role of these two systems in modulation of memory process is well described. The aim of the current study was to investigate parallels, contrasts and interactions between muscimol (a GABAA receptor agonist) and AM630 (a selective CB2 cannabinoid receptor antagonist/inverse agonist) on memory consolidation in mice.

Methods : A single-trial step-down inhibitory avoidance task and open field test was used to evaluate memory retention and locomotor activity, respectively. Adult male Naval Medical Research Institute (NMRI) mice which 5-8 weeks old and weighed 25–30 g at the time of surgery were used. Animals were housed in groups of 10 in plastic cages and maintained at a constant temperature of $22 \pm 2^\circ\text{C}$ under a 12/12-h light/dark cycle with water and food freely available except during the limited periods of experiments. Drug was dissolved in sterile 0.9% saline and was injected into the intra-CA1 in a volume of 1 μl /mouse (0.5 μl /per side).

Results : Kruskal–Wallis ANOVA indicated that post-training intra-CA1 injections of muscimol ($H(3)=7.90, P<0.05$) and AM630 ($H(3)=8.837, P<0.05$) decreased the step-down latency in the one-trial inhibitory avoidance task. The post hoc analysis by Mann–Whitney’s U-test showed that sole administration of muscimol (0.1 μg /mouse) and AM630 (100 ng/mouse) impaired memory consolidation, thus reveal an amnesic effect. In addition, one-way ANOVA exhibited that muscimol [$F(3, 28)=1.937, P>0.05$] and AM630 [$F(3, 28)=1.774, P>0.05$] did not alter locomotor activity. The results also displayed that post-training intra-CA1 infusion of non-significant dose of AM630 (1 ng/mouse) had no meaningful effect on

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memory impairment caused by muscimol (0.1 $\mu\text{g}/\text{mouse}$). Moreover, two-way ANOVA indicated that these interventions did not change locomotor activity [$F(7, 56)=0.968, P>0.05$].

Conclusion : Our findings indicate that sole administration of muscimol and AM630 impaired memory consolidation whereas co-administration of them had no significant effect on memory response. It is possible that there is no interaction between muscimol and AM630 on memory consolidation in the CA1.

Keywords : CA1, memory, muscimol, AM630



Count: 160
Abstract ID: 188
Presentation Type: Oral

Functional brain modularity in people who stutter: an investigation with EEG using graph theory analysis

Submission Author: Amirhosein Ghaderi

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Background and Aim : Stuttering is associated with abnormalities in complex cognitive functions such as speech and language. Also, it is related to several structural abnormalities in cortical and subcortical brain areas such as the Broca's area (BA 44, 45), basal ganglia, supplementary motor area and parasyllvian cortex. There is also white matter abnormality in people who stutter compared with persons with fluent speech. Recent studies suggest that functional deficit in motor system is involved in stuttering and also new evidences suggest that the brain network deficit is evident in people who stutter.

Methods : Graph theory analysis is a new approach to functional and structural brain mapping that indicates topological properties of the brain in health and disease. In this study, as a first attempt using QEEG, graph theory analysis is applied to investigate the functional brain deficits in adults who stutter. Subjects were twenty adults who stutter versus twenty controls. All subjects were aged between 20 and 30 years and without history of other psychiatric or neurologic disorders and diseases. EEG coherence in different frequency bands is used as edges of graph. Various thresholds were applied and binary adjacent matrices were created. Finally clustering coefficient and global efficiency were used to report functional brain segregation and integration in the stuttering group compared with normal subjects.

Results : In the clustering coefficient, significant differences were observed in the beta (13.5-25 Hz) and the high beta (25-30 Hz) bands. The stuttering group shows higher clustering in low to middle thresholds ($T < 0.35$). However, in the high thresholds ($T > 0.4$), there was no significant difference between adults who stutter and persons with fluent speech. But, in the high thresholds ($T > 0.4$), the control group shows higher global efficiency than the stuttering group (in the beta (12.5-24.5 Hz) and the high beta (25-30 Hz) bands). Despite the clustering coefficient, this result was not seen in lower thresholds. F7, F8, T3, T4 and T5 are completely disconnected, in the high beta band (25-30 Hz). Also, in this frequency band, distorted functional brain network is observed. In other bands (delta, theta and alpha), the global efficiency difference was not significant and the clustering coefficient difference was significant only in a few thresholds.

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Conclusion : There is strong evidence indicating that the beta oscillation in the striatum is related to movement planning and preparations. This oscillation is produced during planning and is suppressed during movement. Functionally, clustering coefficient and global efficiency are associated with brain segregation and integration, respectively. Our results indicate that the stuttering group exhibit Lower integration and higher segregation in the beta and high beta bands. This is related to more functional modularity and lower speeds of signal propagation in motor function. Our results support the hypothesis that explains stuttering is a disorder associated with deficit in motor function. Also, lower beta integration and higher beta segregation and significant disconnection between temporal electrodes and other regions suggest that functional disconnection of pathways between temporal cortex and motor areas may be concluding to stuttering.

Keywords : Brain Network, Stuttering, Brain segregation, Brain integration

Count: 161

Abstract ID: 135

Presentation Type: Poster

Analgesic effect of methanolic extract of *Cuscuta epithymum* in male mice

Submission Author: Behnaz Ghaderi

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Background and Aim : Attentions have long been scattered on inhibition of pain to introduce effective painkilling medications with minimal side effects. The aim of this study was to evaluate the analgesic effect of *Cuscuta epithymum*

Methods : In the present study, male NMRI mice were divided into 27 groups of 7 animals each: 3 negative control group (receiving normal saline), 6 positive control groups treated by (morphine), 18 groups treated by various doses of methanolic extract of *Cuscuta epithymum* (2.5, 5, 10, 25, 50 and 100 mg/kg). Subsequent to determining the LD₅₀, we carried out tail-flick, formalin and writhing tests to assess pain. Statistical significance was calculated using the one-way ANOVA and Tukey's post hoc tests.

Results : In the tail flick test, compared with the negative control group, the group treated by *Cuscuta epithymum*'s effective dose (25 mg/kg) significantly increased Maximum Possible Effect (MPE) 30, 60 and 120 minutes after injection ($P < 0.05$). In comparison with the negative control group, there was a significant increase in MPE 30 minutes after injection in the groups treated by *Cuscuta epithymum* extracts with doses of 50 mg/kg ($P < 0.01$) and 100 mg/kg ($P < 0.001$), as was at 60 and 120 minutes after injection ($P < 0.001$). In the formalin test, administration of the extract (25 mg/kg), significantly decreased pain in the first ($P < 0.01$) and second ($P < 0.001$) phases. Additionally, the extract at doses of 50 and 100 mg/kg significantly reduced pain in both phases of the test ($P < 0.001$). In the writhing test, administration of *Cuscuta epithymum* extract (5 mg/kg) significantly reduced the number of abdominal contractions, compared to that in the control group ($P < 0.01$). Moreover, the number of abdominal contractions significantly reduced in experimental groups receiving the extract at doses of 10, 25, 50, and 100 mg/kg ($P < 0.001$).

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Conclusion : Intraperitoneal injection of methanolic extract of *Cuscuta epithymum* showed antinociceptive effect on all the pain tests

Keywords : Tail flick Test, Formalin test, Writhing test, Pain, *Cuscuta epithymum*, Plant Extract, Mice.



Count: 162

Abstract ID: 482

Presentation Type: Poster

Neural control of continence: A Narrative Review

Submission Author: Fariba Ghaderi

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Background and Aim : Voluntary micturition is a behavior pattern that starts with relaxation of the striated urethral sphincter and PFM. Voluntary PFM contraction during voiding can lead to a stop of micturition, probably because of collateral connections to detrusor control nuclei and descending inhibitory pathways. Bladder contractions are also inhibited by reflexes, activated by afferent input from the PFM, perineal skin, and anorectum.

Methods : The search strategy was performed in five databases (PubMed , Web of Science, Science Direct, Cochrane Clinical Trials, Medline (Ovid)) . The following keywords were used: neural control, continence, micturition, bladder control and detrusor activity.

Results : According to the searched data bases; at rest continence is assured by a competent sphincter mechanism, including not only the striated and smooth muscle sphincter but also the PFM and an adequate bladder storage function. Centers in the pons (brain stem) coordinate micturition as such, but areas rostral to the pons (the hypothalamus and other parts of the brain, including the frontal cortex) are responsible for the timing of the start of micturition. The pontine micturition center (PMC) coordinates the activity of motor neurons of the urinary bladder and the urethral sphincter (both nuclei located in the sacral spinal cord). Without the PMC and its spinal connections coordinated bladder and sphincter activity is not possible, thus patients with lesions of the PMC and its spinal connections demonstrate bladder sphincter discoordination (dyssynergia). Patients with lesions above the pons do not show detrusor-sphincter dyssynergia, but have urge incontinence (due to bladder over activity) and demonstrate noninhibited sphincter relaxation and an inability to delay voiding to an appropriate place and time. During the physical stress (e.g. coughing, sneezing) the urethral and anal sphincters may not be sufficient to passively withhold the pressures arising in the abdominal cavity, and hence within the bladder and lower rectum. Activation of the PFM is mandatory, and may be perceived as occurring in two steps by two different activation processes.

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Conclusion : From a physiotherapeutic point of view, it should be noted that the musculature of the pelvic floor takes part in the physiological control of urinary outflow. The relaxation of the muscles of the pelvic floor needed for micturition is facilitated by certain body postures, such as sitting. On the other hand, in other postures muscular activity increases and so supports continence. These two examples are linked to interactions of the pelvic floor muscles with central motor programming and synergic patterns. So physical therapy can play an important role for treating neural control impairments of continence.

Keywords : : neural control; continence; pelvic floor



Count: 163
Abstract ID: 465
Presentation Type: Poster

Effectiveness of Cognitive and Supportive Expressive Group Therapy on Self-Efficiency and Life Style of MS Patients

Submission Author: Leila Ghaemi

Leila Ghaemi¹

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Background and Aim : This study compared the effectiveness of two methods of cognitive therapy and supportive-expressive therapy on the efficacy and quality of life in MS patients.

Methods : This is an experimental project which has used developed group pretest - posttest and follow-up with 3 groups. The study included all patients with multiple sclerosis in 2013 that were members of the MS Society of Iran in Tehran. The sample included 45 MS patients that were selected voluntarily of members of the MS society of Iran and randomly divided into three groups and pretest, posttest, and follow-up (three months) for the three groups had been done. Fifteen patients for cognitive therapy, 15 for supportive-expressive therapy and 15 for control group. After the entry criteria were considered and the design was described for both groups, if satisfied, entered the study. Entry criteria were: diagnosis of exclusion of MS, history does not consist of going to psychiatrist or psychologist, aged 20-40, not suffering from mental disorders, lack of acute disease (not requiring hospitalization) and higher diploma education. Twelve sessions which were 90 minutes of cognitive therapy and supportive therapy were established for experimental group and pre-test and post-test were conducted for both groups and after three months in a session titled follow-up, tests were performed again for each group. The dimensions of quality of life in patients with multiple sclerosis scale, and general self-efficiency scale of Schwarzer and Jerusalem was used for collecting data.

Results : The results showed that there was a significant difference between the mean of quality of life scores at pretest, posttest, and follow-up of the experimental groups. There was no significant difference between the mean of quality of life of the experimental groups which means that both groups were effective and had the same effect. There was no significant difference between the mean of self-efficiency scores in control and experimental group in pretest, posttest and follow-up.

Conclusion : The present findings indicate that cognitive therapy and supportive-expressive therapy were effective in improving the quality of life in patients with MS, but the effectiveness of these treatments was

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not different. Therefore, group psychotherapies can be seen as elective psychotherapy methods and complementary methods of medical treatment to improve the quality of life for these patients

Keywords : Group Therapy, Cognitive, Supportive-Expressive, Quality of Life, Self-Efficiency, Multiple Sclerosis



Count: 164

Abstract ID: 466

Presentation Type: Poster

Effects of Cognitive Interventions on Maladaptive Schemas in Male Patients with Cardiac Rehabilitation

Submission Author: Leila Ghaemi

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Background and Aim : According to the cognitive theory, maladaptive schemas have an important role in the creation of stress and emotional disorders and so in the predisposing heart attacks and strokes. Cognitive interventions can change feelings and behaviors through the influence thought patterns, increase the level of health and modify the risk behaviors in aggravating the heart disease, reduce the causes of disability in patients and provide more consistency with disease conditions. Since there is little research on the psychological factors involved in the expression of health after a cardiac event, in this study we have identified maladaptive schemas in cardiac rehabilitation patients, and for the first time impact of cognitive schemata in preventing heart attack and reducing fear of repeated heart attacks, have been studied.

Methods : The population of this study consisted of patients that following coronary surgery were referred to the center of cardiovascular research and rehabilitation in the period May to July 2012. The sample was composed of 30 patients who were eligible to enter the study. The research method was quasi-experimental planned pretest-posttest without control group. In this study, the Yang questionnaire YSQ for maladaptive schemata was used. Cognitive interventions were performed in 8 sessions of one hour each. After completion of the session, the posttest was taken from patients in two sessions and the obtained data were analyzed using SPSS software. To investigate the distribution (normal data) the Kolmogorov - Smirnov test and for data analysis, according to the assumptions considered, dependent t-test were used.

Results : The maladaptive schema component of emotional deprivation and emotional inhibition had abnormal range in majority of patients (60%). The components of uncompromising standards and deserves, by means of 17.13 and 30.17 respectively, had abnormal range in most participants. Data analysis showed that cognitive interventions, except subscales of emotional deprivation, incompetence and obedience, leading to a significant difference between pre-test and post-test and change the maladaptive schemas in the subjects.

Conclusion : Maladaptive schemas as cognitive structures lead to the formation of illogical beliefs. Since the schemas are somehow belief and beliefs are changeable, cognitive interventions can correct the

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irrational beliefs. Our results as the first step in this field showed that cognitive interventions can reduce maladaptive schema in the heart disease, adjust the risk behaviors resonator of heart disease and increase the level of health.

Keywords : Cognitive Interventions, Maladaptive Schema, Cardiac Disorder, Rehabilitation, Yang questionnaire YSQ, Emotional Deprivation, Emotional Inhibition, Incompetence, Obedience



Count: 165

Abstract ID: 710

Presentation Type: Poster

The impact of OCD related factors on depression severity among individuals with OCD in Ardabil city

Submission Author: Sajjad Ghaffari

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Background and Aim : Comorbid depression presents a challenging problem for the treatment of obsessive-compulsive disorder (OCD) and it also predicts early drop-out from psychological and pharmacological treatments of OCD. The aim of present study was to investigate the impact of OCD related factors on depression severity among individuals with OCD in Ardabil city.

Methods : Participants were 102 individuals (39 males and 63 females) with OCD who were recruited from a private psychiatric clinic in Ardabil city. We divided them into two groups: 1. Individuals with a current comorbid DSM-5 diagnosis of major depressive disorder or dysthymic disorder (OCD-DD). 2. Individuals did not have a comorbid diagnosis of a depressive disorder (OCD-ND). We used Yale-Brown Obsessive Compulsive Scale (Y-BOCS), Beck Depression Inventory-II (BDI-II), Beck Anxiety Inventory (BAI) and Obsessive Beliefs Questionnaire-44-item version (OBQ-44) in order to gathering data .we also used Pearson correlation coefficient , hierarchical multiple regression and one-way analyses of variance (ANOVA) in order to analyzing data.

Results : Results indicated that the OCD-DD group had significantly higher depression scores than the OCD-ND group and there were no significant differences in the anxiety scores between two groups. Correlation analysis showed that there was no significant relationship between depression and OCD scores .Regression analysis also showed that depression severity in the whole sample was significantly predicted by anxiety, avoidance, obsessional thoughts, obsessional impulses, and obsessional beliefs.

Conclusion : The current study showed that both OCD-related factors and non-specific factors predicted depression severity in the sample of OCD patients, so dealing with comorbid depression in OCD is a priority for improving treatment outcomes for OCD.

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Keywords : OCD, Depression , Anxiety



Count: 166

Abstract ID: 654

Presentation Type: Poster

The role of cognitive distortions in prediction of depression and anxiety symptoms among adolescents with ADHD

Submission Author: Sajjad Ghaffari

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Background and Aim : Assessment and treatment of cognitive deficits, cognitive distortions and other behaviors related to emotional distress have been considered an important feature of comprehensive cognitive-behavioral treatment for adolescents with ADHD. The aim of present study was to investigate .The role of cognitive distortions in prediction of depression and anxiety symptoms among adolescents with ADHD.

Methods : We used descriptive – correlation method in the present study. Participants were 30 adolescents (19 male, 11 female) who were diagnosed with ADHD .they filled out five scales in order to gathering data : Cognitive Distortions , Attention Deficit Disorder– adolescent version, adolescents' rating scale self-report , anxiety and depression. We also used Mean, standard deviation, Pearson correlation coefficient and regression in order to analyzing data.

Results : Results of correlational analysis indicated a significant positive relationship between cognitive distortions and ADHD ($r= 0.487, p<0.05$) .significant relationship were also identified between cognitive distortions with depression and anxiety. Regression analysis showed that cognitive distortion significantly predicts anxiety and depression symptoms in adolescents with ADHD.

Conclusion : Several manuals that describe empirically supported psychosocial treatments for adolescents ADHD underscore the importance of incorporating an individuals' cognitive experiences into treatment for the ADHD, so paying attention to this issue is very essential for those who are dealing with ADHD adolescents problems.

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Keywords : ADHD , Cognitive distortions , Adolescents



Count: 167
Abstract ID: 625
Presentation Type: Oral

The comparison of time perception between subjects with major depression disorder and normal subjects in the face of oddball emotional stimuli

Submission Author: Mahsa Ghaheri

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Background and Aim : Time perception is an adaptive function that facilitates the ability to predict, anticipate, and respond efficiently to coming events. Depressive patients frequently report overestimation in perceive time. The effective state of sadness in depressive individuals affects their time perception. On the other hand, the novelty of stimuli may change subjective duration. Several studies exhibit that repeated stimuli are perceived shorter than novel stimuli and this effect may be depended to repetition suppression. Previous studies show that salience and affective stimulus does not modulate the mentioned effect in normal subjects. However, there is no any investigation in people with major depression disorder. It seems that emotional stimuli have higher salience aspects on people with major depression disorder and therefore different mechanism in time perception of oddball/repeated may involve.

Methods : In this study, oddball paradigm was used for comparison of time discrimination between subjects with major depression disorder Assessed for with the Beck Depression Inventory (N=20, aged between 20 and 35 years; SD: 3:12; female: 12) and normal control subjects (N=20, aged between 20 and 35 years; SD: 2.89; female: 13). Faces with neutral, happy and sad expressions were used as frequent and rare stimuli. Frequent stimulus presented between 500 ms while rare stimulus presented 300, 400, 600 and 700 ms in different conditions. Participants should be pressed right mouse button if they identified that oddball stimulus has longer duration than frequent and press left if that was shorter.

Results : the results show time discrimination between two groups was significantly different and participants with major depression disorder show more error in time discrimination in the face of sad and happy stimuli.

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Conclusion : the results suggest that mechanism of time discrimination of emotional stimuli in major depression disorder is completely different from normal subjects. It may be dependent to different response of parietal cortex (as accumulator) in the face of emotional stimuli. More activity of parietal cortex is frequently reported in depression disorder. Our results is in consistent with this finding and also support from this idea that more activity in parietal cortex may cause to more accumulation of time steps and overestimation of time in emotional stimuli within the major depression group.

Keywords : depression, time discrimination, emotion, repetition suppression, accumulator



Count: 168

Abstract ID: 603

Presentation Type: Poster

The impact of depression on hopelessness and suicidal ideation among individuals with MDD in Ardabil city: moderating role of impulsivity

Submission Author: Ayda Ghahremani

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Background and Aim : Individuals with major depressive disorder are much more prone to suicide in compare of normal individuals. Some factors such as hopelessness, impulsive behaviors and suicidal ideation increase suicidal risks in them. The aim of present study was to investigate the impact of depression on hopelessness and suicidal ideation among individuals with MDD: moderating role of impulsivity.

Methods : Participants were One hundred and sixty-two aged from 16 to 65 years meeting the criteria for MDD. All participants underwent structured interviews carried out by clinical psychologists with more than five years of clinical and research experience. They also filled out depression severity, hopelessness, suicidal ideation, and impulsivity assessment scales. Regression analyses with bootstrapping methods were used to examine the mediating and moderating effects of various risk factors.

Results : The regression analyses showed that the total impact of hopelessness on suicide ideation was significant ($t=2.958$, $p<0.01$) and the impact was fully mediated through depression severity, the positive value of the coefficient ($B=.258$, $SE=.087$) indicated an increase in hopelessness was always accompanied by an increase in SI. It also showed that the interaction of depression severity and impulsivity could predict SI significantly, suggesting a moderating effect of impulsivity.

Conclusion : This paper findings showed that impulsive patients with hopelessness are more susceptible to depressive symptoms and prone to endorse SI, so these findings highlight the importance of impulsivity assessment and alleviation of depressive symptoms to prevent Suicidal related behaviors in patients with MDD.

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Keywords : depression , suicidal ideation , hopelessness



Count: 169

Abstract ID: 757

Presentation Type: Poster

The effect of ACT on negative emotional memory retrieval in subclinical depressed patients

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Background and Aim : It is commonly reported that depressed patients retrieved negative better than positive memories, which is correlated with their mood. However, there is no study on the effect of acceptance and commitment therapy (ACT) on this memory retrieval bias. The aim of this study was to assess the effect of ACT on this memory bias.

Methods : Twenty adult female students (18-24 Y/O), with subclinical depression based on their beck inventory test score (score 18-29), was assigned into two groups; experimental (n: 10) and controls (n: 8). the experimental group underwent 2 hrs ACT sessions for eight weeks. A pictorial memory test was designed to assess the positive, negative and neutral memory retrievals (20 pictures in each category selected from IAPS), and applied to both groups before and after 8 weeks.

Results : It was shown that 8 weeks ACT significantly reduced the beck score of experimental group from 21.3 to 8.6 ($p=0.0001$). The results also showed that the memory retrieval of positive and negative pictures is not different in experimental group before and after ACT ($p=1.00$ and $p=0.34$, respectively). However, the retrieval for neutral pictures was significantly increased (from 5.7 to 9.2, $p=0.007$).

Conclusion : Findings of this study have shown the beneficial effect of ACT on depression score in subclinical depressed subjects, and also enhancing the memory of neutral pictures. However, it seems that lower beck score is correlated with better retrieval of neutral memory in subclinical depressed patients.

Keywords : subclinical depression, ACT, memory, memory retrieval



Count: 170

Abstract ID: 656

Presentation Type: Poster

The effect of speed of walking on concurrent cognitive performance in healthy young people

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Background and Aim : Knowledge about cognitive performance during challenging walking conditions provides insight into the adaptability of central nervous system for controlling attentional demands of human gait. The aim of the present study was to assess the effects of walking speed on cognitive performance in young people during dual-task walking (DTW) conditions.

Methods : Thirty young people (age: 27 ± 4.42 years; 15 female and 15 male) participated in this study. They performed 6 walking trials on a treadmill, including walking at three paces (preferred, slower and faster) while subtracting 1's or 3's from a random three-digit number (simple and complex DTW, respectively). Each DTW task took 90 seconds to be done. As a reference for assessment of dual-task cost of cognitive performance, participants performed one seated 90-second trial of subtracting 1's or 3's from a random three-digit number. To calculate the cognitive score, first we calculated correct response rate (CRR) by multiplying the response rate per second in percent of correct responses for each of the cognitive tasks under seated and walking conditions. Then cognitive score for each dual-task walking trial was calculated by dividing the difference between CRR of each cognitive task when seated and walking to CRR of the same task when seated. Thus, A positive value indicates worse performance under dual-task conditions (ie, lower CRR), whereas a negative value indicates better performance under dual-task conditions (ie, higher CRR). We used a one-way analysis of variance for statistical analysis.

Results : Our results showed that speed of walking had a significant effect on complex cognitive task ($p < 0.05$), but not on simple cognitive score. Moreover, Bonferroni post-hoc results revealed that the mean of complex cognitive score was significantly lower When walking slowly compared to walking under preferred speed ($p < 0.05$).

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Conclusion : In conclusion when people walk slower than their usual speed and perform a concurrent complex cognitive task, their cognitive performance declines significantly. This could be attributed to the higher physical controlling demand of slower walking compared to usual walking speed which may reduce the cognitive performance, regarding limited capacity of attention.

Keywords : Cognition, Dual-task walking, Gait speed.



Count: 171

Abstract ID: 105

Presentation Type: Poster

Effect of radiofrequency radiation emitted from Wi-Fi equipment on rat brain total antioxidant capacity

Submission Author: Mahsa Ghasemi

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Background and Aim : In today's world, electromagnetic radiation-emitting devices particularly wireless access points are widely used in household, industrial, medical, military, and scientific applications. Electromagnetic radiation from Wi-Fi equipment appears to induce neurodegenerative processes through increase of oxidative stress and decrease of antioxidants in the brain.

Methods : Our study has been devoted to the investigation of the possible effects of electromagnetic radiation from Wi-Fi equipment on rat brain. For this purpose, two group of rat involved in this study, one control group and other group exposed to radiation emitted from Wi-Fi equipment. Brain tissue was homogenized with PBS 100mM, pH 7.4 in a tissue homogenizer (Ika-Ultra-Turrax T25, Germany). Total antioxidant capacity of rat brain were measured with the FRAP assay.

Results : Total antioxidant capacity level of rat brain was significantly increased in Wi-Fi exposed rats (560.50 ± 93.25 Vs 409.50 ± 67.85 nmol/g tissue, $P < 0.05$). According to our results, the antioxidative defense system were attenuated in the brain of rat exposed to Wi-Fi radiation.

Conclusion : In conclusion, exposure to Wi-Fi emitted radiofrequency radiation may cause brain oxidative damages. Future studies are warranted to identify the specific intracellular signaling pathways that transduce Wi-Fi-induced changes in the brain of exposed cases.

Keywords : Wi-Fi Equipment, Radiofrequency Radiation, Total Antioxidant Capacity, Brain



Count: 172

Abstract ID: 106

Presentation Type: Oral

Increased rat brain catalase activity after continues exposure to Wi-Fi radiation

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Background and Aim : There is growing concern regarding the potential human health hazard due to exposure to radiofrequency electromagnetic radiation emitted from Wi-Fi equipment. The present experiment was carried out to investigate whether continues exposure of rats to a Wi-Fi equipment could have harmful effects on brain. For this purpose, oxidative damage on brain tissue were studied in rat model.

Methods : Twelve male rats were selected for this study and divided into two groups including control and exposed groups, six in each group. After the completion of exposure period, rats were sacrificed and the whole brain tissue was dissected and used for assay of catalase. Catalase activity was determined according to the method of Abei based on the measurement of residual hydrogen peroxide.

Results : A significant increase was observed in catalase activity in rats exposed to radiofrequency electromagnetic radiation emitted from Wi-Fi equipment compared with control group (32.07 ± 10.35 Vs 60.91 ± 18.55 U/g tissue, $P=0.016$).

Conclusion : Increased catalase activity may be due to increased hydrogen peroxide production in exposed rat, which is an index of oxidative stress. Oxidative stress, due to sensitivity of neuronal cells, implicated in the development or progression of Alzheimer's disease (AD), Parkinson's disease (PD) and other neurodegenerative diseases. We concluded that continuous exposure to electromagnetic radiation from Wi-Fi equipment may cause oxidative stress, which is implicated in pathologies of the neurodegenerative diseases.

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Keywords : Brain, Catalase, Wi-Fi Equipment, Radiofrequency Electromagnetic Radiation



Count: 173

Abstract ID: 739

Presentation Type: Poster

The effect of mesenchymal stem cell Trabecular determination in the motor symptoms in Parkinson,s disease model

Submission Author: Heila Ghasemifard

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Background and Aim : One of the new approaches in the treatment of Parkinson,s disease using stem cells. The effect of these cells in stem cell therapy strategies related to one of the concern of this area. The aim of this study was to investigate the effect of transplantation of stem cells derived from Trabecular meshwork of the eye an animal model of Parkinson,s.

Methods : In this study, used male wistar rats. The animal in to three groups: control, vehicle and treated with Undifferentiated stem cells. To creat a model of Parkinson,s 6- OHDA were injected to medial forebrain bundle. To confirmation of models used apomorphin injection and rotarod test.Two week after model based on the grouping of cells to be injection striatum. Four week after transplantation animals are exmined in term of rotatin and motor coordination.

Results : Number of turns decrease four weeks after Trabecular stem cell transplantation and motor coordination improved significantly.

Conclusion : Drived stem cells of the Trabecular meshwork improves motor disorders in animal models of Parkinson.

Keywords : Parkinson disease; Stem cell; Trabeculae meshwork



Count: 174

Abstract ID: 229

Presentation Type: Poster

Study Effect of Aspirin on the Protein Level of ABCA1 in Astrocyte isolated from C57BL/6 mice.

Submission Author: Hamide Ghasempoor

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Background and Aim : In the central nervous system, the process of removing excess cholesterol from astrocytes and transfer it to the apolipoprotein E is mediate by ABCA1. ABCA1 plays a key role in regulating and maintaining the homeostasis of cholesterol in the brain. Increased levels of this transporter may be useful in neurological disorders associated with accumulation of cholesterol in cells. recent studies imply the effect of aspirin on the transporter ABCA1 in peripheral cells (macrophages), in this study we aimed to determine the effects of the drug on the protein surface of ABCA1 receptor in cultured astrocytes from fetal mouse brain.

Methods : First astrocytes were isolated from fetal brain of C57BL/6 mouse and cultured in DMEM and FBS10%. Seven days after the beginning of primary cell culture, At the 75-80% of confluency, cells were treated with 0.25, 0.5, 1 and 2 mM of aspirin for 12 hours or incubation by 1mM of aspirin at intervals of 0, 6, 12, 24 and 36 hours. Protein level of ABCA1 was evaluated by Western blotting method.

Results : The results showed that ABCA1 protein levels was significantly increased in mouse astrocytes treated with 1 and 2 mmol/l aspirin for 12h incubation times compared to control group($P<0.01$). After incubation of astrocytes with the best concentration of aspirin (1 mmol/l) for different times(0, 6, 12, 24, 36 hours), a significant increase in the level of ABCA1 protein was observed after 6-36 hours of treatment with aspirin ($P<0.01$).

Conclusion : The results of this study showed that low-dose of aspirin can increase ABCA1 protein level that indicating the potential effect of aspirin on increasing the protein level of ABCA1. Aspirin may be increases HDL formation through increasing levels of ABCA1 in astrocytes that is important in the cholesterol homeostasis in neurological disorder.

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Keywords : Astrocytes, cholesterol homeostasis, ABCA1, aspirin, western blotting



Count: 175

Abstract ID: 230

Presentation Type: Poster

The association between APOE polymorphism and Alzheimer disease in Ahvaz population, Iran.

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Background and Aim : apolipoprotein E(apoE) is the main lipid transporter in the brain. Epsilon 4 allele of apoE polymorphism been recognized as risk factor for Alzheimer's disease(AD). in this study we investigated the association between apoE- ϵ 4 and AD in ahvaz population.

Methods : We examined the apoE alleles frequency in 100 AD and 82 controls by using polymerase chain reaction(PCR) and PAGE Electrophoresis. After extracting DNA allele frequencies and genotypes of apoE in 100 Alzheimer's disease and 82 healthy people as a control group was examined by using PAGE electrophoresis method and PCR-RLFP

Results : The ϵ 2/ ϵ 2 genotype frequency of control subjects was insignificantly higher than that of the AD cases. the ϵ 2/ ϵ 3 genotype frequency of controls was insignificantly higher than that of the AD cases (5% in control versus 3% in AD, $P=0.778$) and significant higher ϵ 3/ ϵ 4 genotype frequency was observed in AD cases comparing controls(26% versus 7.5%, $P=0.001$). distribution of ϵ 4/ ϵ 4 genotype significantly differ in the groups(9% versus 1.2%, $P=0.01$). the ApoE- ϵ 2 allele was more frequent in the control group when compared with the AD, the statistical was not significant($P=0.222$). distribution of ϵ 4 allele significantly differ in the groups ($P=0.001$). also ϵ 3/ ϵ 4 and ϵ 4/ ϵ 4 genotypes and ϵ 4 allele frequencies in female were higher than in men.($P<0.05$).

Conclusion : there was significant association between apoE- ϵ 4 allele and AD in a population from Ahvaz, Iran and ApoE4 allele can be considered as a risk factor for Alzheimer's disease

Keywords : Apolipoprotein E, Alzheimer's disease, Ahvaz population



Count: 176

Abstract ID: 120

Presentation Type: Poster

Effect of ethanolic extract of *Rosmarinus officinalis* L. aerial parts on pain and apoptosis induced by chronic constriction injury (CCI) model of neuropathic pain in rats

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Background and Aim : According to traditional medicine, rosemary (*Rosmarinus officinalis*) has been used in many ailments such as dysmenorrhea, rheumatic pain and stomachache. This work was carried out to evaluate putative anti-allodynic and anti-hyperalgesic effects of *R. officinalis* ethanolic extract and some spinal cord molecular changes on a neuropathic pain model in rats.

Methods : Peripheral neuropathy was induced by chronic constriction injury (CCI) of sciatic nerve. Rats were treated daily with ethanolic extract of aerial parts of *R. officinalis* (100, 200, and 400 mg/kg, i.p.), from the day of surgery (day 0) for 14 days. Mechanical allodynia, cold allodynia and heat hyperalgesia were measured on days 0, 3, 5, 7, 10 and 14. Apoptotic factors (bcl-2-like protein (Bax), cleaved caspases 3 and 9, anti-apoptotic mediator, Bcl2) were measured via western blot on days 7 and 14.

Results : CCI rats exhibited a marked mechanical allodynia, cold allodynia, and thermal hyperalgesia on days 3, 5, 7, 10, and 14 post-CCI. All three doses of rosemary ethanolic extract were able to attenuate neuropathic behavioral changes as compared with CCI animals that received vehicle. In the vehicle-treated CCI group, a significant increase in levels of Bax, cleaved caspases 3 and 9 was detected on both days 7 and 14. Rosemary extract, 400 mg/kg significantly decreased the amounts of mentioned apoptotic markers as compared with vehicle-treated CCI animals.

Conclusion : Anti-apoptotic processes might contribute to the anti-allodynic and anti-hyperalgesic effects of rosemary following nerve injury. Our findings support the ethnopharmacological use of rosemary as a potential candidate in treating neuropathic pain and different neurological disorders that associate with the activation of apoptosis pathways.

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Keywords : Rosmarinus officinalis L.; neuropathic pain; chronic constriction injury; apoptosis.



Count: 177

Abstract ID: 153

Presentation Type: Poster

Social stress and Total antioxidant capacity of in vitro cultured mice preantral follicles

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Background and Aim : It has been suggested that there is a link between oxidative stress and various stress conditions, which in turn lead to the overproduction of reactive oxygen species and decrease antioxidant capacity (TAC). We conducted a study to determine whether maternal separation (MS) a social stress state has long-lasting effects on the TAC levels of mice preantral follicles during in vitro culture

Methods : Newborn of NMRI mice were considered in control and MS group. MS group experienced 6 h per day of maternal separation between the second and sixteen postnatal day. Pre-antral follicles derived from ovarian tissues of control and MS groups were cultured individually in α -MEM medium supplemented with 5% FBS, 100 mIU/ml FSH, 1% Insulin-Transferrin-Selenium and 10 ng/ml rEGF. On the twelfth day of culture period, ovulation was induced by adding 1.5 IU/ml human Chorionic Gonadotropin (hCG). TAC levels were measured during culture period by ferric reducing/antioxidant power (FRAP) assay.

Results : It has been suggested that there is a link between oxidative stress and various stress conditions, which in turn lead to the overproduction of reactive oxygen species and decrease antioxidant capacity (TAC). We conducted a study to determine whether maternal separation (MS) a social stress state has long-lasting effects on the TAC levels of mice preantral follicles during in vitro culture

Conclusion : Induction of MS a social stress state coincident with an adverse alteration of TAC levels of in vitro cultured mice preantral follicles.

Keywords : Total antioxidant capacity, Stress, Preantral follicle, Mice



Count: 178

Abstract ID: 107

Presentation Type: Oral

Contusion Model of Spinal Cord Injury by a NSRC Impactor Device

Submission Author: Meysam Ghorbani

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Background and Aim : Spinal cord injury (SCI) is a serious neurological disease in the clinic with sensor and motor dysfunctions and high financial burden for urgent treatments. Animal models of SCI have proved invaluable method which enhances, understanding of cellular and molecular pathways and therapeutic interventions also. According to contusion type of spinal cord injury that accrues commonly in the human and extensive studies in the field of SCI, we designed a novel impactor device which is capable of making SCI model, with different severity of injuries.

Methods : In the present study, 18 adult male rats weighing 250-280 g were used. In experimental group, animals were divided into three groups based on different severities of SCI injuries. In each groups, 3 rats were used (total= 9) that were applied three different force (100, 150 and 200 Kdyn) at T10 level of spinal cord that generated mild, moderate and sever injuries, respectively. After two week, sections of spinal cord tissues prepared for H&E staining for calibration of different forces and the severity of the SCI caused by this device.

Results : The result of force, displacement and time parameters are illustrated in graphs as factors effect on traumatic spinal cord injury, with different severities. based on demonstration in H&E stained sections of injured spinal cord; 100, 150 and 200 Kdyn of forces (kdyn) divided as mild, moderate and sever injuries. The data analyzed by one way ANOVA ($P < 0.05$).

Conclusion : There is high incidence of spinal cord injuries in Iran which caused by accidents. So we need devices for simulating animal models of SCI in our studies. According to High-precision for delivering forces by NSRC of Tabriz (Neuroscience's Research Center of Tabriz University of Medical Sciences)

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impactor on the spinal cord and its economic efficiency, this novel impactor device could be very important and useful in spinal cord injury studies.

Keywords : Spinal cord injury, Contusion model, NSRC (Neuroscience Research Center of Tabriz University of Medical Sciences) Impactor



Count: 179
Abstract ID: 644
Presentation Type: Oral

Valproic acid is an efficient and potent inducer for Human Wharton Jelly stem cells differentiation into neuronal phenotype

Submission Author: Sadegh Ghorbani

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Background and Aim : Neurodegenerative diseases are developed by neurons damage in nervous systems. This matter may occur following acute and chronic neurodegeneration such as stroke, trauma or the loss of a particular neuronal subtype. Such diseases in the brain are known as Alzheimer disease (AD), Huntington disease (HD) and Parkinson disease (PD). Also, in the brainstem and spinal cord, spinal muscular atrophy (SMA) and amyotrophic lateral sclerosis (ALS) are the other types of degeneration. Cell therapy is one of the option for treatment of neurodegenerative and spinal cord disorders. However, this approach has been limited owing to transplant cell death because of the unsuitable microenvironment. Tissue engineering could use stem cells, scaffolds and growth factors to improve the chance of their survival and regeneration. The synergism of stem cell biology and biomaterial technology promises to have an intense impact on stem cell-based clinical applications for tissue regeneration.

Methods : To prepare neurons from human Wharton Jelly stem cells (hWJMSCs), different protocols have been adopted. To investigate their possible neuronal fate, we studied the hWJMSCs differentiation into neural phenotype using Valproic acid (VA) as an inducer on 3D culture where the morphological, immunochemical and gene expression profiles were evaluated. In this study, PLA scaffolds fabricated by wet electrospinning method followed by dissolving 15% (w/v) PLA polymer in chloroform that spun in coagulation bath. Then, hWJMSCs were isolated from human umbilical cords, collected after full-term deliveries with informed consent of the mothers, cultured in DMEM/F12 supplemented with 10 % (v/v) FBS, 100 unit/ml of penicillin and 100mg/ml of streptomycin and incubated in a humidified incubator at 37 °C with 5% CO₂ until the fourth passage. Afterward, the cells were seeded into the scaffolds where they were cultured in DMEM/F12 medium containing 1mM VA for 7, 14, and 21 days.

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Results : Finally, the neuron-like cells were characterized by immunocytochemical techniques using nestin, NSE, and MAP2 as markers, in addition to the expression of nestin, SOX2 and neuro D genes which were detected by RT-PCR technique.

Conclusion : Consequently, we found that hWJMSCs could differentiate into neuron-like cells by induction with valproic acid only. These cells expressed nestin, neuro D after 7 days of induction. SOX-2 gene expressed in all time points until 21 days, then declined, this may due to reprogramming by VA. We showed in this investigation that VA in 1mM concentration can transdifferentiate the hWJMSCs into neuron-like cells by direct induction.

Keywords : Valproic acid, Neurodegenerative diseases, Neuron-like cells, 3D medium

Count: 180

Abstract ID: 280

Presentation Type: Poster

Purification of high quality RNA from rat brain by a cheap method

Submission Author: Azade Ghorbanpor shakakomi

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Background and Aim : Purification of high quality RNA from brain tissue for subsequent quantitative measurements like Real-time PCR is a challenge for researchers in the field of molecular neurobiology, due to high fat in this tissue. Extraction of the pure RNA is estimated from the absorbent spectrum and measuring the 260/280 and 260/230 ratios. Here, we recommend a simple and cheap method for this purpose.

Methods : The previously available method of RNA extraction based on guanidine thiocyanate was utilized using RNX plus solution (Sinaclon, Iran). The hippocampus of 10 juvenile Wistar rats was removed and frozen in liquid nitrogen, immediately. One sample hippocampus was weighted. Then, tissues were pulverized and homogenized in 200 μ l phosphate buffer saline and aliquoted into four distinct tubes. 250 μ l of the RNX plus solution was added to one of these tubes and the RNA was extracted according to the protocol of the kit with some essential modifications. A Nano drop spectrophotometer was used

Results : The weight of the hippocampi was about 60 mg. By using the appropriate amount of the RNX plus solution and washing twice with ethanol, the average of 260/280 was 1.88 ± 0.02 and that of the 260/230 was 1.9 ± 0.02 , which represents extra pure RNA.

Conclusion : The results indicate that it is quite possible to extract high quality RNA from the brain tissue by means of a simple and cheap method. We highly recommend the utilized protocol for researchers in the field of molecular neurobiology.

Keywords : Brain, RNA, Rat



Count: 181

Abstract ID: 611

Presentation Type: Poster

Evaluation of the gene expression of CAM kinase IV in the hippocampus of offspring rats following maternal injection of frankincense

Submission Author: Azade Ghorbanpor shakakomi

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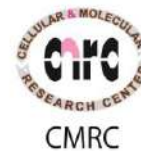
Background and Aim : Frankincense has a putative role on improvement of memory in different experimental models of learning. However, the underlying molecular mechanisms have less been investigated. It has been argued that part of the effects of frankincense might be done by protein kinases. It is known that maternal injection of frankincense during pregnancy or gestation periods leads to improvement of memory in the offspring rats. Here, we have investigated the effect of maternal injection of frankincense during pregnancy and gestation periods on the gene expression of calcium calmodulin protein kinase IV (CAMKIV) in the hippocampus of offspring rats.

Methods : Female rats were received two doses (50 and 100mg/kg; Gavage) of aqueous extract of frankincense during pregnancy and gestation periods. The hippocampi of juvenile rats were removed and frozen in liquid nitrogen, immediately. One sample hippocampus was weighted. Then, tissues were pulverized and homogenized in 200µl phosphate buffer saline and aliquoted into four distinct tubes. 250µl of the RNX plus solution was added to one of these tubes and the RNA was extracted according to the protocol of the kit. A Nano drop spectrophotometer was used to measure the RNA concentration. A real-time quantitative PCR was used to measure mRNA expression levels.

Results : One-way ANOVA did not show any significant changes in the expression of hippocampal CAMKIV mRNA levels.

Conclusion : The results indicate that the beneficial effects of frankincense on memory performance in the offspring rats might not be mediated via changes in the expression of hippocampal CAMKIV.

Keywords : Frankincense; Hippocampus; Calcium calmodulin protein kinase IV



Count: 182

Abstract ID: 26

Presentation Type: Poster

Hydro-alcoholic saffron extract consumption increases Brain-Derived-Neurotrophic factor (BDNF) plasma concentration

Submission Author: Hassan Ghoshooni

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Background and Aim : It is clear that Brain- Derived-Neurotrophic Factor (BDNF) is involved in several brain function including neuroregeneration, learning and memory. In addition, BDNF plasma concentration decreased during depression and saffron administration increases BDNF plasma concentration in these patients. In the present study, effect of saffron hydro-alcoholic extract on plasma BDNF concentration in healthy subjects was investigated.

Methods : Twenty five healthy male subjects (21-25 Year, 68.4±2.1 kg W, 173.5±3.7 cm Height) were divided into the control (n=12) and experimental (n=13) groups. Subjects were filled the Beck Depression Inventory II and Spielberger State-Trait Anxiety Inventory forms for depression and anxiety respectively and then blood samples were collected from them for further BDNF, IL-6, TNF α , and CRP evaluations. The control group received a capsule containing 200 mg starch/daily for 90 consecutive days. The experimental group received a capsule containing 200 mg saffron hydro-alcoholic extract/daily for 90 consecutive days. After experiment completion, the subjects were complete the forms again, and their blood sample were collected for above mentioned parameters evaluation.

Results : Beck and Spielberger tests numbers revealed that the depression and anxiety were reduced in experimental group. Plasma BDNF level was increased in the experimental group. In addition, plasma TNF α , IL-6 and CRP levels were decreased in this group. Results from the ... forms also revealed that depression and anxiety were lower in the experimental group.

Conclusion : This research showed that saffron can improved the brain function possibly via induction of BDNF production and also reduction of inflammation.

Keywords : Anxiety; BDNF; Depression; Saffron



Count: 183

Abstract ID: 371

Presentation Type: Poster

A2A Adenosine Receptors mediate the mitochondrial pathway of Apoptotic Hippocampal Cell Death Following MDMA Administration in Rat.

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Background and Aim : 3,4-methylenedioxymethamphetamine (MDMA, ecstasy) is a popular recreational drug and a major source of substance abuse, which ultimately leads to sensations of well-being, elation and euphoria, moderate derealization/depersonalization, and cognitive disruptions, as well as intense sensory awareness. The neuropharmacological mechanisms involved in MDMA-induced memory impairment are not clear.

Methods : In this study, 40 Sprague-Dawley rats, weighting between 200- 250g were used. Experiments were performed in four groups, each containing 10 rats. The first group of rats was used as control treated with DMSO. The second group treated with MDMA. The third group treated with MDMA and CGS (the adenosine A2a receptor agonist, 2-[p-(2- carboxyethyl) phenethylamino]-5'-N-ethylcarboxamidoadenosine) (CGS 21680) and the fourth group treated with MDMA and SCH (the A2a receptor antagonist [7-(2-phenylethyl)-5-amino-2-(2-furyl-)pyrazolo-[4,3-e]-1,2,4 triazolo [1,5-] pyrimidine]) (SCH58261). The Drugs in all groups were administrated via interaperitoneal injection (ip), daily for 7 days. In 5 rats of each group, following perfusion, samples were taken from hippocampi to investigate apoptosis. Accordingly, the samples were stained using the TUNEL kit, and studied by light microscopy. In other rats, fresh tissue was also removed to study the expression of Bax and Bcl-2 proteins by western blotting.

Results : We observed that the co-administration of MDMA with CGS reduced BAX protein expression and prevented apoptosis of hippocampal cells. The co-administration of MDMA and SCH increased Bax protein expression and also increased the frequency of hippocampal cell apoptosis.

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Conclusion : The present study showed that administration of CGS with MDMA decreased the usual side effects often associated with MDMA usage.

Keywords : Ecstasy or MDMA, Neurotoxicity, Adenosine Receptor



Count: 184

Abstract ID: 32

Presentation Type: Poster

ATG101 doesn't express in the rat model of Parkinson disease: a possible mechanism of a defective autophagy initiation

Submission Author: Zohreh Golmohammadi

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Background and Aim : Parkinson disease is the most common movement associated neurodegenerative disease characterized by protein aggregations in the cytoplasm of the dopaminergic neurons. Oxidative stress and mitochondrial dysfunction have a critical role in the dopaminergic neuronal death. Autophagy is a conservative mechanism in response to these cellular stresses. Dysregulation of autophagy results in protein aggregations and damage of organelles in neurodegenerative diseases. However, nothing is known about the autophagy related gene expression in this disease. This study tried to answer this question.

Methods : Male Wistar rats were divided into three groups as follows: control, sham (injection of ascorbate-saline solution into the left striatum) and lesion (injection of 6-hydroxy dopamine, dissolved in ascorbate-saline solution into the left striatum) groups. The apomorphine-induced rotation test was done one week before (base line) and four weeks after surgery. Then, rat substantia nigra pars compacta was extracted and RT-PCR was performed to detect expression of FOXO3A and the ATG genes of VPS34, ATG101, ATG14L, ATG13 and LC3.

Results : An assessment of the apomorphine-induced rotation test indicated significant contralateral rotations in the lesion group after four weeks compared to one week before surgery. Using RT-PCR, as a main consequence, in the induction group, ATG101 gene didn't express and ATG13, ATG14L and VPS34 was downregulated in comparison with control groups. ATG101 expression is necessary for the formation of initiation steps of autophagy.

Conclusion : Thus, These results show that autophagy deregulation occurs in the initiation stages of the process in the rat model of Parkinson disease.

Keywords : Parkinson, Autophagy, ATG101, Oxidative stress



Count: 185

Abstract ID: 170

Presentation Type: Oral

Effects of Neurofeedback on Reducing Depression Symptoms and Attention and Concentration Problems on Adults with Depression.

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Background and Aim : The aim of this study was to identify the effects of neurofeedback on depression symptoms and attention and concentration problems on adults with depression.

Methods : The research method was quasi-experimental design with pre-test and post-test. The population consisted of 28 adults with symptoms of depression and attention and concentration problems. Subjects were referred by clinical psychologists to the Exir psychological clinic in Tehran, I.R. Iran. Sampling method was available samples. Instruments for diagnosing were Beck Depression Inventory (BDI) and Integrated Visual and Auditory Performance Test (IVA). These people received neurofeedback for 30 one-hour sessions, 3 times a week. To describe and analyzing the data, T tests and Variance analysis were performed by using SPSS (19).

Results : The results show that the neurofeedback has significant decrease in depression symptoms and attention and concentration problems on subjects.

Conclusion : Neurofeedback interfere by decreasing Alpha Waves amplitud in F3 and reinforcing Beta ones in Fcz. In result Neurofeedback decrease both depression symptoms and attention and concentration problems.

Keywords : Attention; Concentration; Depression; Neurofeedback.



Count: 186

Abstract ID: 208

Presentation Type: Poster

Efficient Transdifferentiation of Rat Bone Marrow Stromal Stem Cells into Neuron-Like Cells using Schwann Extracted Medium as Inducer

Submission Author: Ghazaleh Goudarzi

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Background and Aim : Schwann cell (SC) is a special neuroglia cell in peripheral nervous system that ensheathes axons. The SC cells have a strong ability to induce nerve regeneration due to the release of variety of neurotrophic factors. Bone marrow stromal cell (BMSC) is a multipotent stem cell that can differentiate into several types of mesodermal tissues. Moreover, BMSCs may also transdifferentiate into neural-like phenotype cells under appropriate growth factors

Methods : Rat BMSCs were cultured and characterized for expression of MSCs-specific markers CD105 and CD90 using flow cytometry. The Schwann cells from adult rat Sciatic nerve were isolated by enzymatic and mechanical digestion and cultured. Then the conditioned medium of SC cells were collected every 3 d. The BMSCs were sequentially treated with Schwann extracted medium up to 12 days. Morphology changes were detected using inverted microscopy during differentiation procedure. Neural-specific markers including (Nestin and MAP-2) were detected by Immunocytochemistry. Axonal outgrowth was measured in inverted microscopic images using the image J software. In addition, Nissl bodies were stained in differentiated cells by Cresyl violet. The expression of neural genes (Nestin and β -III tubulin) were examined in comparison to control group by PCR assay. The data were analyzed with t student test.

Results : The results of flow cytometry showed that BMSCs were positive for mesenchymal specific markers CD105 and CD90. The morphology of differentiated cells in treated group was significantly changes after 3-5 days. Immunocytochemistry analysis showed that neural-specific markers Nestin and MAP-2 were expressed only in treated group. The axon length in differentiated cells was increased by 42% in compared with control culture. Nissl bodies were detected as dark-blue particles in the cytoplasm of

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treated cells with Schwann extracted medium. We could not find any similar structure in control group. The PCR analysis showed expression of Nestin And β -III tubulin in treated group.

Conclusion : The findings suggest that Schwann extracted medium could provide a neurotrophic factors for differentiation neuron-like cells from BMSCs in vitro in a similar manner to in vivo.

Keywords : BMSCs, Schwann Medium, Neuron-Like Cells, Transdifferentiation



Count: 187

Abstract ID: 574

Presentation Type: Poster

Attentional signal maintain information for perceptual decision making during temporal gaps

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Background and Aim : Many decisions involve integration of evidence separated by temporal gaps over time. The brain seems to be able to gather the fragments of evidences and keep the integrated evidences during gaps to obtain an optimum decision (Kiani et al., 2013). Dynamic systems are basics of several decision-making models to simulate the integration of evidence which observed in neural recording studies. In these models, the state of the model evolves toward stable points which are corresponded to the decision outcome (Brown and Holmes, 2001; Usher and McClelland, 2001; Wang, 2002; Wong and Wang, 2006; Albantakis and Deco, 2011; Miller and Katz, 2013). Although these models can predict important properties of decision making process in the neural and behavioral levels, they cannot maintain the integrated evidences during temporal gaps as human behavior (Kiani et al., 2013). A hierarchical recurrent cortical network model was used that suggested by Wimmer et al., which is composed of a sensory and an integration circuits. The output of the model can successfully behave as Lateral Intraparietal Cortex (LIP) neurons in a delayed visual motion discrimination experiment (Shadlen and Newsome, 2001). Adding an attention signal to this model during gap, we decreased the negative impact of temporal gap in total behavioral performance of the model and make the behavior of the model more similar to the human behavior.

Methods : Biological evidences show that Prefrontal cortex (PFC) is an important candidate which seems to modulate attention-related responses in V4 which in absence of PFC, affects attentional guidance (Gregoriou et al., 2014). Due to this fact, we simulate the task which has been presented in (Kiani et al., 2013) by using the computational model suggested in (Wimmer et al., 2015) as a basic model. In this model, during stimulus presentation, synaptic weights between neurons is being reinforced with synaptic facilitation underlying system dynamics. The back projections from higher to lower levels of cortical area was simulated in order to control the state of the model during temporal gap. It can be expected that these projections may play the attention signals roll when subjects need to refer to their working memory.

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Results : The results show that simulating attentional signals can maintain the state of the model during gap. This modification avoids losing information in temporal gap and consequently performance will be independent from different gaps as observed in previous study (Kiani et al.,2013).

Conclusion : PFC modulates processing in the visual cortex using attention (Gregoriou et al.,2014). Here our results raise the hypothesis that attentional mechanism cause subjects to keep their collected information during different gaps in absence of any source of information and makes the performance to be invariance to the temporal gaps.

Keywords : Decision making;Attention; computational modeling



Count: 188

Abstract ID: 477

Presentation Type: Poster

Task matters: effect of two different concurrent cognitive tasks on gait parameters in aging

Submission Author: Fahimeh Habibifar

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Background and Aim : Changes in older adults' gait parameters induced by concomitant performance of cognitive tasks are well reported. However, how different cognitive tasks activating different working memory subsystems influence gait in aging is still unknown. Therefore, this study was designed to investigate the effect of two types of cognitive tasks on spatio-temporal parameters of gait in older adults.

Methods : 12 older adults (67.5±2.19 years old) without any medical or neuro-psychological conditions took part in 3 walking conditions recorded by a Motion Analysis system: (I) single walking(single task), (II)walking while performing a visuospatial cognitive task (dual task) and (III) walking while performing a verbal cognitive task (dual task). The visuospatial task was designed based on Brook's spatial memory task and displayed on a monitor installed in front of the participants' walking path. The verbal task involved different arithmetic calculations and was presented to the participants through pre-recorded instructions. The participants performed 12 trials in each condition from which 6 trials were selected for further analysis. In dual task condition, 6 trials in which the participants completed cognitive task correctly were selected, while in the single task condition, these 6 trials were selected randomly. Repeated measure ANOVA was used in order to analyze the gait parameters.

Results : The findings indicated a significant difference between 3 testing conditions in gait speed ($F(2,142)=64.54, P<0.05$), step length($F(2,142)=45.82, p<0.05$) and step width($F(2,142)=16.36, p<0.05$). concurrent performance of visuospatial cognitive task with gait led to statistically significant shorter step length, wider step width and slower gait.

Conclusion : The findings revealed that visuospatial cognitive task interfered with older adults' gait more severely than the verbal task, hence these findings supports the visuospatial sketchpad of working memory involvement during gait.

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Keywords : Working memory, gait, aging, Visuospatial task, verbal task



Count: 189

Abstract ID: 223

Presentation Type: Poster

Evaluation of decellularized human umbilical vein for peripheral nerve regeneration

Submission Author: Parisa Hadavi

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Background and Aim : Peripheral nerve repair using autograft has several shortcomings, so the scientist focused on nerve guidance channels to prove regeneration. It's desirable that fibers inserted in a tube as a nerve guidance channel for nerve regeneration are absorbed after nerve bridging. We tested the human umbilical vein (DHUV) as a nerve guidance channel of regenerating nerve tissue. Furthermore, we compared the results after grafting by autograft repairing.

Methods : Eighteen adult male Sprague- Dawely rats were randomized into 3 groups. The sciatic nerve was exposed and 10 mm of that was removed, Then the gaps was repaired by the following methods: 1) sham surgery, 2) autograft, 3) human umbilical vein + saline. Nerve regeneration was examined on days 28 and 90 after repair the by sciatic functional index (SFI), electrophysiological assessments, Histology and immunohistology staining.

Results : After 90 days of regeneration, the mean of SFI in autograft and DHUV + normal saline was non-significant ($p > 0/05$). On day 90, the mean nerve conduction velocity of human umbilical vein was greater than autograft and the difference was statistically significant ($p < 0/05$). The mean amplitude (Amp) on day 90, between the groups was non-significant ($p > 0/05$).

Conclusion : The result of this study indicated that the positive effects of using the DHUV as a guidance channel in nerve regeneration.

Keywords : Nerve Regeneration; Sciatic nerve; Human umbilical vein; Nerve guidance channel; Rats.



Count: 190

Abstract ID: 211

Presentation Type: Poster

Crocine improve spatial memory in A β induced neurotoxicity in male Wistar rat

Submission Author: Mohammadmehdi Hadipour

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Background and Aim : It was proposed that water-soluble carotenoid of saffron, crocin, involved in learning and memory. In this study, we aimed to investigate the effect of crocin on spatial memory deficits in bilateral intra-frontal cortex A β (1–42) peptide injection in rats.

Methods : Male adult Wistar rats (220-250g) were used in this study. For animal surgery, rats were anesthetized intra-peritoneally (IP) with a mixture of ketamine (80 mg/kg) and xylazine (20 mg/kg). A β (1-42) at a concentration of 10 ng/ μ l bilateral injected into the frontal cortex using a stereotaxic apparatus (Bregma coordinates: 3.2 mm anteroposterior, 2 mm mediolateral, and 3 mm depth). Sham-vehicle rats underwent the same surgical procedure, except that normal saline (as a vehicle of A β peptide) was bilaterally injected. Another group received crocin IP at a dose of 30 mg/kg for seven consecutive days. Experiments were done after seven days A β peptide injection. Latency time, number of errors and strategy to find the target zone in Barnes maze task was used as an index of learning and memory.

Results : Compare to the control and sham groups, A β significantly increased latency time and number of errors to reach the target zone. IP administration of crocin (30mg/kg- daily) improved latency time in A β injected group and reduced the number of errors. But, after seven days crocin administration in A β induced neurotoxicity results did not show any significant changes on target zone finding strategy than the control group.

Conclusion : The results of the present study provide and extend the possible neuroprotective effect of crocin against learning and memory deficit in neurodegenerative disease such as Alzheimer's disease.

Keywords : Alzheimer disease, Crocin, Amyloid beta, Barnes maze



Count: 191

Abstract ID: 328

Presentation Type: Poster

Effects of crocin on memory deficit induced by amyloid beta in male Wistar rats

Submission Author: Mohammadmehdi Hadipour

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Background and Aim : The aim of this study was to investigate the neuroprotective effect of crocin, the active constituents of *Crocus sativus* L., on emotional memory deficit induced by injection of Amyloid Beta (A β) (1–42) peptide in the bilateral frontal cortex in rats, in the step-through passive avoidance test.

Methods : Male adult Wistar rats (220–250g) were divided into, 1 control; 2 sham; 3 crocin (30 mg/kg); 4 A β and 5 A β +crocin (30 mg/kg) groups. In A β group rats were anesthetized with intra-peritoneal (IP) injection of a mixture of Ketamine (60 mg/kg) and xylazine (8 mg/kg). 2 μ l of A β (1–42) (10 ng/ μ l) injected into the frontal cortex bilaterally using stereotaxic apparatus (AP: 3.2; ML: 4 and DV: 3.6 mm), sham group in surgical procedure received saline as vehicle of A β peptide. Groups 3 and 5 received crocin IP 30 mg/kg seven consecutive days. Learning and memory performance was assessed using shuttle box apparatus. Entrance latency to a dark chamber in days 1, 4 and 7 after a training phase was used as a learning and memory index.

Results : The entrance latency in A β group (106.50 \pm 35 s) was significantly shorter than control and sham (300 s), however, administration of crocin prevents memory deficit in A β group and latency time significantly increased. In day 4 the entrance latency time of A β +crocin group (267.50 \pm 61s) markedly longer than A β group (131.92 \pm 79 s). On day 7 crocin+A β group reduced memory deficit (218.25 \pm 54) than A β -treated alone (40.58 \pm 36).

Conclusion : These results demonstrate that crocin (30 mg/kg) can antagonize the memory deficits caused by A β (1–42) peptide in rats. Thus, this study provides the behavioral basis for the possible neuroprotective effect of crocin in neurodegenerative diseases such as Alzheimer's disease.

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Keywords : Alzheimer disease, Crocin, Amyloid beta, passive avoidance test



Count: 192

Abstract ID: 102

Presentation Type: Oral

Hydrogen sulfide protects slightly dopaminergic neurons of substantia nigra against intracerebral injection of 6-hydroxydopamine

Submission Author: Hashem Haghdoost Yazdi

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Background and Aim : Parkinson's disease (PD) is a chronic, progressive neurodegenerative disorder with increased prevalence in the aging population. The primary pathological cause of PD is the progressive neurodegeneration of dopaminergic (DA) neurons within the substantia nigra pars compacta (SNc) of the midbrain. In spite of prominent advances, all current treatments are symptomatic and unable to halt or retard dopaminergic neuron degeneration. Therefore, current studies are being directed toward identification of new strategies for prevention of DA neurons degeneration. Hydrogen sulfide (H₂S) is the third most common endogenously produced gaseous signaling molecule alongside nitric oxide and carbon monoxide. H₂S plays important roles in regulating brain function and disturbed H₂S synthesis is involved in Down's syndrome, stroke and possibly Alzheimer's disease. However, little is known about its role in the initiation and progression of PD. The purpose of the current study was to assess the antiparkinsonism and neuroprotective effect of H₂S in the 6-hydroxydopamine (6-OHDA) animal model of PD.

Methods : 6-OHDA was administrated by stereotaxic surgery into medial forebrain bundle of the right hemisphere. Two groups of rats were subjected to daily intraperitoneal injection of H₂S at doses of 3 and 5.6 mg/kg for 7 days starting a few hours before the surgery. Apomorphine (APO) -induced rotational test and elevated body swing tests were carried out at the third and fifth weeks post- surgery and Rotarod test was carried out at sixth week. Then, six rats in each group were perfused and immunohistfluorescence staining was carried out on the midbrain sections. The brain of eight rats was freshly removed and homogenates were prepared from striatum of both hemispheres. After that, dopamine concentration in the homogenates was measured using immunosorbent assay kit.

Results : H₂S attenuated APO-induced rotational activity in the first postsurgery test but had no effect on this activity in the second postsurgery test. H₂S also did not change toxin related dysfunctions in EBST and

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rotarod test. Our histological data demonstrates that H₂S at high dose (5.6 mg/kg) slightly decreased toxin related loss of DA neurons in SNc. This dose also reduced the decreasing effect of 6-OHDA – on striatal dopamine level.

Conclusion : Our findings demonstrate that 7 days treatment with H₂S at dose of 5.6 mg/kg produces slight but significant neuroprotective effect in the SNc dopaminergic cells against 6-OHDA. Since several other experiments have confirmed neuroprotective effect of H₂S, clinical evaluations for assessment of H₂S as potential therapeutic target for treatment of PD in human being is encouraging.

Keywords : 6-hydroxydopamine, Hydrogen sulfide, Apomorphine -induced rotational test, immunohistfluorescence staining, striatal dopamine level



Count: 193

Abstract ID: 664

Presentation Type: Poster

Treating the Obstructive Sleep Apnea and Delaying the Onset of Neurodegenerative Disorders; the Advent of Oral Appliances

Submission Author: Sara Haghighat

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Background and Aim : Obstructive Sleep Apnea Syndrome (OSAS) is amongst the most prevalent Sleep-related breathing disorders which involves nearly 5% of the adult population and in some instances up to 60-70% of the elderly. OSAS is characterized by frequent O₂ desaturation events and subsequent brain arousals during sleep. Recent evidence have documented that such a hypoxia challenge in OSAS could increase the risk of dementias and Alzheimer's disease (AD) in particular. Treating OSAS may then play a defining role in patients' health and quality of life. The use of Continuous Positive Airway Pressure (CPAP) and Mandibular Advancement Devices (MADs) -also known as Oral Appliances (OA) - are the two commonly used approaches in treating OSAS. While CPAP is shown to be quite effective, it subjects to lack of compliance. On the other hand the general adherence to oral appliance is greater perhaps due to lower noise, less cost and more convenience. This study aimed to review the evidence on the effectiveness of OA treatment in improving cognitive impairments in OSAS patients, with a special focus on neurodegenerative diseases namely AD

Methods : We reviewed the literature indexed in PubMed from 1996-2016 about the OA and its effectiveness on cognitive disorders linked to the severity of OSAS.

Results : All the retrieved reports indicated an improvement in one to several aspects of cognition in OSAS sufferers following the treatment with OA. The significance of improvement, however, was controversial probably due to disparities in participants and evaluation methods. Among different cognitive domains, vigilance and attention were the most significantly improved functions. The age of onset for cognitive decline was also delayed following the proper treatment of OSAS using OA.

Conclusion : It appears that the use of OA for OSAS treatment has improved some key cognitive domains especially vigilance and attention. Further research is deemed necessary to clarify the efficiency of this

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treatment on other domains of cognition impaired in OSAS sufferers and whether OA and CPAP may equally improve cognitive impairments in head-to-head comparisons.

Keywords : Obstructive Sleep Apnea Syndrome, Oral Appliances, Cognition, Neurodegenerative Disorders



Count: 194
Abstract ID: 442
Presentation Type: Oral

Genetic risk factors of idiopathic nightmare disorder revealed in a genome wide association study

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Background and Aim : Nightmare disorder, or dream anxiety disorder, is a sleep disorder characterized by frequent nightmares. The nightmares, which mostly portray the individuals in a stressful situation that jeopardizes their life or personality, usually occur during the REM stages of sleep. Scream and awakens during the nightmare and increased heart rate and symptoms of anxiety, like sweating are common symptoms of nightmare disorder. This disorder could be idiopathic or as part of a posttraumatic stress reaction or disorder which may result from experiencing a traumatic event. Amphetamines, antidepressants, and stimulants like cocaine and caffeine and also blood pressure medications could cause nightmares. Molecular mechanisms and genetic risk factors involved in nightmare disorder are not clear. Present study aimed to evaluate genetic risk factors of nightmare disorder based on a familial study.

Methods : Whole genome assessment of single nucleotide polymorphisms with array comparative genomic hybridization could help to obtain comprehensive data in multi-factorial disorders. First 6 families with at least 3 members with idiopathic nightmare disorder recruited from North West of Iran. Blood samples collected from affected members of families (34 persons) and 34 non-psychiatric controls and DNA was extracted. Subjects had no psychiatric or somatic disease. Genotyping for the subjects was performed using the Affymetrix Genome-Wide Human SNP Array 6.0 (Affymetrix, Santa Clara, CA) according to the manufacturer's protocol. Frequency of SNPs with strongest association assessed in 230 idiopathic nightmare disorder patients and 400 non-psychiatric controls by using DNA extracted from blood samples and RFLP technique. Then mRNA level of genes with most significantly related SNPs examined in all subjects 264 patients and 434 non-psychiatric controls by using quantitative Real time PCR. Electroencephalography-event related potential tests (MMN, P300 visual and auditory) assessed for executive functions and cognition in all subjects.

Results : After Bonferroni correction 38 SNPs with genome-wide significance detected in nightmare disorder patients which were involved in dopaminergic pathway, neural plasticity and migration and NMDA receptors. Gene expression studies showed down regulation of 9 genes (COMT, NRX1, FOXP1,

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DISC1, ZNF804A, ERBB2, BDNF, IL2 and SP1) from 22 genes with significant SNPs. Significant correlation between MMN latency and down regulation of ZNF804A detected.

Conclusion : This is the first genetic analysis on idiopathic nightmare disorder. Previously several possible reasons for nightmare disorder had been suggested; including heart diseases and channelopathies. Present study clearly supports the role of genetic risk factors that alter expression pattern of genes which are involved in CNS development and neural activity including NMDA receptors, neurotrophic factors dopamine degradation enzymes and transcription factors. These 9 genes are potential candidate genes in further studies on molecular mechanisms of sleep disorders including idiopathic nightmare disorder.

Keywords : idiopathic nightmare disorder ; genetic; SNP ; Real time PCR



Count: 195

Abstract ID: 252

Presentation Type: Poster

The effectiveness of cognitive hypnotherapy on children's emotional intelligence operates 12.6 years

Submission Author: Sadegh Haghighi

Sadegh Haghighi¹, Majid Panahi²

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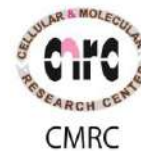
Background and Aim : One of the major concerns of human life from the past to the present human species such as how it can enhance his life. Emotional intelligence seems to be associated with learning problems is important in children's lives And they can take advantage of emotional intelligence to better protect themselves from risks. This study aimed to increase the effectiveness of cognitive hypnotherapy on children's emotional intelligence was 12-6 city of Yasooj.

Methods : This semi-experimental study on 28 girls and Boy two experimental and control groups, respectively, in each treatment group and 14 random sampling was done. Questionnaires included the emotional intelligence. Results SPSS21 and software using analysis of variance were used.

Results : Results in a significant level of $P < 0/05$ were examined. The performance of cognitive hypnotherapy, emotional intelligence 12-6 year old children there is a significant difference. Emotional intelligence function could improve children's cognitive hypnotherapy.

Conclusion : Cognitive hypnotherapy could have on children's emotional intelligence to improve performance. And it can be used in a performance boost emotional intelligence in children.

Keywords : cognitive Hypnotherapy , emotional intelligence, children



Count: 196

Abstract ID: 254

Presentation Type: Poster

The effectiveness of cognitive hypnotherapy on children's emotional intelligence operates 12.6 years

Submission Author: Sadegh Haghighi

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Background and Aim : One of the major concerns of human life from the past to the present human species such as how it can enhance his life. Emotional intelligence seems to be associated with learning problems is important in children's lives And they can take advantage of emotional intelligence to better protect themselves from risks. This study aimed to increase the effectiveness of cognitive hypnotherapy on children's emotional intelligence was 12-6 city of Yasooj.

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Keywords : cognitive Hypnotherapy , emotional intelligence, children



Count: 197

Abstract ID: 221

Presentation Type: Poster

The comparative study of narrative skill in language sampling of sentence structure in of children with cochlear implant, mental retardation and normal children 4 to 5 years

Submission Author: Sajad Haghshenas

Sajad Haghshenas¹, Sakineh Rahimimehr²

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Background and Aim : Narration is as a way that can be measured speech and language skills, and as a way was considered to study the language in a natural position. The ability of storytelling in the children with delay predicts of reading comprehension and syntax competence of these children. This study was performed with the aim of check storytelling as a way of sampling language of sentence structure

Methods : This cross sectional descriptive analytic research was conducted on 26 typically normal children and 30 children with delayed speech and language development (15 cochlear implants child and 15 children of Intellectual Disability) in a convenient sampling method. The descriptive data of speech are provided by method of describing a picture

Results : Among the three groups of children, there was a significant difference in the average compound and passive sentences ($p < 0/05$). But among all three groups were not significantly different in negative sentences and questions. There was a significant difference in the variation of total number of sentences only between normal and mental disability children ($p = 0/037$). While and there was no significant difference in this variation in normal and Cochlear implant children ($0/222$).

Conclusion : The results of our study show that there were significant difference only variations of complex and passive sentences in even three children groups that corresponded with the data of previous studies about these sentences in the different ages. Then both intelligence and hearing and factors affect on the variations of complex and passive sentences

Keywords : Narration, Cochlear Implants, Intellectual Disability and compound sentences



Count: 198

Abstract ID: 590

Presentation Type: Poster

Association between Mother Education and logical memory in patients with schizophrenia

Submission Author: Maryam Haghshomar

Maryam Haghshomar¹, Fatemeh Rashidi Molkesari², meisam ebrahimi³, mohammad amin khadem bashiri⁴, mohammad mehdi khadem bashiri⁵, hamidreza ostadrahimi⁶, mohammad eslami⁷, bahar pourmennati⁸

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Background and Aim : Childhood training and socioeconomic status (SES) are perceived to have enduring effects on adult mental health and associated cognitive performance, such as memory. Here we assessed the association between mother education, as an index of SES evaluation, and logical memory in patients suffering from schizophrenia; a chronic mental disorder.

Methods : Data for this analysis came from Mind Clinical Imaging Consortium (MCIC) data base. After excluding missing data and outliers, we performed Pearson correlation, using IBM SPSS statistics 22, between level mother education and subjects score obtained from Thematic Test (a test utilized by MCIC to determine logical memory level). Univariate analysis of covariance was then carried out on logical memories using Thematic Test as dependent variable. Independent variable included Mother Education. We also included age and sex as covariates to decline the possible impact of demographic variables.

Results : Logical memory was correlated to mother education ($r=0.196$, $P=0.018$, $f=1.974$). Univariate analysis of covariance exposed no major effect on age ($F=0.112$, $P=0.739$) and sex ($F=0.809$, $P=0.371$). Significance level was considered 0.05.

Conclusion : We illustrated that higher level of mother education leads to better logical memory in patients with schizophrenia. This may be due to the fact that children learn in response to their environment which

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is profoundly affected by literacy of their mother. This means that by evolving the level of education in mothers, we can reduce finance load of numerous mental diseases including schizophrenia. However our statistical population was limited and more studies should be performed to confirm and extend our findings. A possible approach could be neural imaging of patients with schizophrenia.

Keywords : schizophrenia;mother education;logical memory



Count: 199

Abstract ID: 387

Presentation Type: Poster

The comparison of OECs Transplantation Effect on Functional Recovery and Axonal Regeneration in Acute and Delay Phase of Spinal Cord Injury

Submission Author: Somaye Haidarizadi

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4. Department of Social Medicine, Faculty of Medicine, Ilam University of Medical Sciences, Ilam , Iran.
5. Department of Anatomy, Faculty of Medicine, Ilam University of Medical Sciences, Ilam , Iran
6. Department of Anatomy, Faculty of Medicine, Ilam University of Medical Sciences, Ilam , Iran

Background and Aim : Spinal cord injury (SCI) is a serious clinical problem that often leads to spinal cord damage, dysfunction and disability. Among the cells used in the spinal cord injury treatment, Olfactory Ensheathing Cells (OECs) are all taken into consideration. Following by transplanting OECs to spinal cord injured site, promoting axonal regrowth, remyelination, increased angiogenesis, migration through glial scar, and acceleration of the regrowing axons was observed. Therefore, In the present study, the OECs were used and their impact was investigated on functional recovery and axonal regeneration in contusion model of SCI in acute and chronic phase.

Methods : In this study, 30 adult male rats randomly divided into six groups: Sham, Control, vehicle, and three Treatment groups A(immediately cell transplantation), B (transplanting 3 days post lesion) and C(transplanting 7 days post injury).In the Sham Group, only laminectomy was performed and in other groups, after laminectomy, spinal cord contusion model was induced using the Weight drop technique. For culturing cells, the olfactory mucosa of 7-day-old male wistar rats were used. Immunocytochemistry for p75 marker of OECs was performed. Immediately, 3 and 7 days after the injury, 10µl medium alone or with 106 cells were injected to vehicle and Treatment Groups respectively. Motor function in all groups, was evaluated for eight weeks by BBB test. At the end, tissue samples of animals were prepared and stained by luxol fast blue and bielschowsky.

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Results : Immunocytochemistry confirmed 89% of cultured cells were OECs. The motor test comparing of all treatment groups with the control group, was significant from the end of the first week to the end of study specially in treatment group A ($P=0.05$). Luxol fast blue and Bielschowsky staining in histological studies confirming the formation of myelin and axon sprouting in groups recipient cell transplantation specially in immediate cell transplantation group, while in control group the hollow cavity confirming the location of lesion.

Conclusion : The results indicated OECs transplantation in the acute (immediate) phase of SCI is more effective than delay phase. The histological results showed that the gold time for cell transplantation is immediately post injection as well.

Keywords : Spinal Cord Injury, Contusion, Acute and Chronic Phase, Olfactory Ensheathing Cell



Count: 200

Abstract ID: 90

Presentation Type: Poster

effects of exercise on behavior and anxiety via the serotonin pathway

Submission Author: Arsh Haj Mohammad Ebrahim Ketabforoush

Arsh Haj Mohammad Ebrahim Ketabforoush¹, Nami Mohammadian khounsari²

1. Research Committee of Alborz university of medical science
2. Research Committee of Alborz university of medical science

Background and Aim : the relations of exercise and serotonin in numerous studies has been observed and the role of serotonin in mood behavior and anxiety has been proven thus exercise can affect our mood and behavior via the serotonin pathway

Methods : The generation of Tph2 $-/-$ mice has been described in many studies These are mice that can not produce neural serotonin due to lack of an enzyme called tryptophan hydroxylase2 Tph2 $-/-$ mice are used in the study although mood , behavior and anxiety can not be easily determined but there are standards that can be very helpful to determine these feelings . Tph2 $-/-$ mice are established on a C57BL/6N background (F10 generation backcross; Charles River) . Young-adult [6 weeks of age, postnatal day (P)42], adult (3 months of age, P80), and 1-year-old female Tph2 $+/+$ mice, their Tph2 $+/+$ littermates, or C57BL/6N mice (as control for P42) to investigate the role of exercise induced serotonin on mood and behavior. as approved by institutional guidelines and relevant authority [Landesamt für Gesundheit und Soziales (LaGeSo), Berlin, Germany]. Sixty animals are divided into two groups for “baseline” conditions (standard cage 3-6 mice per cage), and “RUN” conditions (single housed in a standard cage plus running wheel), and are held for 6 d with a 12 h light/dark cycle and ad libitum access to food and water. Mice in RUN conditions had unlimited access to the running wheel for 6 d , and running distance was monitored.

Results : exercise reduced anxiety like behavior and depressive like behavior in mice that were TPH $+/+$ although anxiety and depressive behavior was reduced in TPH $-/-$ it was not as significant as TPH $+/+$

Conclusion : exercise can reduce depressive like behavior and anxiety . although other neurotransmitters could play a role here but serotonin plays an important role and sports can improve our behavior via the serotonin pathway

Keywords : serotonin;exercise;behavior;anxiety;depression



Count: 201

Abstract ID: 91

Presentation Type: Poster

the effects of exercise on synapse formation

Submission Author: Arsh Haj Mohammad Ebrahim Ketabforoush

Alireza Shams¹, nami mohammadian khonsari ², Arsh Haj Mohammad Ebrahim Ketabforoush³

1. department of anatomy , Alborz university of medical science
2. Research Committee of Alborz university of medical science
3. Research Committee of Alborz university of medical science

Background and Aim : The relations of exercise and serotonin has been observed in numerous studies and the role of serotonin in memory creation and hippocampal neurogenesis has been observed thus exercise can affect our memory creation and synapse formation via the serotonin pathway

Methods : The generation of Tph2 $-/-$ mice has been described in many studies These are mice that can not produce neural serotonin due to lack of an enzyme called tryptophan hydroxylase2 Tph2 $-/-$ mice are used in the study Tph2 $-/-$ mice are established on a C57BL/6N background (F10 generation backcross; Charles River) . Young-adult [6 weeks of age, postnatal day (P)42], adult (3 months of age, P80), and 1-year-old female Tph2 $+/+$ mice, their Tph2 $+/+$ littermates, or C57BL/6N mice (as control for P42) is used to investigate the role of serotonin on proliferation and increased hippocampal neurogenesis and synapse formation following physical activity. as approved by institutional guidelines and relevant authority [Landesamt für Gesundheit und Soziales (LaGeSo), Berlin, Germany]. Sixty animals are divided into two groups for “baseline” conditions (standard cage 3-6 mice per cage), and “RUN” conditions (single housed in a standard cage plus running wheel), and are held for 6 d with a 12 h light/dark cycle and ad libitum access to food and water. Mice in RUN conditions had unlimited access to the running wheel for 6 d , and running distance was monitored. Afterwards hippocampal Brain-derived neurotrophic factor (BDNF) was measured as BDNF plays a major role in synapse formation and neurogenesis .

Results : exercise increased hippocampal serotonin thus increasing BDNF and BDNF itself caused synapse formation indicating memory formation

Conclusion : exercise can improve synapse formation and memory creation and may be beneficial in memory loss and alzheimer's disease

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Keywords : serotonin;exercise;synaptogenesis;memory



Count: 202

Abstract ID: 696

Presentation Type: Poster

Leptin attenuate glucose-induced neurotoxicity in PC12 cells

Submission Author: Zahra Hajializadeh

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1. Physiology Research Center, Institute of Neuropharmacology, Kerman University of Medical Sciences, Kerman, Iran.
2. Physiology-Pharmacology Research Center, Physiology and Pharmacology Department, Faculty of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran
3. Neuroscience Research Center, Neuropharmacology Institute, Kerman University of Medical Sciences, Kerman, Iran.

Background and Aim : We was studied the neuroprotective effect of Leptin on glucose-induced neurotoxicity in pheochromocytoma (PC12) cells as an experimental in vitro model of diabetic neuropathy.

Methods : For induction of PC12 glucose neurotoxicity the cells were cultured in 100mmol high glucose DMEM media. MTT assay was used to evaluation of Cell viability. Cleaved caspase-3, a biochemical cellular parameter of apoptosis, was assessed via western blot analysis.

Results : Obtained results from this investigation showed that high glucose media (100mmol) decreased PC12 cell viability significantly ($p<0.001$). Furthermore, increased in caspase-3 activation was seen after 24 hr in hyperglycemic situation ($p<0.001$). Treatment with 12nmol of leptin elevated the cell viability of PC12 in high glucose media condition and inhibited activation of caspase-3 ($p<0.01$ and $p<0.05$ respectively).

Conclusion : We concluded that leptin protects against high glucose-induced cellular toxicity. This protection could be associated with the prevention of cellular apoptosis.

Keywords : PC12 cells; Apoptosis; Hyperglycemia; Neuroprotection



Count: 203

Abstract ID: 9

Presentation Type: Poster

Effect of Cyperus rotundus on ischemia-induced brain damage and memory dysfunction in rats

Submission Author: Fataneh Hashem Dabaghian

Fataneh Hashem Dabaghian¹, Mehrdad Hashemi²

1. Research Institute for Islamic and Complementary Medicine, Iran University of Medical Sciences
2. Genetic Department, Islamic Azad University, Tehran Medical Sciences Branch, Tehran, Iran

Background and Aim : Global cerebral ischemia-reperfusion injury causes loss of pyramidal cells in CA1 region of hippocampus. In this study, we investigated the possible neuroprotective effects of the ethanol extract of *Cyperus rotundus* (EECR) on a model of global transient ischemia in rat, by evaluating the pathophysiology of the hippocampal tissue and spatial memory.

Methods : Treatment group (EECR, 100 mg/kg/day) was gavaged from 4 days before, to 3 days after ischemia. Morris water maze test was performed 1 week after ischemia for 4 days. Brain tissue was prepared for Nissl staining.

Results : Our data showed no statistical difference between the treatment and ischemia groups in water maze task. So, treatment of ischemia with EECR cannot improve spatial learning and memory. On the contrary EECR ameliorated the CA1 pyramidal cell loss due to transient global ischemia/ reperfusion injury

Conclusion : These results suggest that EECR cannot reduce the ischemia-induced, cognitive impairments seen after transient, global cerebral ischemia but can prevent pyramidal cell loss in CA1 region of hippocampus.

Keywords : Cerebral ischemia *Cyperus rotundus* Morris water maze Spatial memory

Count: 204

Abstract ID: 15

Presentation Type: Poster

Protective Effects of *Cyperus rotundus* Extract on Amyloid β - Peptide (1-40)- Induced Memory Impairment in Male Rats. A Behavioral Study

Submission Author: Fataneh Hashem Dabaghian

Fataneh Hashem Dabaghian¹, Sara Soleimani Asl², Mehdi Mehdizadeh³

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3. Cellular and Molecular Research Center, Faculty of Advanced Technologies in Medicine, Department of Anatomy, Iran University Tehran, Iran

Background and Aim : Introduction: Alzheimer's disease (AD) is the most common form of dementia that leads to memory impairment. Amyloid β protein ($A\beta$) is considered to be one of the major contributing factors to the development of AD. *Cyperus rotundus* is traditionally used for improving the memory. Investigations showed that it is potential source of natural antioxidants, immunomodulators, anti-inflammatory and cytotoxicants. In a study, it improved the scopolamine-induced learning and memory deficit in mice. In this study, we examined the protective effects of *Cyperus rotundus* on Amyloid β ($A\beta$) - Induced memory impairment.

Methods : Twenty eight wistar male rats received intra-hippocampal (IHP) injection of the $A\beta$ (1-40). Seven of rats received aqueous extract of *Cyperus rotundus* (400 mg/kg, intraperitoneally) and compared with control and sham groups. Spatial memory was assessed by the Morris water maze (MWM) task

Results : In the MWM, $A\beta$ (1-40) significantly increased escape latency and traveled distance. *Cyperus rotundus* administration attenuated the $A\beta$ - induced memory impairment the MWM task. The control group spent less time to find the hidden platform (escape latency) than the other groups. Longer escape latency indicates more sever spatial memory deficits. A post-hoc analysis showed a significant difference between the control and sham- operated groups and the rats which received $A\beta$ ($p < 0.001$). According to the results, *Cyperus rotundus* administration caused significant reduction in escape latency compared with the $A\beta$ - treated group ($p < 0.01$). In accordance with the latency data, there was a significant effect of treatment ($P < 0.001$). A significant differences in traveled distance was seen between $A\beta$ - treated rats and control and sham operated groups ($p < 0.001$). $A\beta$ - treated rats that received *Cyperus rotundus* for 7 days showed less traveled distance compared with $A\beta$ group ($p < 0.05$).

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Conclusion : Our findings showed that Cyperus Rotundus could improve the learning impairment following A β treatment and it may lead to an improvement of AD induced cognitive dysfunction.

Keywords : Alzheimer's disease, Amyloid β - peptide, Cyperus rotundus, Spatial Memory



Count: 205

Abstract ID: 461

Presentation Type: Poster

Children with Learning Disabilities: The Effectiveness of Cognitive Training on Working Memory

Submission Author: Raha Hashemi

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Background and Aim : Learning disability is a classification that includes several areas of functioning in which a person has difficulty learning in a typical manner, usually caused by an unknown factor or factors. Disorder refers to significant learning problems in an academic area. Learning disabilities fall into broad categories based on the four stages of information processing used in learning. Problems with memory can occur with short-term or working memory, or with long-term memory. Most memory difficulties occur with one's short-term memory, which can make it difficult to learn new material without more repetitions than usual. Difficulties with visual memory can impede learning to spell. The present study aims to investigate the effect of cognitive training on the working memory, and processing speed in children with learning disabilities. Besides working memory and processing speed, its effect on academic performance was also examined. It was an experimental research with two groups and pretest-posttest. Many normed assessments can be used in evaluating skills in the primary academic domains: reading, including word recognition, fluency, and comprehension; mathematics, including computation and problem solving; and written expression, including handwriting, spelling and composition.

Methods : Experimental research with two groups and pretest-posttest, The research population in the present assessment was all male and female students in third, fourth and fifth grades of primary school that are referred to special learning centers of Tehran. Among them, 20 students were selected randomly, 10 students were placed in each of experimental and control group. Then the cognitive training was administered for experimental group in 10 one-hour sessions. Each student was assessed before and after the intervention, using digit span, coding, search symbols and visual memory.

Results : The ANCOVA analysis revealed significant main effects of Experimental Condition, in coding $F(1, 18)=71.28, p<0.001$, search symbols $F(1, 18)=97.63, p<0.001$. a significant main effect was found for digit span $F(1, 18) =22.6, p<0.01$, and visual memory task , $F(1, 18)=6.26, p<0.001$.

Conclusion : The results show that the effect of cognitive training, on the speed of information processing, verbal working memory and visual-spatial working memory has been significant.

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Keywords : Learning Disabilities, Working Memory, Speed of Processing, Cognitive Training



Count: 206

Abstract ID: 236

Presentation Type: Oral

electrophysiological properties from mouse cortical primary culture

Submission Author: Shiva Hashemizadeh

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Background and Aim : The patch-clamp technique allows investigation of the electrical excitability and the functional properties of neurons. As well as, this technique has contributed to the understanding of passive and active biophysical properties of excitable cell membrane, such as neurons and cardiac cells. Primary culture of neurons from cerebral cortex is a popular model to study neuronal function in vitro. The electrical properties and functional roles of cortical cells are not well understood in vitro. Here we describe the electrophysiological characteristics of cortical neurons in the dissociated culture

Methods : In this study, mouse cortical neurons were isolated from embryonic brains on 15th day of fetal development and neuronal cultures were established in vitro by culturing on a glass coverslip coated with poly-L-ornithine/laminin and maintained for 14 days. Whole-cell patch-clamp recordings were performed on cortical neurons, after in vitro maturation functional characteristics of cells was investigated

Results : The present finding indicate that all the neurons had a stable resting membrane potential more negative than -40 mV resting membrane potential mean: -42.6 ± 1.77 through the recording. In voltage-clamp mode, electrophysiological experiments demonstrated that currents, including spontaneous fast and slow synaptic current was recorded and both inward voltage gated dependent and outward current typical of a delayed rectifier potassium current were present. In current-clamp recordings we determined that there is a heterogeneity among cortical neurons and most neurons could fire spontaneously with different pattern and in some cases sustained depolarization were present. Multiple action potentials could be evoked by depolarization, and also generate repetitive trains of rebound action potentials in response to hyperpolarizing currents

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Conclusion : These results suggest that neurons after 14 days in culture are able to show the functional properties of a mature neuron

Keywords : cell culture, mouse cortical neuron, whole cell patch clamp , action potential, spontaneous activity.



Count: 207

Abstract ID: 382

Presentation Type: Oral

predictors of timed picture naming in Persian speaking children

Submission Author: Fatemeh Hassanati

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Background and Aim : Timed picture naming is an appropriate method for studying language and cognitive function. Naming studies show that several psycholinguistic variables predict naming accuracy and latency, but whether these variables have differing effects across different languages and age groups is an open question. The present study aims to identify the predictors of timed picture naming for a set of pictures among Persian speaking children.

Methods : At first, 400 pictures that were used in Cycowicz et al. (1997) study were selected. We went through the following stages in order to prepare the final set of pictures. First, based on a small pilot study, we removed items which had 50% naming accuracy or lower. We also showed the pictures to two speech and language pathologists and one linguist in order to remove the linguistically and culturally inappropriate pictures. At the end, 128 black and white pictures were shown to 120 children aged 6-8 years old. Also, thirty children aged 6-8 years old participated in familiarity rating, 30 different children aged 6-8 years old did the visual complexity rating, and 30 parents took part in age of acquisition rating. One hundred of 120 children who participated in the naming latency phase were selected for name agreement rating. All the subjects were native Persian speakers and had healthy cognitive, visual and auditory status.

Results : The results showed that age of acquisition, name agreement, familiarity and visual complexity had a significant correlation with picture naming latency, but only name agreement and age of acquisition were robust predictors of naming latency.

Conclusion : These results are highly similar to previous studies in children and adults in other languages. The normative data are provided as an excel file in the supplemental material.

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Keywords : Age of acquisition, Children, Familiarity, Name agreement, Naming latency, Persian language, Visual complexity,



Count: 208

Abstract ID: 742

Presentation Type: Poster

Modeling TNF α secretion by astrocyte in synaptic cleft: health and disease

Submission Author: Hossein Hassanpoor

Hossein Hassanpoor¹, maryam saidi²

1. Faculty of Bio Signal Processing, Research Center of Development Advanced Technologies
2. PhD student, Tabiat modares university

Background and Aim : High TNF α secretion is involved in pathological brain states; however, in the healthy brain at much lower levels it exerts regulatory effect on synaptic transmission. Through its effects on AMPA receptor trafficking, it enhances synaptic strength at excitatory synapses and plays important role in learning capacity. In this study, we modified mathematical model of tripartite synapse and added the effect of TNF α on gliotransmitters (glutamate) secretion by astrocytes.

Methods : Mathematical modeling and computer simulation was carried out using Matlab. A modified tripartite neural network was generated using following variables: TNF α concentration (C_TNF α), number of AMPA receptors (N_ampa), astrocytic calcium oscillations (Cai, CaER), glutamate secretion (Gg) and membrane potential of pre and postsynaptic neurons (Vp). Memory and astrocyte functions output were assessed by the use of differential equations and changing the level of TNF α concentration in synaptic cleft.

Results : Our proposed model showed the effect of TNF α concentration on production of glutamate which affected LTP. Furthermore, it simulated two effects on learning: First, effect on postsynaptic neuron by insertion of new AMPA receptors and absorption of more vesicles to be released by presynaptic neuron. Second, effect on astrocyte by switching the Ca²⁺ oscillation from local to global leading to release of more glutamate in synaptic cleft, extended stimulation period of postsynaptic neuron and enhanced learning by changing synaptic plasticity.

Conclusion : This study simulated a new mechanism for learning capacity by astrocyte cells and TNF α concentration. If this modeling is indeed proved true by biological experiments, it can shed better light on understanding mechanism of learning and the pathogenesis of learning disorders such as Alzheimer's disease as well as possible effects of TNF α inhibitors on memory.

Keywords : Astrocyte, Learning, TNF α , Modeling



Count: 209

Abstract ID: 616

Presentation Type: Poster

Selective Serotonin Reuptake Inhibitors Efficacy on reaction time to light and sound discriminative stimulus in patients suffering from stroke with depression

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Background and Aim : Abstract Stroke is a clinical syndrome characterized by focal neurologic deficits. It is classified as one of the most important causes of impairment. Stroke has a critically impairing effect on the life quality of patients the present study aims to investigate the efficacy of Selective Serotonin Reuptake Inhibitors on reaction times to light and sound discriminative stimulus in patients suffering from stroke with depression.

Methods : Methods: This study carried out based on a multiple baseline with a staging initiation of treatment. The subjects were comprised of six patients suffering from stroke with depression who were referred from neurologic clinics. The patients firstly were selected according to a purposeful procedure. Then, they were identified according to an interview administered by the neurologist and reviewing their medical records (patients suffering from stroke with depression according to the Beck depression scale), and finally six subjects were randomly selected as the sample (3 subject recipient fluoxetine and 3 subject recipient citalopram). In this study, Stroke Checklist & reaction time device and Beck depression scale was used to collect the data. Intervention (received fluoxetine and citalopram) lasted for 4 months and measuring the reaction time.

Results : Results: The results of data chart visual analysis revealed a significant difference between the intervention and baseline phases for the six patients in reaction times to light and sound discriminative stimulus, light discriminative stimulus (PND:100% subject number 1 & 100% subject number 2&100% subject number 3 &100% subject number 4 and 100% subject number 5 and 80% subject number 6) and in sound discriminative stimulus (PND:80% subject number 1 & 100% subject number 2&80% subject

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number 3 & 80% subject number 4 and 60% subject number 5 and 100% subject number 6). In other words, Selective Serotonin Reuptake Inhibitors intervention can be might lead to increase the speed in the reaction times to light and sound discriminative stimulus. The rate of increase the speed remained stable in the follow up phase (4 week after intervention).

Conclusion : Conclusion: It seems that Selective Serotonin Reuptake Inhibitors intervention can be might lead to change and accelerated in the reaction times to light and sound discriminative stimulus in patients suffering from stroke with depression.

Keywords : Keywords: Selective Serotonin Reuptake Inhibitors - reaction times - light and sound discriminative stimulus- patients suffering from stroke-depression-SSRI



Count: 210

Abstract ID: 295

Presentation Type: Poster

Effect of ethanol extracts of Fennel (*Foeniculum Vulgar*) on pain and morphine-induced analgesia in male mice

Submission Author: Kazem Hatami

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Background and Aim : Pain is one of the biggest problems in patients. Due to the side effects of opioid and chemical drugs in reduction pain, nowadays herbs containing analgesic materials are a lot of attention, that the Fennel is one of these plants. The aim of the present study was evaluating analgesic effect of ethanol extract Fennel in male mice by using formalin test.

Methods : In this study, 28 mice were used, in 4 groups: control, morphine, Fennel, Fennel + morphine. Ethanol extract Fennel was used by 100mg/kg concentration. In positive control group, was used the morphine 10 mg per kilogram of body weight for subcutaneous injection. To obtain pain scores using formalin test with injection 0/02ml of formalin 2/5 % to the fourth finger of the animals right hand.

Results : The results showed that oral administration of Fennel ethanol extract has significant decrease in pain scores in the acute and chronic phases of formalin-induced pain. This reduction in pain scores was evident in the chronic phase. In group that received morphine + Fennel, Fennel extract increased morphine analgesia effect and lowered pain scores dramatically.

Conclusion : This study demonstrated a significant analgesic effect of Fennel, and supports its using in traditional medicine. Due to the increase morphine analgesia effect by Fennel extract, may not competitive between analgesic agents of Fennel extract and opioid pathways.

Keywords : Pain, Formalin test, Ethanol extract, Fennel



Count: 211

Abstract ID: 483

Presentation Type: Poster

The Effect of Vitamin A Supplementation on TGF- β Gene Expression in PBMC cultured of Multiple Sclerosis Patients

Submission Author: Mahsa Hatami

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Background and Aim : Vitamin A has been shown to modulate the immune system and has stimulatory effects on upregulation of regulatory T (Tregs) cells through transforming growth factor- β (TGF- β). Multiple sclerosis (MS) which is an auto-inflammatory disease of the central nervous system, results from impaired balance of Treg and Th17 cells in immune system. This study was accomplished to evaluate the effect of vitamin A supplementation on the expression of TGF- β gene in peripheral blood mononuclear cells (PBMCs) cultured of Avonex-treated MS patients.

Methods : In this double blind randomized clinical trial study 36 relapsing-remitting MS (RRMS) patients were allocated. The patients received vitamin A (25,000 IU as retinyl palmitate) or placebo for a period of 6-month. The expression of TGF- β gene was evaluated in PBMC cultured in presence of MOG (Myelin oligodendrocyte glycoprotein) and PHA (Phytohaemagglutinin) and with no treatment before and after the study.

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Results : The concentrations of TGF- β significantly increased in the supernatant of stimulated cells with MOG in vitamin A group ($P=0.05$). This increase in the supernatant of not-stimulated cells was also significant in vitamin A groups ($P=0.022$). And also a moderate decrease in TGF- β gene expression was seen in placebo group that was not statistically significant.

Conclusion : According to the inhibitory effect of TGF- β on IL-17, increased levels of TGF- β is an important finding in current investigation. Therefore, vitamin A supplementation can be considered as a new approach in MS prevention and treatment. However further studies at cellular levels are needed to confirm these findings.

Keywords : Multiple Sclerosis; Vitamin A; TGF- β



Count: 212

Abstract ID: 487

Presentation Type: Poster

The Effect of Bariatric Surgery on Migraine Headache in Morbid Obese Patients

Submission Author: Mahsa Hatami

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Background and Aim : Migraine, a common and chronic neuro-inflammatory disease with Progressive and episodic headache manifestation that leads to considerable disability. Some studies suggested that obesity is a risk factor for migraine progression. Furthermore, both migraine and obesity is highly prevalent and important risk factors of chronic cardiovascular disease, stroke, and other inflammatory disease. Thus, it is very important if weight loss could alleviate the migraine headache and its related comorbidities. The present review article was conducted to assess the potential effect of Bariatric surgery on improvement of migraine headaches.

Methods : Scopus, PubMed and Google scholar electronic database were systematically searched with key words of “Bariatric surgery”, “gastric Bypass”; “Morbid Obesity” and “Migraine headache” for interventional studies investigated the impact of Bariatric surgery on migraine headache.

Results : Five relevant studies were found. The original articles evaluated the headache frequency, duration, disability and migraine-associated symptoms in 248 morbidly obese fulfilling migraine criteria before and after bariatric surgery. The most common bariatric procedure was the Roux-en-Y gastric bypass. The findings suggest significant improvement in headache frequency, duration, headache-induced disability and the presence of migraine-associated symptoms (nausea, photo and phonophobia) occurs as early as 3 months after bariatric surgery. Moreover, patients who had higher weight loss were more likely to experience a 50% or higher reduction in headache frequency, duration and severity.

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Conclusion : The entire evidences suggest patients with indications of bariatric surgery will benefit from the improvements in the Migraine headache after surgery. However, it remains unclear whether Bariatric-induced endocrine, gut-brain axis alterations, or reduction in adipokines contribute to migraine improvement, so further studies are needed to confirm and clarify these findings.

Keywords : Bariatric surgery; Gastric bypass; Morbid obesity; Migraine headache



Count: 213
Abstract ID: 721
Presentation Type: Poster

The expression analysis of STAT6 gene in Iranian Multiple Sclerosis patients

Submission Author: Mahsa Hatami

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Background and Aim : Multiple Sclerosis (MS) is a chronic neuroinflammatory demyelinating disease of the Central Nervous System. The cytokine genes are involved in autoimmune diseases through JAK-STAT pathway such as MS. On of the signaling pathway that has important role in proliferation, differentiation, immunity, apoptosis and on cogenesis. The most important component of this pathway is STAT genes.in this study, we report that changing expression of STAT6 gene how contribute to creating disease. STAT6 is critical for Th2 maturation that has function as a anti inflammatory factor in allergic situation.

Methods : In this study 50 MS patients and 50 ethnically, age, and sex matched healthy controls were selected .blood samples of all individuals were collected in EDTA tubes, then RNA extraction with GeneAll kit, primer and probe designed by Allele ID software for TaqMan real-time PCR. finally analyses data by LinReg, Rest, SPSS18 software. Accordingly, the expression levels of STAT6 in patients compered to control group.

Results : The expression of STAT6 gene was significantly higher in patients than controls.

Conclusion : Increase expression of STAT6 is showed in multiple sclerosis patients.

Keywords : STAT6, Multiple Sclerosis, Expression, Real-Time PCR, TaqMan



Count: 214

Abstract ID: 313

Presentation Type: Poster

Determination of emotional terms in children's description as a good feature for discerning patients with ADHD and normal population

Submission Author: Marziyeh Hatami

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Background and Aim : Theory of mind (ToM) is the ability to attribute mental states such as beliefs, intents, desires, pretending, knowledge to oneself and others to understand that others have beliefs, desires, intentions, and perspectives that are individually different among various people. Using social skills for recognizing patient with ADHD from normal is expected to increase the accuracy of classification. In this study all the participants were assessed using the modified version of movement shape paradigm to put value on their theory of mind. We asked them to describe what they saw in the animation. The aim of this study is to investigate if the emotional terms in children's description is a appropriate feature for discriminating patient with ADHD from normal group or not.

Methods : 30 boys of ages 7 to 9 without any mental disorders, based on interviews with their parents and 30 boys with ADHD participated in this study. Children's descriptions were rated according to their accuracy of answers, types of applying descriptions, and lengths of phrases and emotional terms. Finally, decision tree and SVM was conducted on data sets.

Results : By applying decision tree C4.5 on emotional term feature WEKA software could not build a decision tree and the information gain was 0. Moreover by using SVM the number of support vectors were 60 and the accuracy was 50%.

Conclusion : Based on these findings the emotional term feature is not appropriate feature for discriminating patients from control population.

Keywords : Theory of mind, ADHD, SVM, decision tree, movement shape paradigm



Count: 215

Abstract ID: 200

Presentation Type: Poster

Alterations of spatial memory and anxiety related behavior during methamphetamine addiction

Submission Author: Somayyeh Hatami

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Background and Aim : Introduction: Methamphetamine (METH) abuse is a grave problem that can lead to serious health conditions including brain damage, memory loss, psychotic-like behavior, heart damage, hepatitis, and HIV transmission. Considering the issue of neurotoxicity, it is usually assumed that METH has direct toxic effects on neural cells, with relative selectivity towards specific cell groups, brain structures, and cellular organelles. Also among amphetamine abusers, psychiatric disorders, such as anxiety, panic attacks and mania are commonly reported. Controversies over amphetamine effects on memory and anxiety in animal models can be encountered in the literature. The aim of present study is to investigate the effects of different doses of crystal meth on spatial memory and anxiety in male rats.

Methods : Materials and Methods: 28 adult male Wistar rats randomly divided in five groups (n= 7) including: saline, crystal meth 5 mg/kg; crystal meth 10 mg/kg and crystal meth 15 mg/kg. The time course of intraperitoneal injection was 5 days. The Morris Water maze was used for studying spatial learning and memory for five consecutive days. Elevated plus maze was used for studying the anxiety related behavior in the first and fifth days. Data analysis was performed by using One-Way ANOVA.

Results : Results: crystal meth in the dose of 5 mg/kg decreased spatial memory by increasing time latency and traveled distance for finding hidden platform ($p<0.05$). Crystal meth in the doses of 10 and 15 mg/kg severely decreased spatial memory ($p<0.001$). Crystal meth in all doses increased the number of entrance to open arm in elevated plus maze. Crystal meth in all doses decreased anxiety ($p<0.001$).

Conclusion : Conclusion: It seems that toxic effect of crystal meth on dopaminergic and serotonergic pathway result in the anxiolytic effect. Also according to the literature crystal meth may lead to neurodegeneration and apoptosis of hippocampal neurons. Damaging hippocampal neurons can cause cognitive disorders.

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Keywords : Keywords: Crystal meth, Anxiety, spatial memory, Rat



Count: 216
Abstract ID: 76
Presentation Type: Oral

Effect of stress on the emotion-cognition interaction and applications of it in the soft-war

Submission Author: BOSHRA HATEF

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Background and Aim : Positive and negative emotion are a result of previous experiences and learning about interaction of person with environment. Each emotion activates the unique brain network. Amygdala as hub of emotion and dorsolateral prefrontal cortex (DLPFC) as hub of cognition activate together in agonistic ipsilateral and antagonistic contralateral pattern.

Methods : many studies showed that

Results : Stress is a sub-category of negative mood preferably activate right amygdala and DLPFC. And inhibited left DLPFC. Different subset nucleus of amygdala also activate in positive or negative emotion separately. Then descending autonomic response of emotion that involves the orbitofrontal cortex, hypothalamus and brain stem become different. Then sequence and timing of responses do not controllable. Two important cortical parts, anterior cingulate cortex (ACC) and medial prefrontal cortex (MPFC), have be involved in stress network. They have connected and modulated role in the stress network. They are also involved in other pathways such as pain and anticipation for ACC and social interaction and imagination for MPFC. The chronic stress reduces the volume of ACC, DLPFC and MPFC.

Conclusion : It means the cognitive ability of person exposed to chronic stress such as cognitive flexibility, self-inhibition, forethought and emotion regulation will be diminished. In this situation, when this person exposes to complex and high risk decision making, the prevalence of wrong and induced decision will be increase.

Keywords : stress, emotion-cognition interaction, soft-war



Count: 217

Abstract ID: 79

Presentation Type: Poster

Power features of masseter muscle activity in tension-type and migraine without aura headache during open-close clench cycles

Submission Author: BOSHRA HATEF

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Background and Aim : Types of headache influence on the masseter muscle activity. Aim of this study was to assess the Trend of energy level of EMG activity of masseter muscle during open-close clench cycles in migraine without aura (MOA) and tension-type headache (TTH).

Methods : the twenty five women with MOA and twenty four women with TTH participated in the study. They matched with 25 health subjects in term of age, class of occlusion and prevalence of temporomandibular joint (TMJ) with sound. EMG of both masseter muscles were recorded during open-close clench cycles in rate of 80 cycle/minute for 15 seconds. The month opening was restricted to two centimeters by mandibular motion recorder. Signal processing steps have been done on the EMG as: noise removing, smoothing, feature extraction, statistical analyzing. Six statistical parameters of energy computed were mean, Variance, Skewness, Kurtosis, first and second half energy over all signal energy

Results : Three way ANOVA demonstrated that during all cycles, the mean of energy was more and has delay to show peak of energy in the masseter of left side with TMJ sound in MOA group than two other groups while this pattern was occurred inversely in the side without TMJ sound (p -value < 0.009). The variation of energy was significantly less in MOA group than two other groups in the side without TMJ sound (p -value <0.003). On the other hand the relative first or second time parts to all time showed that TTH group had less energy in first part and more energy in second part in comparison with two other groups ($p < 0.05$).

Conclusion : The study showed different change of energy distribution of masseter muscle activity during cycles in MOA and TTH. MOA in contrast TTH had lateralization effect on EMG.

Keywords : trend of EMG energy, masseter, migraine without aura, tension-type headache



Count: 218

Abstract ID: 51

Presentation Type: Oral

Linear and non-linear features of EEG and ECG markers of acute stress

Submission Author: BOSHRA HATEF

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Background and Aim : The stress control is a big challenge of our century. Firstly the identification the stress markers should be done. Level of cortisol is a hormonal marker of stress but it takes too long time to make distinguish. The aim of the study was to assess the EEG and ECG recording having quickly reports in relation to acute stress in addition to the level of cortisol.

Methods : twenty three young men (mean age: 23.5 ± 2.5 years) were exposed to triar social stress test. Emotive visual analogue scale (EVAS) questioner, salivary cortisol, EEG (32 channels) and ECG recording were taken before, after test and after 20 minutes of rest. Some psychological evaluation such as IQ, EQ, DASS and previous stress experience at a month ago were taken. Paired t-test and repeated measurement and non-linear regression used to analysis.

Results : the findings showed that the level of cortisol and EVAS increased after stress and the cortisol increase was yet even after recovery time. ECG recording showed that the mean of heart rate variation (HRV) increased after stress and SDs of Poincare plat and spectral entropy of HRV decreased after stress test. EEG recordings in the eyes close situation in the almost of channels especially in the right hemisphere, showed the increase of alpha 1 band (8-10 Hz) power after stress that remained after recovery. Because of the high correlation of channel activity, the corrected p-value less than 0.0001 was considered for significancy. There was significant cubic or invert regression between trend of cortisol and some EEG

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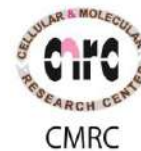
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features changes such as alpha 1 activity in F8 channel and spectral entropy of alpha 1 activity of FP2 channel.

Conclusion : the alpha 1 band of EEG in close eyes and the SD of Poincare plot and spectral entropy of ECG may be the best way to show stress quickly after stress exposure.

Keywords : acute stress, salivary cortisol, EEG, ECG



Count: 219

Abstract ID: 758

Presentation Type: Poster

The protective effect of SILYMARIN on the experimental model of alzheimer disease in male rat: behavioral and histochemical study

Submission Author: Neda Hedayati

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Background and Aim : Alzheimer's sporadic is a chronic neurodegenerative disease which leads to progressive disorders in memory and cognitive functions. According to the epidemiologic results stress oxidative and inflammation play a significant role in creating the first steps of Alzheimer. In this research we evaluated the effect of SILYMARIN As a strong anti oxidant on prevention of cognitive and histological disorders of Alzheimer. In the other words we studied the effect of SILYMARIN on learning and memory.

Methods : Male rats were injected 200mg/kg SILYMARIN intraperitoneal an hour before the surgery. To make the rats alzheimeric we injected A β 1-40 intrahippocampal bilateral. And after the surgery rats were given SILYMARIN IP for 2 weeks 50mg/kg daily. 4 hours after the last injection animals of all groups were being tested behaviorally to compare the status of special memory and learning in 3 groups of sham-operated and injured and SILYMARIN treated rats. By the way the number of neurons in each group hippocampus was compared by nissel and H&E coloring.

Results : Results of behavioral tests showed significant decrease in step through latency parameters of inactive avoidance behavior ($p < 0.01$) in alzheimeric animals and significant decrease in correct choice ($p = 0.0004$) and significant increase in number of errors ($p = 0.0001$) in the group of maze and sham-operated. We found significant decrease in number of neurons in alzheimeric animals hippocampus (dentate gyrus and CA1) in comparison to sham-operated group. After IP SILYMARIN injection we achieved important changes in the mentioned parameters that cause the behavior and number of neurons to improve.

Conclusion : In conclusion, our study shows the significant role of IP SILYMARIN injection in the protection of brain against damage caused by A β 1-40 hippocampus injection and it can be effective in preventing deterioration of special memory.

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Keywords : Alzheimer; SILYMARIN; spacial memory



Count: 220

Abstract ID: 578

Presentation Type: Poster

A Temporal model for biological object recognition

Submission Author: Hamed Heidari Gorhi

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Background and Aim : Investigations in neuroscience indicate that mammals, especially humans and monkeys, are capable of object recognition which comprises of categorization and identification. Despite abundant existing unanswered questions for neuroscientists, there has been a broad range of efforts on understanding the role of different parts of the visual pathway involved in object recognition. Several brain scan methods in forms of invasive (neuron recording) and non-invasive (EEG, fMRI and MEG) have been used in these investigations. Another way is to present the computational models in which being accommodated to the last findings of neuroscience. In the most of current presented models, the time dimension is not considered or a non-biological categorization method was used. Due to the misconception of the time the current models do not have enough compatibility with the visual cortex operation.

Methods : In this study using the time of processing and a diffusion based decision making model, we present an object recognition model with more compatibility with the visual cortex. The decision maker model accumulates information to reach a threshold called decision bound to classify the input image. Information is temporally extracted from the input image with a biological plausible model suggested by Masquelier et al.

Results : The results show that adding noise to the images and blurring them decrease the firing rate and increase information accumulation time and consequently increase the model response time. These observations are compatible with reported results in behavioral and magnetic imaging experiments.

Conclusion : In conclusion using this model we suggest that a simple accumulation to bound mechanism can accounts for different response time in human behavior. Taking the advantages of a biological plausible

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model for decision making layer which truly accounts for choices and response times, we can study the mechanism of different theories such as speed accuracy trade off.

Keywords : Visual Cortex; Object Recognition; Spiking Neural Network; computational models; decision making



Count: 221

Abstract ID: 517

Presentation Type: Oral

Intra-hippocampal microinjection of oxytocin produced antiepileptic effect on the pentylenetetrazol-induced epilepsy in rats

Submission Author: Farzin Henareh-Chareh

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Background and Aim : In addition to its role as a circulating hormone, oxytocin can also act as a neurotransmitter and a neuromodulator within the brain. In this study, we investigated the intrahippocampal effect of oxytocin on experimental seizure model induced by pentylenetetrazole (PTZ) in rats. We also used atosiban (oxytocin antagonist), diazepam and flumazenil (GABA-benzodiazepine receptor agonist and antagonist, respectively) to clarify the involved mechanism.

Methods : In ketamine-xylazine anesthetized rats, the right and left sides of the dorsal hippocampus (CA1) were implanted with two guide cannulas. Epileptic behaviors were induced by ip injection of PTZ (60 mg/kg), and the durations of latency of onset of first myoclonic jerk, and duration of epileptic seizures were determined for 30 min.

Results : Intra-hippocampal microinjections of oxytocin at doses of 10 and 20 ng/site, diazepam (100 and 200 ng/site) and co-administration of their ineffective doses significantly ($P<0.05$) increased the onset of first myoclonic jerk and decreased duration of epileptic seizure. Antiepileptic effects of oxytocin (20 ng/site) were inhibited by pretreatment of atosiban (20 and 40 ng/site) and flumazenil (100 ng/site and 200 ng/site). On the other hand, prior administration of flumazenil (100 and 200 ng/site) and atosiban (20 and 40 ng/site) prevented the antiepileptic effects induced by diazepam.

Conclusion : The results of the present study showed that at the level of the hippocampus oxytocin suppressed the severity of epileptic behaviors. GABA -benzodiazepine receptors of the hippocampus may be involved in antiepileptic effect of oxytocin.

Keywords : Epilepsy; Oxytocin; Atociban; Diazepam; Flumazenil



Count: 222
Abstract ID: 33
Presentation Type: Poster

Effect of Monophosphoryl Lipid A on Kindling Rate in Traumatic Rats

Submission Author: Soghra Hesam

Soghra Hesam¹

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Background and Aim : Traumatic Brain Injury (TBI) is one of the prevalent medical problems. Post Traumatic Epilepsy (PTE) is one of the complications of TBI. Mild stimulation of microglial cells preconditions them in such a way that are not activated severely in response to upcoming trauma and therefore neural damage is decreased. We evaluated the preventive effect of the microglia activator Monophosphoryl Lipid A (MPL) on acquisition of epilepsy after trauma in kindling model of epilepsy.

Methods : Male Wistar rats became epileptic using the amygdala kindling model of epilepsy. Rats received MPL (1µg/rat) or vehicle intracerebroventricularly. Five days thereafter, trauma was exerted to the temporo-parietal cortex of the rats by Controlled Cortical Impact (CCI) device causing a 2 mm lesion. After 24 hours, kindling stimulations were started. Each stimulus is delivered at an intensity of 200-500 µA, with 50 Hz frequency with monophasic square wave train stimulations once daily. One control group with no trauma and just kindling stimulation was considered in experimental groups. A sham group was also considered in which animals underwent all procedures including surgery and kindling stimulations without trauma. The number of stimulations required to kindled state (acquisition of generalized seizures) were recorded

Results : Mean number of 14 stimulations needed for kindled state in control and sham groups. Traumatic rats became kindled with a significantly lower number of electrical stimulations (5 stimulations). MPL-receiving traumatic rats became kindled similar to control group after mean number of 14 stimulations.

Conclusion : The microglia stimulator MPL prevents facilitative effect of trauma on acquisition of epilepsy in the kindling model.

Keywords : epilepsy; trauma; Monophosphoryl Lipid A; kindling; rat



Count: 223

Abstract ID: 190

Presentation Type: Poster

Phenytoin intraperitoneal administration effects on neuropathic pain induced by chronic constriction injury in male rats

Submission Author: Farzane Hesari

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Background and Aim : Abnormal expression and function of voltage-gate sodium channels occurs in neuropathic pain conditions. Phenytoin is an anticonvulsant drug and blocks these channels. Present study checked out the effects of Phenytoin in neuropathic pain in rats.

Methods : 21 male rats in the weight range of 200 to 250 g were used in this experiment study. Neuropathic pain was created with Sciatic nerve ligation (CCI) model. Animals were randomly divided into 3 groups each with 7 animals. The sham CCI group with nerve ligation, a group receiving phenytoin at a dose of 50 mg per kg chronically during the 14 days after surgery, a group receiving 20% DMSO (as solvent) Phenytoin. Mechanical (Von Frey, Pin Prick) and thermal (Acetone, Hot Plate) pain testing performed on zero (before surgery) and 3rd, 7th, 14th, 21st and 28th days after surgery. The statistical analysis were performed using Graph pad software.

Results : Phenytoin significantly reduced mechanical and thermal neuropathic allodynia and hyperalgesia on days 3, 7, 14, 21 and 28. ($p < 0.001$).

Conclusion : Chronic administration of Phenytoin as voltage-sensitive sodium channels blocker, probably prevents the alterations which leads to neuropathic pain after nerve injury, so it could be inferred that during the physio-pathologic events that leads to neuropathic pain the chronic activity of voltage-sensitive sodium channels is important after nerve injury, at least in part, so may be, Phenytoin could be considered as a drug suggestion to prevent possible neuropathic pain.

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Keywords : Chronic constriction injury ; Neuropathic pain; Allodynia; Hyperalgesia; Phenytoin.

Count: 224

Abstract ID: 469

Presentation Type: Poster

The Effectiveness of Working Memory Training Task on Attentional Deficits in Methamphetamine Abusers

Submission Author: Solmaz Heydari

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Background and Aim : In this study 16 male methamphetamine abusers on the cure duration were assessed by Integrated visual and auditory continues performance (IVA-Plus) pattern analyses. IVA-Plus is a unique approach designed to process visual and auditory evaluation of attention variables. IVA-PLUS test was done after and before participating in 20 session n-back training. Pre-session and post-session comparisons were analyzed by means of t-test and $P < 0.05$ was considered statistically significant.

Methods : Sixteen male methamphetamine abusers who were institutionalize in specialized treatment center were assessed by Integrated visual and auditory continues performance. Twenty Sessions of Working Memory training were performed by N-Back Software. For post-test, IVA was done again. Pre-session and post-session comparisons were analyzed by means of paired sample t-test IVA-Plus is a unique approach designed to process visual and auditory evaluation of attention variables. IVA-PLUS test was done before and after participating in the 20-session n-back training. Pre-session and post-session comparisons were analyzed by means of t-test and $P < 0.05$ was considered statistically significant.

Results : Full Scale Attention Response Control Quotient (FSRCQ) improved significantly after 20 sessions of Working memory training ($t=3.48$, $P < 0.001$). Visual and Auditory RCQ and auditory RCQ showed highly significant differences between pre and after treatment ($t=3.08$, $P < 0.01$; $t=3.52$, $P < 0.001$). Full scale Attention Quotient improved significantly ($t=2.85$, $p < 0.01$). Both Visual and Auditory Quotients in attention scale increased by training ($t=2.22$, $P < 0.05$; $t=3.01$; $p < 0.01$). Full Scale Attention Response Control Quotient (FSRCQ) improved significantly after 20 sessions of Working memory training ($t=3.48$, $P < 0.001$). Visual and Auditory RCQ and auditory RCQ showed highly significant differences between pre and after treatment ($t=3.08$, $P < 0.01$; $t=3.52$, $P < 0.001$). Full scale Attention Quotient improved significantly ($t=2.85$, $p < 0.01$). Both Visual and Auditory Quotients in attention scale increased by training ($t=2.22$, $P < 0.05$; $t=3.01$; $p < 0.01$). The results indicated that n-back has a prominent effect on visual and auditory processing in methamphetamine abuser.

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Conclusion : The results of pre-tests and post-tests show positive and beneficial effects of proper function on auditory processing of methamphetamine abuser. The findings show using the n-back training has an importance in increasing of attention level and visual and auditory processing. Moreover, these studies recommend this training for rehabilitation plans. The results of this study suggest that attentional deficits following long-term MA abuse can be improved by working memory training. Increased knowledge about the neural mechanisms underlying behaviors that promote and sustain substance use will help to guide treatment strategies and will constitute an important contribution to the neuro-rehabilitation of drug addiction.

Keywords : Working memory, Attention, N-back, Methamphetamine, IVA-Plus test



Count: 225
Abstract ID: 62
Presentation Type: Poster

A new approach for best classifying imagined and verbal speech

Submission Author: Amin Honarmandi

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Background and Aim : The objective of this study is to investigate the use of common features in different classifier that might be related to fiend best discriminate EEG responses for each imagine and verbal phonemic and single word prompts on a trial basis.

Methods : First we compute features for all modalities, and perform binary classification of phonological categories using a combination of this modalities. Also between the different states of the recording, after that we use features that were common in huge features for different classifiers.

Results : Common features in different classifiers are overall significant, instead we use huge features for classifying we can use common features with relative better accuracy for all classifiers.

Conclusion : The result of our study show that brain responses to phonems can be better classified for single trials using Common features that we found from different classifiers with best accuracy This approach may not only become a useful tool for the brain–computer interface but it could also be used for discriminating the neural correlates of categorical speech.

Keywords : Electroencephalography, feature extraction and selection, phonological categories, classification, brain computer interface

Count: 226

Abstract ID: 34

Presentation Type: Poster

Effect of transcranial direct current stimulation on pain intensity and quality of burn dressing

Submission Author: Meysam Hoseini Amiri

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Background and Aim : The most experienced pain of burn injuries occur during dressing changes. This pain requires high doses of opioids. Some evidences suggest that changes in cortical irritability, cathodal somatosensory cortex stimulation, could be effective in relieving acute pain. The aim of this study was to determine the effect of Transcranial direct current stimulation (tDCS) on quality of pain in burn dressing.

Methods : A randomized clinical trial including 60 eligible patients hospitalized in burn department of Imam Reza (AS) Hospital in Mashhad were divided into two groups through accessible sampling. In intervention group, patients received cathodal somatosensory cortex stimulation for 20 minutes with one mA current intensity before dressing change in addition to receiving painkillers (if necessary). The treatment protocol was performed in the control group too, however, the tDCS device was turned off after 30 seconds of stimulation. Pain visual analog scale was completed before the intervention and short and modified-form McGill pain questionnaire was applied after dressing. Data was analyzed by Chi-square, independent t-test and Mann- Whitney tests using SPSS software V. 11.

Results : There was no significant difference in background pain intensity before the intervention ($P=0.088$). Significant differences was found between the two groups in the mean scores of sensory, affective, and total pain quality during the burn dressing ($P<0.05$). Also, pain intensity of during dressing was significantly different between the control and intervention groups ($P<0.001$). However, in two groups the results showed no significant difference when comparing the pain pattern of burn dressing ($P=0.145$).

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Conclusion : Transcranial direct current stimulation alongside other methods could be used as a safe and effective intervention for reducing the intensity of pain in burn dressing.

Keywords : Burn dressing; Pain; tDCS

Count: 227

Abstract ID: 550

Presentation Type: Poster

Effects of ellagic acid pretreatment on renal functions disturbances induced by global cerebral ischemic-reperfusion in rat

Submission Author: Khojasteh Hoseinynejad

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Background and Aim : Global cerebral ischemic-reperfusion (GCIR) causes disturbances in brain functions as well as other organs such as kidney. The aim of present study was to evaluate the protective effects of ellagic acid (EA) on certain renal disfunction after GCIR

Methods : Adult male Wistar rats (n=32, 250-300 g) were used. GCIR was induced by bilateral vertebral and common carotid arteries occlusion (4-VO). Animal groups were: 1) received normal saline as vehicle of EA, 2) normal saline + GCIR, 3) EA + GCIR, and 4) EA. Under anesthesia with ketamine/xylazine, GCIR was induced (20 and 30 min respectively) in related groups. EA (100 mg/kg, dissolved in normal saline) or normal saline was administered (1.5 ml/kg) orally for 10 consecutive days to the related groups. EEG was recorded from NTS in GCIR treated groups.

Results : Our data showed that: a) EEG in GCIR treated groups was flattened. b) GCIR reduced GFR ($p<0.01$) and pretreatment with EA prevented this reduction. c) BUN was increased by GCIR ($p<0.001$) and pretreatment with EA restored the BUN to normal level. d) Serum creatinine concentration was elevated by GCIR but not significantly, however, in EA+GCIR group serum creatinine was reduced ($p<0.05$). e) GCIR induced proteinuria ($p<0.05$) but, EA was unable to reduced proteinuria

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Conclusion : Results indicate that global cerebral ischemia-reperfusion impairs certain renal functions and ellagic acid as an antioxidant can restore these functions. Our results suggest the possible usefulness of ellagic acid in patients with brain stroke.

Keywords : Global cerebral ischemia, Ellagic acid, GFR, Proteinuria, BUN, Creatinine



Count: 228

Abstract ID: 548

Presentation Type: Poster

Preventive Effects of Ellagic Acid on Nucleus Tractus Solitarius Electrical Activity and Oxidative Stress Altered by Cerebral Global Ischemia/Reperfusion in Rat

Submission Author: Khojasteh Hoseinynejad

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Background and Aim : Cerebral ischemia commonly occurs when the blood flow to the entire brain or some part of the brain is disrupted. Global cerebral ischemia attenuates the nucleus tractus solitaries (NTS) EEG rhythm, increases the free radicals production and brain inflammation. Ellagic acid (EA) has antioxidative and anti-inflammatory effects against neural damages. The aim of this study was to evaluate the role of ellagic acid on EEG power in the global cerebral ischemia

Methods : Rats were divided into four groups: SO (sham) received normal saline, EA+SO, I/R (normal saline + ischemia/reperfusion), and EA + I/R. EA (100 mg/kg, dissolved in normal saline) or normal saline was administered orally (gavage) for 10 days. Animal underwent to 20 minutes of ischemia followed by 30 minutes of reperfusion in I/R and I/R+EA groups. EEG was recorded from NTS and serum antioxidant enzyme activity was measured.

Results : Data showed that ellagic acid improved electrical power of NTS. Theta and delta bands frequencies in the ischemic animals were decreased in I/R group with compared to SO group significantly ($P<0.001$). Ellagic acid has beneficial effect on superoxide dismutase activity in the ischemic animals with

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compared to I/R group ($P < 0.01$). In contrast, ellagic acid has no significant role on glutathione peroxidase activity in the pretreated ischemic rats in comparison with I/R group.

Conclusion : These findings suggest that ellagic acid increased antioxidant enzymes activity that scavenge the ROS due to ischemia so that it may have neuroprotective effect on NTS neurons and consequently reverse its electrophysiology pattern

Keywords : Ellagic acid; EEG; Antioxidant; Cerebral ischemia/reperfusion; Rat



Count: 229

Abstract ID: 623

Presentation Type: Poster

Study the role of hippocampal 5HT1D and 5HT1F receptors on passive avoidance memory in adult male rats

Submission Author: Mahdie Hosseini

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Background and Aim : Serotonin (5HT) signalling is mediated by its receptors subtypes. Some of 5HT receptors (i.g 5HT1D and 5HT1F receptors) are expressed in brain regions such as hippocampus which are involve on learning and memory processing. They may exert paradoxical effect on the learning and memory processing. The role of 5HT1E and 5HT1F on the memory retrieval are not clear. The aim of present study is to determine the role hippocampal 5HT1D and 5HT1F receptors on the stage of memory retrieval in the adult male rats.

Methods : Fifteen adult male rats (200-250 gr.) randomly divided into the five experimental groups, including: control, sham, PNU (5ht1D receptor agonist), BRL (5HT1D receptor antagonist), LY (5HT1F receptor agonist) groups. Two cannulae were implanted above the hippocampal dentate gyrus (DG). Following the recovery period, they were trained on a step-through passive avoidance (PA) learning and memory task. Memory retrieval was tested 24 h after training. Each rat received intra-DG injection of PNU, BRL or LY before retrieval test. The number of trials to acquisition, Step through latency (STL) into the dark compartment of shuttle box in the training and retrieval sessions and time spent in the dark compartment were measured and compared between experimental groups.

Results : The results showed that, on the training session, there were no significant differences in the STL and number of trials to acquisition between experimental groups. On the other hands, in the retrieval test there were significant differences in the STL and TDC between experimental groups. The STL of PNU treated group was more, but BRL and LY treated groups was less than control and sham groups, respectively. TDC of BRL and LY treated groups was more than control and sham treated groups and the TDC of PUN treated was less than control and sham group.

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Conclusion : It can be concluded that, hippocampal F and D subtypes of 5HT1 receptor has different action on the retrieval of PA memory. Activation and blockade of 5HT1D receptor improves and decline memory retention, respectively. Potentiation of 5HT1F receptor impairs retrieval of PA.

Keywords : 5HT1 receptor, Hippocampus, Memory, Rat



Count: 230
Abstract ID: 541
Presentation Type: Oral

Inducible nitric oxide inhibitor aminoguanidine, ameliorates deleterious effects of lipopolysaccharide on memory and long term potentiation in rat

Submission Author: Mahmoud Hosseini

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Background and Aim : An interaction between nitric oxide (NO) and neuro-inflammation has been considered to modulate learning and memory. In the present study, the effect of an inducible NO synthase (iNOS) inhibitor, aminoguanidine (AG) on lipopolysaccharide (LPS)-induced memory impairment was evaluated.

Methods : The rats were divided and treated: Control (Saline), LPS, AG - LPS and AG, before behavioral and electrophysiological experiments.

Results : The escape latency in Morris water maze (MWM) test and the latency to enter the dark compartment in Passive avoidance (PA) test in LPS group were significantly higher than in control ($P<0.001$) whereas, in AG-LPS group they were shorter than LPS group ($P<0.001$). The amplitude and slope of field excitatory post synaptic potential (fEPSP) decreased in LPS group compared to control group ($P<0.05$ and $P<0.01$) whereas, in AG-LPS group they were higher than LPS group ($P<0.05$). Malondialdehyde (MDA) and NO metabolites concentrations in the hippocampus and serum TNF α level of LPS group were higher than control group ($P<0.001$, $P<0.05$ and 0.01 respectively) while, in AG- LPS group they were lower than LPS group ($P<0.001$ and $P<0.01$ respectively). The thiol content and the activities of superoxide dismutase (SOD) and catalase (CAT) in the hippocampus of LPS group reduced compared to control group ($P<0.001$ and $P<0.05$ respectively) while, in AG - LPS group they enhanced compared to LPS ($P<0.001$ and $P<0.05$ respectively).

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Conclusion : It is suggested that increased NO has a role in LPS-induced learning and LTP impairments and the brain tissues oxidative damage which are preventable by iNOS inhibitor aminoguanidine.

Keywords : Learning, Memory, Lipopolysaccharide, Aminoguanidine, LTP, Inducible nitric oxide



Count: 231

Abstract ID: 75

Presentation Type: Poster

Late Paired Pulse Inhibition response in NBM lesion rats

Submission Author: Nasrin Hosseini

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Background and Aim : The nucleus basalis magnocellularis (NBM) is known as a major source of cholinergic projections to neocortex that is vulnerable to degeneration in Alzheimer's disease. Previous studies indicated that Alzheimer disease leads to impairments in hippocampus synaptic plasticity. Despite numerous anatomical, pharmacological, behavioral, and physiological investigations of NBM, there is no in vivo study of its effect on short term synaptic plasticity. Thus, the effects of bilateral lesion of the NBM on late paired pulse inhibition responses in the dentate gyrus of the hippocampus were assessed using electrophysiological techniques.

Methods : This experiment was investigated in male Wistar rats, with an initial weight of 250-300 g. Twenty-five animals randomly divided to three groups include: the control (C), sham operation (Sh) and NBM-lesion (L) groups. Lesion was induced by 5µg/µl bilateral injection of Ibotenic acid in the NBM. In all groups synaptic potency in the dentate gyrus evaluated by PS amplitude and EPSP slope before induction of late paired pulse inhibition. Then the paired pulse paradigm was used to stimulate the perforant pathway and field excitatory post-synaptic potentials (fEPSP) were recorded in interstimulus intervals 300, 500 and 1000 ms (late paired pulse inhibition) in dentate gyrus.

Results : Our results indicated that the PS amplitude and fEPSP slope significantly ($P<0.05$) decreased in 600,700,800,900 and 1000 µA stimulus intensity in the NBM-lesion group comparing to the control and sham groups in the input-output curves. Also in paired pulse paradigm responses, PS amplitude and fEPSP slope in NBM-lesion group were significantly decreased respect to control and sham groups in interstimulus intervals 300 ms. There were not significant differences between control and sham groups, indicating that the surgery had no effect on basal synaptic and late paired-pulse inhibition responses.

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Conclusion : These findings have shown that although NBM does not send direct cholinergic projections to the hippocampus, lesions of this cholinergic nucleus affects short neural plasticity in the dentate gyrus. In other words, it seems that hippocampal basal forebrain input disruption impaired short-term plasticity maybe by disrupting the basal synaptic responses and paired pulse inhibition phase. Thus, projections from the nucleus basalis magnocellularis appear to play a role in fronto-cortical plasticity, and manipulations of this system offer a model of cortical plasticity alteration in animal models of Alzheimer disease.

Keywords : NBM-lesion, Ibotenic acid, Paired pulse inhibition, Dentate gyrus, Rat.



Count: 232

Abstract ID: 31

Presentation Type: Poster

Decoding emotional stress using electroencephalograph signals: A functional connectivity analysis

Submission Author: Seyyed abed Hosseini

Seyyed abed Hosseini¹

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Background and Aim : This paper proposes a new functional connectivity to identify emotional stress states in the two main areas of the valance-arousal space by using bio-signals. Here, recognition of emotional stress stimuli in a stressful situation is investigated.

Methods : Three emotional conditions, including neutral, positive, and negative states, are examined. All participants are exposed to some visual emotional stimuli. We designed an efficient acquisition protocol to acquire the electroencephalography (EEG) and psychophysiological. Twenty healthy right-handed university students are recruited within/after examination period. The scalp EEG signals are obtained at the different locations, including FP1, FP2, T3, T4, and Pz. All participants gave written informed consent. During the pre-test, several questionnaires based on State-Trait Anxiety Inventory (STAI) have been evaluated in order to check the best psychological input to start the protocol phase. During the experiment, participant's perception of emotional stimuli is evaluated using the self-assessment manikin (SAM) questionnaire.

Results : Qualitative and quantitative evaluation of psychophysiological signals, including heart rate variability, skin conductance, respiration rate, and blood volume pulse, have been used to select suitable segments of EEG signal for improving efficiency and performance of emotional stress recognition system. After recording, EEG signatures of emotional states are estimated from connectivity patterns among eight brain regions. The labeled features are categorized using support vector machine (SVM) classifier.

Conclusion : The results show that EEG-based connectivity pattern is influenced by emotional stress level.

Keywords : Emotion, Connectivity, Electroencephalography, labeling process



Count: 233
Abstract ID: 85
Presentation Type: Oral

Decoding visual covert selective spatial attention using magnetoencephalography signals in brain-computer interface application

Submission Author: Seyyed abed Hosseini

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Background and Aim : This paper proposes a reliable approach to recognize visual covert selective spatial attention (VCSSA) in brain-computer interface (BCI) application using magnetoencephalography (MEG) signals. The MEG signals for BCIs offer higher spatiotemporal resolution and lower distortion as compared with their competing brain signaling techniques such as the electroencephalography.

Methods : The proposed approach proposes segmentation, pre-processing, feature extraction, features standardization, feature selection and classification. In particular, the proposed approach uses SL in order to improve the spatial resolution of MEG channels.

Results : The results indicate that the combined use of the above elements can effectively decipher the cognitive process of VCSSA. Using five-fold cross-validation, the proposed approach robustly predicts the location of the attended stimulus with an accuracy of up to 93.17% for recognizing one dimensional tasks.

Conclusion : The obtained average accuracy is slightly higher than any of the six previously reported methods when tested on the same data. Also, the frontal, parietal, and temporal regions of brain activity provide better average accuracy in comparison with the occipital region. The proposed approach supports the hypothesis that VCSSA is not limited to a particular region and is widely spread in various regions of the brain.

Keywords : Visual covert attention, Selective spatial attention, Magnetoencephalography, Brain-computer interface.



Count: 234

Abstract ID: 501

Presentation Type: Poster

Effects of different doses of crocin on learning and short term memory in chronic stressed rats

Submission Author: Azadehalsadat Hosseini Dastgerdi

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Background and Aim : Stress is an important factor that influences learning and memory processes and crocin as one of the component of saffron exhibits variety of pharmacological effects including learning and memory enhancement. This Study demonstrates that different dose of crocin may have various beneficial effects in the improvement of learning disorders from physiological stress. The present study investigated the effects of different doses of crocin on learning and short term memory in chronic stressed rats.

Methods : Thirty-two male Wistar rats were randomly allocated to four different groups (n=8 per treatment): control, stress (restraint stress as one kind of emotional stress; 6 hour per day for 21 days), two groups receiving daily intraperitoneal injections of crocin (30, and 60 mg/kg) accompanied by a period of 21 days restrain stress. For evaluation of learning and short term memory, latency was evaluated using the passive avoidance test at pre shock and one day after a foot shock. Latencies were measured to determine changes learning and memory in response to different doses crocin.

Results : Results revealed that doses of 30 and 60 mg/kg crocin had protective effect on latencies at pre and post foot shock in stressed rats compared to the control and stress groups. On the other hand, the comparison of the all groups revealed more beneficial effects of 30 mg/kg on learning and memory in chronic stressed rats.

Conclusion : Based on the results obtained, the beneficial effects of 30 mg/kg of crocin observed on learning and short term memory (memory one day after learning) in chronic restraint stressed rats. Although dose 60 mg/kg did not show significant decrease on learning and memory compared to 30 mg/kg of crocin. It may be concluded that, compared to higher doses, lower dose of crocin could improve learning and short

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term memory. Moreover, it proposed the activation of different neurotransmitter systems and stress hormones in brain functions by crocin usage.

Keywords : Learning; Memory; Stress; Passive Avoidance; Crocin; Rat.



Count: 235

Abstract ID: 286

Presentation Type: Oral

Effects of systemic acute and chronic hypoxia on the blood brain barrier

Submission Author: Fezzeh Hosseinzadeh

Fezzeh Hosseinzadeh¹, Gisou Mohaddes²

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Background and Aim : Brain edema is one of the most important complications in different injuries of central nervous system such as stroke, brain trauma and also altitudes disease. These neurological disturbances are concomitant with tissue hypoxia. It is an important pathogenic factor for the induction of vascular leakage and brain edema formation. However, the underlying mechanisms remain poorly understood. The present study was conducted to determine the effects of acute and chronic hypoxic systemic on the BBB disruption in the hypoxic rats

Methods : Adult male Wistar rats were divided into acute and chronic controls, acute or chronic hypoxia. Systemic hypoxia was induced in rats by a hypoxic chamber (O₂ 10-11%) for two days (acute) or ten days (chronic). Subsequently, after hypoxia, brain edema, TNF-a level, VEGF, MMP9; occludin and ZO-1 protein levels were assessed by dry-wet, ELISA and western blotting methods respectively.

Results : The results showed that acute ($P < 0.001$) and chronic ($P < 0.05$) hypoxia caused an increase of brain edema. Acute hypoxia caused an increase of serum TNF-a level. TNF-a level in chronic hypoxia did not significantly change. Western blot analysis revealed that MMP9, VEGF expressions significantly increased in acute and chronic hypoxia and ZO-1 and occludin expressions significantly decreased in acute and chronic hypoxia.

Conclusion : Our data showed that tight junction proteins such as occludin and ZO-1 are essential for maintaining the BBB integrity and decrease of these proteins leads to the BBB permeability. These effects of hypoxia may have been exerted primarily by increased of the production of TNF-a, MMP9 and VEGF in the hypoxic condition.

Keywords : Hypoxia, brain edema, blood brain barrier



Count: 236

Abstract ID: 238

Presentation Type: Poster

Elevated Levels of plasma endothelial microparticles in Alzheimer's disease with vascular risk factors

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Background and Aim : Alzheimer's disease (AD) is known to be associated with cerebrovascular abnormalities. Microparticles (MPs) are membrane vesicles released in response to various stimuli such as activation or apoptosis, and involved in the pathogenesis of many procoagulant diseases, especially vascular diseases. The goal of this study has been evaluation of the hypothesis that endothelial MPs (EMPs) would be increased in AD patients with vascular risk factors.

Methods : We characterized EMP using anti-CD144 (VE-Cadherin) antibody in AD patients (with and without vascular dysfunction) and age/gender-matched controls. The plasma Annexin V+ CD41a- CD144+ EMPs were analyzed by flow cytometry and the results are presented as the number of EMP counts per ml of plasma. All patients received the Functional Assessment Staging (FAST), and the Mini Mental State Examination (MMSE).

Results : The plasma Annexin V+ CD41a- CD144+ EMP assay revealed significantly elevated levels in the AD patients with vascular risk factors as compared with the AD patients without vascular complications and control group ($P < 0.05$). No association was found between plasma EMP levels and the severity of AD; cognitive decline parameters either MMSE or FAST ($P > 0.05$).

Conclusion : Increased plasma levels of EMPs by providing a quantitative assessment of endothelial cell dysfunction, may be useful for understanding vascular pathophysiology in AD.

Keywords : Alzheimer; vascular risk factor; endothelial microparticles



Count: 237

Abstract ID: 37

Presentation Type: Poster

The cognitive disorders in children with HIV and communication disorders

Submission Author: Zahra Ilkhani

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Background and Aim : Human Immunodeficiency Virus (HIV) infection is a viral disease causing various impairments in both central and peripheral nervous systems. This may imply the involvement of those brain areas responsible for language, speech, motor and memory functions and cognitive. Cognitive impairment is one of the important area that can be the reason of other problems such as communication disorders in children with HIV. So, the purpose of this study is the investigation of the cognition disorder in children with HIV.

Methods : In this study, we review latest literature on “HIV”, "cognition" and “communication disorder” and “speech and language problems” reported in PubMed, Science Direct and Google Scholar between 2007 to 2012

Results : HIV disease in children is frequently associated with mild to severe cognition disorders. It may be seen early in the course of this disease. The changes of the CNS raises the possibility of the cognition disorders. Cognitive changes include problems with abstract reasoning, memory disorders, executive function, learning difficulties, slow information processing, and retardation of the spontaneity of speech. It has an important contributing role in the development of communication disorders. Communication is an essential part of interaction for human. That is why, the survey of cognition disorders is too much important. Because of the cognitive importance, the consideration of this is undeniable. Subsequently, the speech and language problems emerge from the cognition disorders. The speech and language problems is associated with memory defect and slow processing. It is also said, the slow processing has been underling the speech and language impairment. Both of the speech and language problems is resulting in interaction disorders.

Conclusion : the cognition disorders can be the center of the communication disorders and another problems related to speech and language. Therefore, many of the searches are required into cognition disorders which is associated with concomitant defects.

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Keywords : HIV”, "cognition" and “communication disorder” and “speech and language problems”



Count: 238

Abstract ID: 38

Presentation Type: Poster

The investigation of execution dysfunction in Human Immunodeficiency Virus (HIV)

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Background and Aim : Human Immunodeficiency Virus (HIV) is a neurodevelopmental disease which involves central and peripheral nervous system in children with HIV disease. It has been associated with speech, language and especially cognitive impairment. Executive function is one of the important area in cognitive disorder. The limited research has been done in this area. So, the present study aims the executive dysfunction in children with HIV.

Methods : In this study, we review latest literature on “HIV”, "cognitive impairment" and “executive dysfunction” and in “children with HIV” reported in PubMed, Science Direct and Google Scholar between 2007 to 2012.

Results : cognitive area has been associated with attention span, concentration, memory, language and learning abilities, and executive functions. Executive function can be one of the significant complications associated with HIV. Execution function includes various areas such as attention control, planning, working memory, making decision, cognitive social. Deficiency in each of these areas may cause different impairments such as speech and language problems. Therefore, paying attention to execution function and the areas related to its cause the exact assessment for therapist. On the other hand, communication disorder occurs in the children with HIV which is associated with execution dysfunction. It is essential the investigation of the executive dysfunction by therapist to avoid communication disorder.

Conclusion : According to this paper, dysfunction disorder as a significant complication in cognition area should be investigated by speech and language therapist. So it is important the consideration of the executive dysfunction in children with HIV.

Keywords : “HIV”, "cognitive impairment" and “executive dysfunction” and in “children with HIV”



Count: 239

Abstract ID: 39

Presentation Type: Poster

: the investigation of the speech impairment in a child with HIV: the study of phonological processes (case report)

Submission Author: Zahra Ilkhani

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Background and Aim : Human Immunodeficiency Virus (HIV) infection is a viral disease causing various impairments in both central and peripheral nervous systems. This may imply the involvement of those brain areas responsible for language, speech, motor and memory functions. There are some factors which destroy speech and language in HIV. Environmental risk factors such as limited communication have an important contributing role in the development of speech and language impairments. Phonological processes are considered as one important aspect of speech that are, developmentally speaking, either normal or abnormal. The aim of this study is to evaluate speech impairment in a child with HIV.

Methods : Through a case-report study, researchers tried to describe the phonological processes of a 4-year-old boy with AIDS who was referred to them for speech evaluation and treatment from the orphanage that cared for him. HIV infection had been diagnosed by Blood testing.

Results : The patient's speech was dominated by single-word utterances, though two-word sentences occurred rarely. He had rather more prominent difficulties in expression than in reception of language. Based on language assessment results, he was operating at emerging language stage and substitution process in form of velar fronting was the most frequent phonological process in his speech. The preponderance of substitutions in the patient's speech was considered as a contributing factor for his decreased speech intelligibility.

Conclusion : Considering the results of the present study, further research into the speech and language functioning of patients with HIV infection is required in order to help therapists making appropriate decisions regarding the assessment and treatment of such patients.

Keywords : HIV infection, intelligibility of speech, phonological process, process of substitution



Count: 240

Abstract ID: 376

Presentation Type: Oral

Baclofen elicits antidepressant like effect in mouse force swimming test by inhibiting NMDA receptor/NO/cGMP pathway

Submission Author: MUHAMMAD IMRAN KHAN

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Background and Aim : Depression is one of the serious brain disorders. There is still a lot of challenges to address this disorder from the clinical perspective as most of the drugs has minimal effect. In current study we aimed to investigate the involvement of N-methyl-D-aspartate receptor (NMDAR) and nitric oxide (NO)/cyclic guanosine monophosphate (cGMP) system in the antidepressant-like effects of baclofen

Methods : Force swimming test was used to study the underlying signaling and antidepressant like effect of baclofen. Open field test was applied to assess the effect of drug on locomotor activity.

Results : Administration of Baclofen (0.5 and 1 mg/kg, i.p.) reduced the immobility interval in the FST. Prior administration of L-arginine (750 mg/kg, i.p.), a nitric oxide synthase substrate or sildenafil (5 mg/kg, i.p.) a phosphodiesterase 5 inhibitor into mice suppressed the antidepressant-like activity of baclofen (1 mg/kg, i.p.). Co-treatment of 7-nitroindazole (50 mg/kg, i.p.), an inhibitor of neuronal nitric oxide synthase, L-NAME (10 mg/kg, i.p.) a non-specific inhibitor of nitric oxide synthase or MK-801 (0.05 mg/kg, i.p.) an NMDA receptor antagonist with subeffective dose of baclofen (0.1 mg/kg, i.p.), reduced the immobility time in the FST as compared to the drugs when used alone. Co-administration of lower doses of MK-801 (0.01 mg/kg) or L-NAME (1 mg/kg) failed to affect immobility time however, simultaneous administration of these two agents in same dose with subeffective dose of baclofen (0.1 mg/kg, i.p.), minimized the immobility time in the FST

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Conclusion : Our finding thus suggest that NMDA receptors and l-arginine-NO-GMP pathway is involved in the antidepressant-like action of baclofen

Keywords : Baclofen, depression nitric oxide, NMDA receptor, mice



Count: 241

Abstract ID: 377

Presentation Type: Poster

Involvement of NMDA receptors and l-arginine/nitric oxide/cyclic guanosine monophosphate pathway in the antidepressant-like effects of topiramate in mice forced swimming test

Submission Author: MUHAMMAD IMRAN KHAN

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Background and Aim : Topiramate (TPM) is an agent primarily used in the treatment of epilepsy. The current study was basically aimed to investigate the influence of TPM on depression by inhibiting NMDA receptor and nitric oxide-cGMP pathway

Methods : The antidepressant like activity and underlying mechanism was evaluated using force swimming test and open field test.

Results : When TPM was administered in a dose of 20 and 30 mg/kg by i.p. route it reduced the immobility time during FST. However this effect of TPM (30 mg/kg, i.p.) in the FST was abolished when the mice were pretreated either with NMDA (75 mg/kg, i.p.), or l-arginine (750 mg/kg, i.p. NO precursor), or sildenafil (5 mg/kg, i.p. Phosphodiesterase 5 inhibitor). The immobility time in the FST was reduced after administration of L-NAME (10 mg/kg, i.p. a non-specific NOS inhibitor), 7-nitoinidazol (30 mg/kg, i.p. a nNOS inhibitor) or MK-801 (0.05 mg/kg, i.p. a NMDA receptor antagonist) in combination with a subeffective dose of TPM (10 mg/kg, i.p.) as compared with single use of either drug. Co-administrated of lower doses of MK-801 (0.01 mg/kg) or L-NAME (1 mg/kg) failed to effect immobility time. However, simultaneous administration of these two agents in the same doses with subeffective dose of TPM (10 mg/kg, i.p.), reduced the immobility time during FST. None of these drugs were found to have a profound effect on the locomotor activity per se during the open field test.

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Conclusion : Taking into consideration our results demonstrates that TPM exhibit antidepressant-like effect which is achieved either due to inhibition of NMDA receptors or NO-cGMP synthesis

Keywords : NMDA, Topiramate, nitric oxide, cGMP, Force swimming test



Count: 242

Abstract ID: 401

Presentation Type: Poster

Thalidomide attenuates the development and expression of antinociceptive tolerance to μ -opioid agonist morphine through L-arginine-iNOS and nitric oxide pathway

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Background and Aim : Morphine is a μ -opioid analgesic drug used in the treatment and management of chronic pain. However, due to development of antinociceptive tolerance its clinical use is compromised. Thalidomide is a glutamic acid derivative which reemerged recently as a potential candidate to counteract a number of disorders including neurodegenerative disorders. The potential effect and underlying mechanisms of thalidomide on morphine-induced antinociceptive tolerance is still elusive. Hence, the present study was designed to explore the effect of thalidomide on the development and expression of morphine antinociceptive tolerance through L-arginine-nitric oxide (NO) pathway.

Methods : Using hot plate and tail flick test antinociceptive tolerance threshold was determined in the absence or presence of various intervention. Molecular aspects of thalidomide effect were studied using T98G cell line.

Results : When thalidomide was administered in a dose of 17.5 mg/kg before each dose of morphine chronically for 5 days it prevented the development of nociceptive tolerance. Also, a single dose of thalidomide 20 mg/kg attenuated the expression phase. The protective effect of thalidomide was augmented in development phase when co-administration with NOS inhibitors like L-NAME (non-selective NOS inhibitor; 2 mg/kg) or aminoguanidine (selective inducible NOS inhibitor; 50 mg/kg). Also, the reversal effect of thalidomide in expression phase was potentiated with concomitant administrated of L-NAME (5

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mg/kg) or aminoguanidine (100 mg/kg). Co-administration of ODQ (a guanylyl cyclase inhibitor) 10 mg/kg in developmental phase or 20 mg/kg in expression phase also progressively increased the pain threshold. In addition, thalidomide (10 μ M) also significantly inhibited the expression of iNOS gene in morphine rendered T98G cell line.

Conclusion : Hence, our findings suggest that thalidomide has neuroprotective effect both in the development and expression phases of morphine antinociceptive tolerance. It is also evident that this effect of thalidomide is induced by the inhibition of NOS enzyme predominantly iNOS.

Keywords : Thalidomide, Morphine, Antinociception, Tolerance, Nitric oxide, Mice

Count: 243
Abstract ID: 291
Presentation Type: Oral

Diabetes in pregnancy impairs the distribution of GluR2 subtype of AMPA receptor in the hippocampus of rat offspring

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Background and Aim : Diabetes during pregnancy period impairs the development of hippocampus, and is associated with neurocognitive and neurobehavioral problems in the offspring. The GluR2 subunit of AMPA receptor plays an important role in synaptic plasticity and cognitive function. The present study aimed to examine the effects of maternal diabetes on the distribution pattern of GluR2 in the developing rat hippocampus using immunohistochemical staining.

Methods : Wistar female rats were maintained diabetic from a week before pregnancy through parturition. At the end of pregnancy, the male offspring euthanized on postnatal days (P) 0, 7, and 14. Optical density of GluR2 expressing neurons in different hippocampal subfields (CA1, CA2, CA3, and DG) was estimated using ImageJ software.

Results : At P0, we found a significantly increase in the expression of GluR2 in the CA3 area in neonates born to diabetic animals ($p < 0.01$) when compared to control and insulin treated diabetic groups. A marked decrease in the expression of GluR2 was found in all hippocampal subfields of diabetic group rat neonates at P7 and P14 ($p < 0.01$ each). There were no significant differences in the GluR2 expression in the different hippocampal sub-fields between the insulin-treated diabetic group and controls ($p > 0.05$).

Conclusion : Our data indicate that diabetes in pregnancy reduced the expression and localization of GluR2 in offspring hippocampus. This alteration may be considered as a probable reason for the structural and

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cognitive abnormalities observed in the offspring born to diabetic mothers. Furthermore, the maternal glycaemia control by insulin treatment in the most cases normalized these negative effects.

Keywords : Maternal diabetes; Hippocampus; GluR2 subtype; AMPA receptors; Rat neonate.



Count: 244

Abstract ID: 384

Presentation Type: Poster

Characterization of Isolated Neural Stem Cells from Adult Rhesus Macaque Monkey's Subventricular Zone, Cortex and Caudate Nucleus to Transplantation of Subacute Spinal Cord Injury Model and Evaluation

Submission Author: Razieh Jabeti

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Background and Aim : Currently, cellular transplantation for spinal cord injuries (SCI) is the subject of numerous preclinical studies. Among many cell types in the adult brain, there is a unique subpopulation of neural stem cells (NSC) that can self-renew and differentiate into neurons. The aim of this study is to explore the efficacy of adult NSC in a primate SCI model.

Methods : In this experimental study, isolated cells were analyzed by flow cytometry, immunocytochemistry and qRT-PCR. Next, BrdU-labeled cells were transplanted into a contusion SCI model. After that, animals were clinically observed for 1 year.

Results : The isolated cells from subventricular zone have the same characteristics of neural stem cells which include self-renewal and multipotency. Therefore, these cells were selected as a source for transplantation. The results show that functional recovery of group which get the transplanted cell is much better than control group.

Conclusion : Our findings have indicated that isolated neural stem cells from subventricular zone can facilitate recovery in contusion SCI models in rhesus macaque monkeys. These cells can be a valuable choice of autologous cell sources for translating to clinic.

Keywords : Neural Stem Cells, Subventricular Zone, Spinal cord injury, Rhesus Macaque.



Count: 245

Abstract ID: 674

Presentation Type: Poster

The study of emotional distress tolerance in relation to panic and social anxiety disorders among adults

Submission Author: Farshad Jafari

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Background and Aim : Distress tolerance (DT) has been proposed as one such transdiagnostic vulnerability factor. Studies have linked poor DT to a number of mental health concerns and have highlighted the importance of targeting DT in treatment. The aim of present study was to investigate the emotional distress tolerance in relation to panic and social anxiety disorders.

Methods : Method of the present study was descriptive- correlation. Participant were 378 outpatients sample with a principal diagnosis of PD and SAD (Men [Mage = 33.53; SD=12.46] women [Mage= 34.33; SD: 12.66]). They filled out three scale in order to gathering data: Distress Tolerance Scale (DTS), Panic Disorder Severity Scale—Self-Report (PDSS-SR) and Social Phobia Inventory (SPIN). We also used Mean, standard deviation, person correlation coefficient and regression in order to analyzing data.

Results : Results indicated that DTS total scores were significantly correlated with social anxiety ($p < 0.001$), Contrary to our hypothesis however, there was no relationship between DTS total and PDSS-SR scores ($p = 0.994$).

Conclusion : The current study examined EDT across panic and social anxiety disorders. On average, participants self-reported difficulty tolerating emotional distress, irrespective of their principle, So paying attention to this issue is essential for those who are dealing with people mental health

Keywords : Emotional distress tolerance , Panic disorder, Social anxiety disorder , Adults



Count: 246
Abstract ID: 456
Presentation Type: Poster

Comparative study of personality disorders in Men with stimulant use and normal

Submission Author: Meysam Jafari

Meysam Jafari¹

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Background and Aim : Given the importance of using drugs in the country and among psychiatric disorders, The aim of this study was to evaluate and compare the personality disorders among men using drugs and compared them with normal men.

Methods : The research method was causal-comparative, A total of 48 men admitted to addiction treatment centers in Tehran (in the second half 94) And 53 of Bhnjarba man matched in age, education, married or single status pay and employment, and also considering the inclusion criteria and were selected with purposive sampling. To collect data, a questionnaire was used clinically million and demographic information. T-test data analysis software SPSS-18 was used.

Results : Test results indicated that the two groups in all subscales million test included clinical personality patterns (schizoid, avoidant, depressive, dependent), Severe personality patterns (borderline, paranoid) Clinical symptoms (anxiety, somatic problems, bipolar disorder, depression, alcohol dependence, drug addiction and post-traumatic stress disorder) And serious clinical symptoms (major depression), significantly different between the consumer and the mean score for men was higher than normal men.

Conclusion : Given that personality disorders are stable and less subject to change And the undeniable impact that these problems can be in the process of using drugs and recurrence of these disorders It is necessary to treat these problems and especially to identify the issues and recommended treatment And also in the treatment and prevention programs should be given to the comorbidity of personality disorders.

Keywords : Personality disorders, stimulant use



Count: 247

Abstract ID: 160

Presentation Type: Oral

Modulatory Effect of Inhibitory System in Absence Seizure

Submission Author: Maryam Jafarian

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Background and Aim : Absence epilepsy is nonconvulsive recurrent seizures accompanied by a sudden drop in consciousness and amnesia, accounts for approximately 8% of epileptic patients among school-aged children. This study focuses on the modulatory effect of inhibitory system in absence epilepsy

Methods : Experimental groups were divided into four groups of six rats of both WAG/Rij and Wistar strains with 2 and 6 months of age. GABA expression levels of different genes and distribution of receptor in the somatosensory cortex and the dorsal-lateral nucleus of the thalamus were studied. The laterodorsal nucleus of the thalamus (LD) and somatosensory cortex (SC) were evaluated with a single unit recording technique and electrocorticography

Results : Data showed that gene expression levels of G-aalpa1, G-aGama2 in the LD in four groups were not significantly different. Distribution of G-aalpa1 receptors in six months WAG / Rij was significantly lower than the other groups. Distribution of G-aGama2 receptors in six months WAG / Rij was significantly higher than the other groups. The expression of all genes in the SC into two groups of two and six months WAG/Rij was significantly lower than six and two month-old wistar groups. Distribution G-aalpa1, G-aGama2 receptors in the cortex of six months WAG/Rij was considerably less than in groups of two and six months old wistaR. Neuronal discharge of LD neurons with correlated spike-wave discharges (SWDs) in the cortex, showed activity which precedes the spike component of the SWD. Microiontophoretic injection of GABAA antagonist showed a significant increase in the duration and the number of SWDs during and after injection compared to preinjection period

Conclusion : These findings indicate the crucial role of LD in epileptiform discharges in an absence seizure model.

Keywords : absence epilepsy, laterodorsal nucleus of the thalamus (LD), GABAA



Count: 248

Abstract ID: 7

Presentation Type: Oral

Tramadol state-dependent memory: involvement of dorsal hippocampal muscarinic acetylcholine receptors

Submission Author: Majid JafariSabet

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Background and Aim : The effects on tramadol state-dependent memory of bilateral intradorsal hippocampal (intra-CA1) injections of physostigmine, an acetylcholinesterase inhibitor, and atropine, a muscarinic acetylcholine receptor antagonist, were examined in adult male NMRI mice.

Methods : A single-trial stepdown passive avoidance task was used for the assessment of memory retention.

Results : Post-training intra-CA1 administration of an atypical μ -opioid receptor agonist, tramadol (0.5 and 1 $\mu\text{g}/\text{mouse}$), dose dependently impaired memory retention. Pretest injection of tramadol (0.5 and 1 $\mu\text{g}/\text{mouse}$, intra- CA1) induced state-dependent retrieval of the memory acquired under the influence of post-training tramadol (1 $\mu\text{g}/\text{mouse}$, intra-CA1). A pretest intra-CA1 injection of physostigmine (1 $\mu\text{g}/\text{mouse}$) reversed the memory impairment induced by post-training administration of tramadol (1 $\mu\text{g}/\text{mouse}$, intra-CA1). Moreover, pretest administration of physostigmine (0.5 and 1 $\mu\text{g}/\text{mouse}$, intra- CA1) with an ineffective dose of tramadol (0.25 $\mu\text{g}/\text{mouse}$, intra-CA1) also significantly restored retrieval. Pretest administration of physostigmine (0.25, 0.5, and 1 $\mu\text{g}/\text{mouse}$, intra-CA1) by itself did not affect memory retention. A pretest intra-CA1 injection of the atropine (1 and 2 $\mu\text{g}/\text{mouse}$) 5 min before the administration of tramadol (1 $\mu\text{g}/\text{mouse}$, intra-CA1) dose dependently inhibited tramadol state-dependent memory. Pretest administration of atropine (0.5, 1, and 2 $\mu\text{g}/\text{mouse}$, intra-CA1) by itself did not affect memory retention.

Conclusion : It can be concluded that dorsal hippocampal muscarinic acetylcholine receptor mechanisms play an important role in the modulation of tramadol state-dependent memory.

Keywords : atropine, dorsal hippocampus, mouse, physostigmine, state-dependent memory, tramadol

Count: 249

Abstract ID: 99

Presentation Type: Poster

The antinociceptive effect of *Humulus lupulus* leaf hydro-alcoholic extract in male mice

Submission Author: Saeedeh Jahan panah

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Background and Aim : Pain is one of the main causes of suffering, discomfort and disability in human society. Since most pain medications have side effects, it seems essential to find new analgesics with fewer side effects. The aim of this study was to evaluate the analgesic effect of *Humulus lupulus* (hops) leaf on pain in mice.

Methods : In this experimental study, male NMRI mice were divided into 18 groups (7 in each); control: saline intraperitoneal (i.p.) injection, positive control: morphine 2.5 mg/kg subcutaneous (s.c.), hops extract groups: 10, 25, 50 & 100 mg/kg (i.p.). The LD50 of hops leaf extract in mice was also determined. The tail flick, writhing and formalin tests were used to assess pain. The results were analyzed using one-way ANOVA followed by post hoc Tukey test. $P < 0.05$ was considered statistically significant.

Results : In the tail flick test, there was no difference between hops extract groups and control. In the formalin test, pain was significantly reduced in both acute and chronic phases by the extract (10, 25, 50 & 100 mg/kg) ($P < 0.001$). In writhing test, the hops extract reduced the number of abdominal contractions in comparison to control group significantly ($P < 0.001$). Pain was significantly reduced by morphine in all tests ($P < 0.001$). The intraperitoneal LD50 value of hops in mice was 902 mg/kg.

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Conclusion : Our results showed the antinociceptive effect of hops leaf Hydro-alcoholic extract in both writhing and formalin tests. It seems Hops extract may relieve pain. The mechanism of its analgesic effect needs further studies.

Keywords : Formalin Test, Humulus lupulus, Pain, Writhing Test



Count: 250

Abstract ID: 101

Presentation Type: Poster

Oral *Humulus lupulus* (Hops) extract administration and pain

Submission Author: Saeedeh Jahan panah

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Background and Aim : Herbal medication was considered as alternative drugs to relieve pain, because of side effects of synthetic analgesic drugs. This study aimed to investigate the analgesic effect of oral (p.o.) hops leaf extract administration in mice.

Methods : We used 18 groups of mice in this experiment as follows: the doses of 10, 25, 50 & 100 mg/kg of hops leaf extract (p.o.) in formalin, writhing and tail-flick tests. Morphine sulfate (2.5 mg/kg; s.c.) was also injected. The oral LD50 value of hops leaf extract was also determined. To analyze the results, one-way ANOVA and post hoc Tukey tests were performed. P value less than 0.05 was set as significant level.

Results : The Hops extract exhibited antinociceptive effects in formalin and writhing tests. The formalin test results showed that all doses of extract reduced pain in the chronic phase significantly (P?

Conclusion : The results suggest that the oral administration of Hydro-alcoholic extract of Hops has antinociceptive activity in different experimental pain models in mice.

Keywords : Antinociceptive, Formalin Test, Hops.



Count: 251

Abstract ID: 118

Presentation Type: Poster

beta-Amyloid protein-induced Alzheimer's disease animal model

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Background and Aim : Alzheimer's disease (AD) is the most common form of dementia. At the diagnostic stage, the AD brain is characterized by the accumulation of extracellular amyloid plaques, intracellular neurofibrillary tangles and neuronal loss. The amyloid plaques are composed mainly of aggregated amyloid- β peptide ($A\beta$) which is derived by proteolytic cleavage from the amyloid precursor protein (APP). The $A\beta$ peptide can consist of 39–43 amino acid residues, but the two major forms are $A\beta$ 40 accounting for ~90% of all $A\beta$ released from cells and the longer $A\beta$ 42 accounting for only ~10%. The acute neurodegenerative effect of $A\beta$ and amyloid cores from the brains of AD patients was demonstrated in vivo already in 1991, when these substances were injected into the brain of two different rat models. Our goal in this study injection of $A\beta$ to hippocampal region CA1 and create a non-transgenic rat model of Alzheimer's disease. In this project, The $A\beta$ 1-42 was injected bilaterally into hippocampal region CA1 male rats and spatial performance was assessed 7 day after $A\beta$ injection by Barnes maze test. These results show that beta-amyloid protein-treated rats could be used as an animal model for AD. in the future we will investigate the effects exosome on behavioral functions in a rat model of amyloid β ($A\beta$) induced Alzheimer's disease

Methods : $A\beta$ 1-40 (Sigma) was firstly dissolved in distilled water and then diluted in phosphate buffer saline (PBS) at a concentration of $2\mu\text{g}/\mu\text{L}$ and incubated for 5 days at 37°C to make the state of aggregation prior to injection. Adult male Wistar rats (180–230 g) were randomly assigned to four groups: First group = control, Second group = sham, Third group = Alzheimer's disease, Fourth group = Alzheimer's disease + treat. All of the rats were anesthetized by intraperitoneal injection of sodium pentobarbital and placed on a stereotaxic instrument. The rats were administered $2\mu\text{L}$ of normal saline (control group) or $A\beta$ 1-40 (other groups) bilaterally in the hippocampus over 5 min using a Hamilton micro syringe with a 26S gauge needle at 3.3 mm posterior to bregma, ± 3.5 mm lateral to midline, 2.8 mm dorsoventral from top of the skull bilaterally according to the atlas by Paxinos and Watson. Then spatial performance was assessed 7 day after $A\beta$ injection by Barnes maze test.

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Results : These results suggest that the deposition of beta-amyloid protein in the brain is related to the impairment of learning, and that beta-amyloid protein-treated rats could be used as an animal model for AD. This is consistent with the results from previous studies.

Conclusion : We conclude that A beta infusion models will be a useful complement to transgenic approaches to Alzheimer's pathology.

Keywords : alzheimer disease; amyloid- β ; hippocampal region CA1



Count: 252

Abstract ID: 204

Presentation Type: Poster

The effect of intraperitoneal administration of aqueous extract of Melia azedirach leaves on rat paw inflammatory edema

Submission Author: Alieh Jalali

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Background and Aim : Inflammation is a physiological response of the body to harmful stimuli, such as pathogens, damaged cells, or irritants which leads to swelling, redness, warmth and itching in affected area. In this study the anti-inflammatory effects of the i.p. dose 200 mg/kg of aqueous extract of Melia azedirach leaves was investigated.

Methods : After the preparation of plant leaves aqueous extract, male Wistar rats (200-250gr) were randomly divided into 3 groups: Control groups, sham groups (i.p. Saline) and 200 mg/kg i.p. dose extract receiving group. Inflammation was induced in the rats hind paw by the injection of 0.05 ml of formalin 2.5% and paw volume was measured using plethysmometric method before and one hour after the injection.

Results : Saline didn't have any effects on formalin- induced paw edema but the 200 mg/kg dose of Melia azedirach leaves extract reduced the volume of inflammatory paw edema ($p < 0/001$).

Conclusion : The results indicate that aqueous extract of Melia azedirach leaves have the anti-inflammatory effects that may be due to the presence of tannins and steroid components within the extract which probably inhibit the synthesis, release or action of inflammatory mediators same as histamine and serotonin, this assumption needs more investigations.

Keywords : Melia azedirach; edema; Tannins; Steroid components; plethysmometer



Count: 253

Abstract ID: 205

Presentation Type: Poster

The effect of intraperitoneal administration of aqueous extract of Melia azedirach leaves on pain in Wistar rats

Submission Author: Alieh Jalali

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Background and Aim : The application of herbal plants instead of synthetic drugs has been increasing in the recent years because of their lower side-effects and high varieties of efficient components. One of these herbs, *Melia azedarach* L. belongs to the family of Meliaceae, which is widespread in Mashhad. Various scientific studies have reported the anti-cancer, anti-viral, anti-malarial, anti-fertility and analgesic (visceral pain) activities of this plant. This research aims to investigate the effects of aqueous extract of *Melia azedirach* leaves on thermal and chemical pains.

Methods : After the preparation of plant leaves aqueous extract, male Wistar rats (200-250gr) were randomly divided into 3 groups: Control groups, sham groups (i.p. Saline) and 200 mg/kg i.p. dose extract receiving group. In order to evaluate the chemical pain, formalin test was used and to investigate thermal pain, tail flick test was performed.

Results : Solvent didn't have any effects on formalin and tail flick tests but the 200 mg/kg dose of *Melia azedirach* leaves extract showed a decreasing effect on pain in the first and second phase of formalin test ($p < 0/001$), but the extract didn't show anti nociceptive effects in thermal pain at tail flick test.

Conclusion : The results indicate that aqueous extract of *Melia azedirach* leaves has analgesic properties on the chemical pain of the formalin test and may be due to the presence of flavonoids, glycosides, tannins and steroid and terpenoid components which needs more investigations.

Keywords : *Melia azedirach*; Formalin test; Tail flick test; Chemical pain; Thermal pain



Count: 254
Abstract ID: 218
Presentation Type: Oral

The effect of Methamphetamine exposure during pregnancy and lactation on Doublecortin immunoreactivity in hippocampus of rat's offspring

Submission Author: Zahra Jalayeri

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Background and Aim : Doublecortin (DCX) is a microtubule-associated protein expressed by neuronal precursor cells and immature neurons in embryonic and adult cortical structures. Methamphetamine (MA) is a highly addictive stimulant and one of the most frequently used illicit drugs in the worldwide. Also half of MA users are women in reproductive age, who would continue using the drug also during pregnancy. The aim of this study is comparison of MA abuse in prenatal and postnatal periods on the DCX immunoreactivity in rat pups hippocampus.

Methods : 20 pregnant Female rats were randomized to 4 groups (n=5). 1) Pregnant rats that are received methamphetamine (5 mg/kg, i.p) from gestational day 7(GD7) to GD22 (MA/P) 2) Pregnant rats that are received methamphetamine (5 mg/kg, i.p) during lactation (1 to21 post natal days (PD1-PD21)) (MA/L) 3) Pregnant rats that are received normal saline (5 mg/kg, i.p) from GD7 to GD22 (Saline/P) 4) Pregnant rats that are received normal saline (5 mg/kg, i.p) during lactation (PD1-PD21) (Saline/L). At the end of experimental interventions rat pups (n=5 for each group) were randomly selected and their brain prepared for immunohistochemistry study. Immunostaining intensity was assessed by three examiners separately.

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The Kruskal Wallis and Mann–Whitney tests were used to analyze the immunostaining intensity scores. A significant difference was defined as $p < 0.05$.

Results : our data shown that methamphetamine administration during pregnancy significantly reduces the neuronal DCX immunoreactivity in the CA1, CA3 and DG regions at PD22 ($P < 0.05$). However, methamphetamine administration during lactation doesn't reduce the DCX immunoreactivity in the same regions in rat pups.

Conclusion : Our finding demonstrated that prenatal exposure to MA may lead to decrease DCX immunoreactivity but postnatal exposure didn't effect on the DCX immunoreactivity.

Keywords : Methamphetamine- Doublecortin – pregnancy- lactation- hippocampus



Count: 255
Abstract ID: 140
Presentation Type: Oral

NURR 1 gene expression in dopaminergic like cells differentiated from mesenchymal stem cells isolated from the trabecular meshwork of the human eye

Submission Author: SIMIN JAMALI

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Background and Aim : Cell therapy is an effective way to treat Neurodegenerative disorders such as Parkinson's disease. Various sources of stem cells have been used for this purpose. Mesenchymal stem cells, isolated from the trabecular meshwork of the human eye, are one of the newly identified sources of stem cells. These cells have several advantages including easy accessibility and lack of immunological, tumorigenesis and ethical problems. So, the aim of this study was to evaluate the ability of the eye trabecular meshwork stem cells differentiation into dopaminergic like cells.

Methods : The cell culture medium was replaced with differentiation medium and cells were incubated in the dopaminergic differentiation media including IBMX, RA, Forskolin for 7 days. Then Nurr 1 gene expression as one of the main markers of dopaminergic neurons was evaluated using Real time PCR technique.

Results : The morphology of differentiated cells progressively changed into neuron-like cells and data analysis showed that Nurr 1 gene expression was detected in the cells encountered to differentiation media.

Conclusion : Trabecular meshwork stem cells have a potency to differentiate into dopaminergic like neurons and presumably are a new cell source for the treatment of neurodegenerative disorders and have a great potential for wide application. But, more studies are needed in this field.

Keywords : stem cell;trabecular cell;Dopaminergic neuron



Count: 256

Abstract ID: 478

Presentation Type: Poster

Review meta-cognition in bipolar patients compared with healthy subjects

Submission Author: Farkhondeh Jamshidi

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Background and Aim : The purpose of this study is compare metacognition in bipolar patients and healthy individuals in hamedan (2013-2014).

Methods : The method of this study was analytical-descriptive and comparative..The sample population was included bipolar patients (n =40) in hamedan (farshchian hosphtal) that has been chosen with accessible sampling procedure and healthy individuals has been randomly selected multi stage cluster sampling procedure who completed MCQ Metacognition Questionnaire.It was used descriptive statistic method and multivariate analysis of variance (manova) .Data were analyzed by using statiscal soft were spss 19.

Results : The result of this study showed that the 2 groups were significant difference in mean subscales of positive beliefs about worry (P=0/000) and Cognitive self-awareness(P=0/000) and The average of these two subscales were higher in healthy subjects.Also the 2 groups were significant difference in mean subscales of Negative beliefs about uncontrollability(P=0/000) , Negative beliefs about thought control(P=0/003) and Make cognitive(P=0/012) and The average of these three subscales were higher in bipolar patients.

Conclusion : The results showed that bipolar patients with mood and emotional problems have difficulties in metacognitive beliefs that recognizing this problems is very important in the treatment

Keywords : bipolar disorder , mood disorder , metacognition

Count: 257

Abstract ID: 630

Presentation Type: Poster

The Effects of Cholinergic Muscarinic Receptors in the Hippocampus Region on Memory Acquisition Deficit Induced by Sleep Deprivation

Submission Author: Bibi zahra Javadmoosavi

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Background and Aim : Individual quality of life can be affected by different factors such as sleep disorder or sleep deprivation (SD). Birds and mammals represent two distinctive types of sleep including sleep with non-rapid eye movements (NREM) and rapid eye movements (REM). Animal and human studies have indicated that sleep is beneficial for proper cognitive performance, while lack of sleep or sleep disorder can lead to cognitive deficits such as disorder in attention, learning, and different types of hippocampus-dependent memory. According to evidence, SD may disrupt the process of hippocampus nervous formation through weakening cAMP/PKA signaling, reduction of CREB gene expression, and some neurotropic factors. On the other hand, some evidence indicates that hippocampus possesses some types of cholinergic receptors which play an important role in sleep and wakefulness, facilitation of learning paths, and memory. Therefore, the present study aims to investigate the effects of cholinergic muscarinic receptors in the hippocampus region on memory acquisition deficit induced by sleep deprivation.

Methods : In this study a water box or multi-platform apparatus was used to induce total sleep deprivation (TSD) or REM sleep deprivation (RSD). Moreover, a modified form of passive avoidance was used in rats to determine the effects of TSD or RSD and changes in these effects via pre-train intra-hippocampal injection of physostigmine (anti-cholinesterase) and scopolamine (anti-cholinergic).

Results : Findings of the present study indicated that 24 hours of TSD or RSD could lead to reduced memory acquisition. Intra-hippocampal injection of physostigmine (0.0001 μ g/rat) and scopolamine (0.01 μ g/rat) didn't have any effects on memory acquisition in TSD and RSD sham groups, while intra-

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hippocampal injection of physostigmine (0.0001 μ g/rat) and scopolamine 0.01 μ g/rat) sub-threshold doses could improve negative effects due to RSD. In TSD group, only physostigmine (0.0001 μ g/rat) could improve SD-induced amnesia. In all experimental groups, no changes were observed in the animals' motor activities.

Conclusion : According to this study, cholinergic muscarinic receptors (MAchR) play an important role in improvement of TSD- and RSD-induced amnesia.

Keywords : Sleep, memory acquisition, hippocampus, physostigmine, scopolamine



Count: 258

Abstract ID: 621

Presentation Type: Poster

Cytokine Modulatory Effects of Sesamum Indicum Seeds Oil Ameliorate Mice with Experimental Autoimmune Encephalomyelitis

Submission Author: Mohammad reza Javan

Mohammad reza Javan¹, sariieh shahraki²

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Background and Aim : Multiple sclerosis (MS) is an autoimmune disorder of the central nerve system (CNS), which affects the brain and spinal cord. Experimental autoimmune encephalomyelitis (EAE) is the most commonly applied experimental model for studying the MS. The aim of this study was to determine the effects of Sesamum indicum seeds oil on Experimental Autoimmune Encephalomyelitis (EAE) in mice.

Methods : Sesame oil was administrated intraperitoneally three days before immunization. IFN- γ , IL-10, IL-17 and TGF- β levels and mRNA expression in supernatant of and within cultured mononuclear cells were assessed.

Results : According to our results, sesame oil treated mice demonstrated significant disease severity reduction ($P=0.01$ and 0.001 , respectively). Treated EAE mice also represented statistically significant delay in the onset of symptoms in comparison with control group. The average IFN- γ levels and mRNA of sesame oil treated EAE mice were less than untreated EAE group. IL-10 and TGF- β levels and mRNA did not differ significantly in sesame oil treated EAE mice in comparison to untreated EAE group. IL-17 levels and mRNA were also found to be decreased significantly in treated mice in comparison to untreated mice.

Conclusion : Even though TH1 and TH17 cells through secretion of IFN- γ and IL-17, respectively, are involved in the pathogenesis of multiple sclerosis and EAE, but IL-10 has been shown to exhibit suppressive effects on these disorders. It can be concluded that sesame oil is able to induce TH2 and TH17-related immune responses and suppress TH1 type in EAE

Keywords : EAE, MS, Gene expression, Cytokine, Sesamum indicum seeds oil



Count: 259

Abstract ID: 179

Presentation Type: Poster

Effects of Memantine (an NMDA receptor antagonist) intraperitoneal treatment on neuropathic pain induced by sciatic nerve ligation in rat.

Submission Author: Zainab Javanshiri

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2. Professor
3. Professor
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5. Phd student

Background and Aim : Neuropathic pain is caused by damage or dysfunction in peripheral and central nervous system. Since the treatment of this type of pain is controversial and faced with many problems, in this study the possible effect of Memantine as an NMDA receptor antagonist for the treatment of neuropathic pain induced by sciatic nerve ligation or chronic constriction injury (CCI) in rats is examined.

Methods : This experimental study is done on 21 adult male Wistar rats weighing 200 to 250 g. Animals were randomly divided into 3 groups of 7: A sham CCI Surgical group, a group receiving Memantine at a dose of 10 mg per kilogram chronically during the 14 days after surgery, a group receiving saline (as solvent). Mechanical (Von Frey and Pin Prick) and thermal (hot plate and acetone) tests were done on animals on zeroth (before surgery), 3rd, 7th, 14th, 21st and 28th days after surgery. Finally, statistical analysis was performed using Graph pad software.

Results : Memantine significantly reduced the neuropathic induced thermal and mechanical allodynia and also hyperalgesia) $p < .001$ (.

Conclusion : It is probable that chronic administration of Memantine, as an NMDA receptor antagonist, prevents the alterations which leads to neuropathic pain after nerve injury. so it could be infer that physiopathologic events that leads to neuropathic pain after nerve injury includes NMDA hyperactivities induction, at least in part

Keywords : Neuropathic pain, Memantine , NMDA receptor antagonist



Count: 260

Abstract ID: 651

Presentation Type: Oral

Long-term sensory deprivation of rat barrel cortex leads into hyperactive and less anxious behavior

Submission Author: Mojgan Jouybar

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Background and Aim : Early sensory experiences play a critical role in structural and functional maturation of the sensoriomotor system. Rat barrel cortex which is a part of rodents' somatosensory cortex provides a good model system to study the consequences of these experience dependent changes. In the present study, we assessed the alterations in levels of explorative activity and anxiety in adolescent rats whom had their whiskers trimmed for a long-term period from early postnatal days.

Methods : Wistar rats belonging to the experimental group had their whiskers trimmed bilaterally (SD rats) every other day to the length of <1 mm from postnatal day 3(PND3) to PND59. Rats in the control group were only handled in the same time period. On PND 60 all behaviorally studied animals were tested for spontaneous explorative activity and also implicit anxious behavior in an opaque open field (OF) chamber. Afterward, using elevated plus maze (EPM) direct measurements of anxiety levels were appraised.

Results : Our observations indicate that SD rats show higher explorative activity in comparison to control rats, derived from the number of rearing ($P<0.001$) and upright postures ($P<0.01$) in the OF chamber. On the other hand, longer time elapsed in the center of arena ($P<0.001$) by whisker-trimmed rats is an indirect index of more aggressive behavior in these rats comparing with control rats. Results obtained by EPM reveals lower levels of anxiety in sensory deprived rats as noticed in higher frequency of entry times into open arms ($P<0.001$) and more time spent in the open arms ($P<0.001$) in SD rats compared to control rats.

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Conclusion : Our findings support the idea that abnormal sensory experiences during early life may contribute to the development of behavioral abnormalities associated with neuropsychological disorders in adulthood.

Keywords : Barrel cortex; Sensory deprivation; Explorative activity; anxious behavior

Count: 261

Abstract ID: 133

Presentation Type: Poster

Contribution of amygdala to the pressor response elicited by microinjection of angiotensin II into the bed nucleus of the stria terminalis

Submission Author: Marzieh Kafami

Marzieh Kafami¹, Ali Nasimi²

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Background and Aim : The bed nucleus of the stria terminalis (BST) is part of the limbic system located in the rostral forebrain. BST is involved in behavioral, neuroendocrine and autonomic functions, including cardiovascular regulation. The amygdala, plays an important role in mediating the behavioral and physiological responses associated with fear and anxiety, including cardiovascular responses. In a previous study, we showed that microinjection of Ang II into the BST produced a pressor and two types of single-unit responses in the BST, short excitatory and long inhibitory. This study was performed to find possible involvement of amygdala in cardiovascular responses elicited by microinjection of Ang II into the BST, using blockade of the central nucleus of amygdala (CeA) and single unit recording from the CeA, while injecting Ang II into the BST in anesthetized rat.

Methods : Rats were anesthetized with urethane (Sigma, 1.4 g/kg, ip) and supplementary doses (0.7 g/kg) were given if necessary. The femoral artery was cannulated with polyethylene catheter. All drugs were dissolved in saline. Ang II (100 μ M, 100-150 nl, Sigma). was microinjected into the BST using a micropipette with an internal diameter of 35–45 μ m using a pressurized air pulse applicator. Extracellular action potentials were recorded simultaneously using a glass microelectrode pulled to a fine-tip diameter (1–3 μ m) and filled with NaCl solution (2 M).

Results : Blockade of CeA attenuated the pressor response to microinjection of Ang II into the BST. Eighty-six Ang II microinjections were given into the BST and 198 single unit responses were recorded from CeA simultaneously, from which 89 showed a short excitatory response and 109 showed no responses.

Conclusion : In conclusion, microinjection of Ang II into the BST produces a short excitatory single unit response in the CeA, resulting in contribution of amygdala to the resulted pressor response. Taken together,

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our study and previous studies suggest a plausible hypothesis that these two nuclei perform their cardiovascular functions in cooperation with each other.

Keywords : Angiotensin II; bed nucleus of the stria terminalis; Amygdala; single unit response; blood pressure.



Count: 262

Abstract ID: 122

Presentation Type: Poster

Modeling the Effects of Distractors' Distance on the Performance of the Human Attention Control System

Submission Author: Zohreh Kaffash

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Background and Aim : Different cognitive studies investigated the importance of distractors' location on the attention performance. However, the effect of the distance between the target and the distractor on the function of the attention control system is not fully understood. In this study, we are going to design an experiment to investigate this effect, and to propose a computational model that can explain the relationship between the mentioned distance and human attentional control system's performance.

Methods : We proposed a computational model that was sensitive to the inputs' phase difference. This phase was defined as the distance between the target and the distractor. In order to test this hypothesis, we designed a test in such a way that a clear sight of a target is shown to individuals. They were asked to response as soon as detecting the target. A distractor appeared simultaneously in different positions. The subjects' reaction time was considered as the attention performance. This information enabled us to predict the performance of the attention control system in the presence of distractors that are placed in different distance from the target.

Results : The proposed model showed that by increasing the distance between the target and the distractor, human's attention system filtered the distractor out easier. The experiment results also confirmed this hypothesis.

Conclusion : Proposing a model that can show the effect of the distractor's distance on attentional control system can illustrate what may happen if the distance between the target and the distractor increases or decreases. This outcome can be useful in the design of learning environments and new ideas in advertising.

Keywords : Attention; Distractors; Distance; Computational Model



Count: 263

Abstract ID: 27

Presentation Type: Poster

The role of neuropeptide Y as a bond between obesity, eating behavior, depression and food preference

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Armita Kakavand Hamidi¹

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Background and Aim : Neuropeptide Y: Neuropeptide Y (NPY) is a neuropeptide made up of 36 amino acids which acts at the central nervous system level. It is one of the most conserved peptides during evolution and one of the most abundant peptides found in the brain, although it is also present in the peripheral nervous system. The ARC is the major site of expression for NPY within neurons in the hypothalamus. NPY regulates feeding behaviour, body composition and energy homeostasis inducing hyperphagia, as well as hormonal and metabolic changes that increase food efficiency and favour fat accretion. Obesity: Uncontrolled secretion of neuropeptide Y may lead to obesity resulting from an imbalance between energy intake and energy expenditure. Likewise, increase in neuropeptide Y signaling in the brain result in obesity. NPY stimulates food intake, inhibits energy expenditure, increases body weight and anabolic hormone level by activating the NPY Y1 and Y5 receptors in the hypothalamus. BMI, overweight, and obesity are associated with DNA sequence variation in NPY. Depression: Neuropeptide Y (NPY) may enhance resilience to chronic stress. Low brain NPY reported in major depression. Neuropeptide Y (NPY) has been implicated in anxiolytic- and antidepressant-like behaviour as well as seizure-suppressant effects in rodents. Gene therapy using recombinant viral vectors to induce overexpression of NPY, Y1 or Y2 receptors in the hippocampus or amygdala has previously been shown to modulate emotional behaviour and seizures in rodents. Eating behavior: NPY administration is a powerful stimulant of feeding behavior. Soon after its discovery, several groups demonstrated that NPY injected into the brain either in the ventricles or in different hypothalamic nuclei induced a robust feeding response (hyperphasia). When neuropeptide Y transgenic mice were placed on a high sucrose diet these mice displayed hyperphagia and increased body weight NPY-induced overfeeding activates compensatory responses that inhibit hypothalamic NPY gene expression. Injection of NPY antisense oligodeoxynucleotides may also diminish food intake, meal size and duration. Initial studies on the NPY knockout mice generated by Erickson et al. showed hyperphagic behavior after fasting. Food preference: The nature of the carbohydrate plays a role in the orexigenic effects of NPY. When rats can choose between a high-fat (HF) diet and a high-carbohydrate (HC) diet, the animals eat more of the HC diet if the source of carbohydrate is sucrose or polycose compared with cornstarch. The change in palatability due to increased sweetness of the sucrose or polycose diets versus cornstarch might be an element of this preference.

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Orosensory mechanisms might therefore play a role on the stimulatory effects of NPY on carbohydrate intake. Voluntary ethanol consumption is inversely related to NPY levels, as NPY $-/-$ mice exhibit significant higher ethanol consumption and lower sensitivity to ethanol compared to control mice with NPY-overexpressing mice showing opposite effects.

Methods : -

Results : -

Conclusion : The goal remains to identify the right combination of this gene and its variants and to determine how environmental factors interact with the gene to determine the risk. We hope that the overviewed information provided above will contribute to researchers getting through the resolution of this enormous challenge.

Keywords : neuropeptide Y, obesity, depression, eating behavior, food



Count: 264

Abstract ID: 525

Presentation Type: Poster

An efficient online spike sorting algorithm for implantable BMIs

Submission Author: Fereshteh Kalantari

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Background and Aim : Recently implantable Brain Machine Interfaces (BMIs) have been of great importance on both basic neuroscience researches and clinical applications. On the basic research side, new BMIs are required for deciphering the functionality of the complex world of the brain. On the clinical application side, BMIs are needed to develop neural prosthetics for rehabilitation paralyzed people as well as treatment of diseases such as Parkinson, Alzheimer, and MS. For realization a BMI a few building blocks including recording, spike sorting and neural decoding/encoding are essential. In intra-cortical recording systems, the recorded signal contains the activity information of multiple neurons. The process of individually assignment of spikes to their neurons is considered as spike sorting. The concentrations of this work is on proposing an efficient online spike sorting approach.

Methods : Implantable BMIs need online unsupervised spike sorting algorithms with high accuracy and low computational complexity. Generally a typical spike sorting algorithm consists of spike detection, spike alignment, feature extraction, and classification in which the two last steps have more contributions on the performance of the algorithm. Up to now many different feature extraction and classification methods have been proposed. One appropriate candidate algorithm for feature extraction is based on using first and second derivatives properties such as extremes, averages and differences of both first and second derivatives. In our proposing algorithm two other features including the energy of positive and negative samples are added to previous mentioned features and an improvement on spike sorting algorithm accuracy is achieved.

Results : To evaluate the efficiency of the proposed feature extraction algorithm, the extracted features are given to Fuzzy C-Means classifier which is widely used for spike sorting applications. The average spike sorting accuracy when Signal-to-Noise-Ratio (SNR) changes from 18 to 5 is 91.43% while the accuracy before adding new feature was 79%.

Conclusion : An efficient, unsupervised and online spike sorting approach with low computational complexity feature extraction algorithm was proposed. This method presents high accuracy with low

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computational complexity so it is suitable for on-chip hardware implementation with low power consumption and small silicon area which are crucial for implantable BMIs.

Keywords : Spike Sorting; Feature extraction; Brain Machine Interfaces; intra-cortical



Count: 265

Abstract ID: 746

Presentation Type: Oral

Electrical Stimulation of the V1 modulates contrast sensitivity thresholds

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Background and Aim : Transcranial direct current stimulation (tDCS) has been shown to modulate cognitive functions of the brain. We hypothesized that electrical stimulation of the brain will improve threshold for a contrast sensitivity task on the luminance and chromatic pathways. We evaluated three spatial frequencies in each pathway.

Methods : Eight healthy subjects (four female and four male with mean age 24.1 ± 3.6) with no history of neuropsychiatric or visual system disorders were tested with Forced-choice Spatial Color Contrast Sensitivity task while receiving tDCS. tDCS is used in three conditions: anodal, cathodal and sham. We employed three different gratings: Red-Green, Blue-Yellow and the luminance grating. Then for each grating, we applied three type of spatial frequencies in order to detect contrast sensitivity threshold. Visual stimuli had low, medium and high frequencies. A two-alternative forced-choice staircase method consisted of 20 steps was used for each visual task. Anodal, cathodal, and sham tDCS montage were delivered at Oz and Cz for 15 minutes using two square electrodes (25cm² with the maximum output of 2 mA) in sessions separated by 5 days. Nine contrast thresholds were calculated for each participant by averaging last five responses.

Results : Anodal tDCS montage significantly increase Blue-Yellow and Red-Green axis sensitivity ($p < 0.05$) and had no significant effect on luminance grating discrimination. Cathodal tDCS montage increased the luminance perception in comparison with anodal montage ($p < 0.001$) but reduced sensitivity in the Blue-Yellow and Red-Green axis ($p < 0.001$). Compared with medium and low spatial frequency, high spatial frequency shows a significant decreasing in the CCS threshold in all types of gratings ($p < 0.001$).

Conclusion : The results suggest that anodal tDCS was effective in improving discrimination to the Blue-Yellow and Red-Green discrimination but not luminance, measured by the CCS. Cathodal tDCS had

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opposite effect on these thresholds, increasing the sensitivity of the former and decreasing the sensitivity of the latter.

Keywords : Transcranial direct current stimulation; Contrast sensitivity; Chromatic pathways



Count: 266

Abstract ID: 220

Presentation Type: Poster

The neural correlates of love

Submission Author: Melika Karimi

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2. Iran university of medical science

Background and Aim : lately, love, as a universal phenomenon has been a focus of attention of neuroscientists. Current studies mainly focus on neuroendocrine factors which are involved in love and brain mechanisms that are responsible for romantic emotions and behaviors.

Methods : This review article has been written according to 67 articles mentioned in references.

Results : Neuroscientists have studied mechanisms of pair bonding in animal models and have discovered basic roles of dopamine, oxytocin, vasopressin and several other neuroendocrine factors and also their receptors. Brain imaging techniques such as fMRI and PET scan show an obvious increase in activity of several brain regions, specially the dopaminergic brain reward system. On the other hand some areas such as cortical regions show signs of a decrease in their activity.

Conclusion : This article has argued that love is more than just a simple emotion. In summary the previous studies showed a certain involvement of neural basis in love.

Keywords : Neuroendocrine; oxytocin; vasopressin; dopaminergic brain reward system; romantic love; maternal love



Count: 267
Abstract ID: 572
Presentation Type: Oral

Pretreatment with Phosphatase and Tensin Homolog Deleted on Chromosome 10 Inhibitor; SF1670 Attenuates Ischemic Reperfusion Induced Injury by Down Regulation of Proinflammatory Cytokines and Proapoptosis

Submission Author: Pouran Karimi

Pouran Karimi¹, Solmazi Chamani²

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Background and Aim : Apoptosis, inflammation and mitochondrial damage are involved in the expansion of ischemic reperfusion injury (R/I). Phosphatase and tensin homolog (PTEN) negatively regulates intracellular levels of phosphatidylinositol-3,4,5-trisphosphate (PIP3) in cells such as acts as a Akt/PKB signaling pathway suppressor that develops cell survival and growth in response to extracellular signals. Aim The aim of the current investigation was to particularize the potential effect of a specific phosphatase and tensin homolog deleted on chromosome 10 (PTEN) inhibitor SF1670 against IR/I induced Apoptosis, inflammation and mitochondrial biogenesis.

Methods : We treated pc12 cells by 10 micromolar SF1670 after induction of IR/I by 1 h oxygen glucose deprivation (OGD) followed by 3 h reperfusion. The expression of pro-inflammatory cytokines; TNF- α , IL-1 β , IL-6, apoptosis related proteins; Bcl-2, BAX, mitochondrial biogenesis related proteins; PGC1 α , NRF1,2, TFAM and Akt signaling pathway related proteins; PI3K, Protein kinase B, phospho AKT and NF- κ B detected by immunoblotting assay as well as activation of mitogen activated protein kinases (MAPK) family proteins ; p38 MAPK, ERK1,2 and c-JNK was measured by western blotting method. MTT assay was also performed to detection of cell viability

Results : pretreatment with SF1670 increased cell viability and induced anti apoptotic and anti inflammatory effects by negatively regulation of TNF- α , IL-1 β , BAX and NF- κ B also by up regulation of phospho AKT, Protein kinase B and Bcl-2. The content of PGC1 α , NRF1,2, TFAM, PI3K and activation of MAPK proteins were not changed.

Conclusion : resultant data not only confirm the neuroprotective properties of SF1670 on IR/I -stimulated PC12 cells but also suggests that this is due to a considerable reduction of NF- κ B activity and subsequent

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TNF- α , IL-1 β , and IL-6 down-regulation as well as induction of AKT pathway. Also, SF1670 has no effect on activation of MAPK pathway and mitochondrial biogenesis

Keywords : SF1670, mitogen activated protein, mitochondrial biogenesis, proinflammatory cytokins, phosphatase and tensin homolog deleted on chromosome 10



Count: 268

Abstract ID: 703

Presentation Type: Oral

Blockade of orexin-1 receptors in the orbitofrontal cortex impaired delay based decision making in the rat

Submission Author: Sara Karimi

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Background and Aim : Orexinergic neurons are discretely localized within the lateral hypothalamus and have widespread projections to the whole brain. In addition, several lines of evidence specify that orexins may also participate in theregulation of a variety of affective and cognitive processes.Orexin-1 receptor (OX1R) is distributed extensively throughout the prefrontal cortex (PFC).Delay based decision making is mediated largely by the orbitofrontal cortex(OFC).Hence, in the present study, we conducted a series of experiments to clarify the role Orexinergic OX1 receptors in the OFC regulate delay-based decision making.

Methods : Sixteenadult male Wistar rats (Pasteur Institute, Iran) were used in this study.The rats had been trained in a delay-based form of cost-benefit T-maze decision making task. The two goal arms were different in the amount of accessible reward. The animals could choose high reward arm (HR arm) and pay delay cost to achieve large reward or obtain a low reward in the other arm immediately (LR arm). Each rat was placed in the start arm and was allowed to choose both food arms on each trial. Ten trials ran each day. On each day, at first each rat received two forced trials, one to each goal arm, then 8 choice trials, with an inter-trial interval of approximately 5 min. Before surgery, all animals were selecting the HR arm on almost every trial. During test days, the rats received local injections of either DMSO 20% /0.5µl, as vehicle, or SB334867(3,30,300 nM/0.5µl), as selective OX1-receptorantagonist, within the OFC. After 5 min the rat was put in the T-maze and tested.

Results : To analyze the results, the data were divided into separate 4 testing day with two treatments (vehicle vs SB334867) and were subjected by two way repeated-measures ANOVA. All results are reported using a subsequent Bonferroni post hoc. P-values less than 0.05 (P<0.05) were considered to be statistically significant. Our results demonstrate profound effects of OFC's OX1-receptoron delay based decision making. Bilateral microinjection of SB334867, at the doses of 30nM/0.5µl into the OFC changed the animal's preference to a low but immediately available reward. This was not caused by a spatial memory

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because the same rats returned to selecting the HR arm when the amount of cost needed to be expended to obtain reward in either arm was equalized.

Conclusion : OX1-receptor inactivation changed decision policy, such that animals tended to make suboptimal decisions by avoiding decision costs. These results imply that OX1-receptor has a crucial role for allowing the animal to be patient to acquire greater rewards.

Keywords : Orexin, orbitofrontal cortex, delay based decision making, Rat



Count: 269

Abstract ID: 74

Presentation Type: Poster

Effect of regular training on Diabetes Induced Memory Deficits and Biochemical Parameters in Male Wistar Rats

Submission Author: Seyed Asaad Karimi

Seyed Asaad Karimi¹, Iraj Salehi², Alireza komaki³

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2. Neurophysiology Research Center, Hamadan University of Medical Sciences, Hamadan, Iran
3. Neurophysiology Research Center, Hamadan University of Medical Sciences, Hamadan, Iran

Background and Aim : The main objective of this study was to determine the effects of treadmill running and swimming exercise on passive avoidance learning (PAL) and plasma parameters at streptozotocin-induced diabetic rats.

Methods : For this purpose, male Wistar rats were divided into the following six groups (N=6-8): Con: healthy rat without exercise, STZ: diabetic rats without exercise, Con + SE: healthy rat with swimming exercise (for 2 month), STZ + SE: diabetic rats with swimming exercise (for 2 month), Con + TE: healthy rats with treadmill exercise (for 2 month), STZ + TE: diabetic rats with treadmill exercise (for 2 month). Diabetes was induced by the single dose intraperitoneal injection of 50 mg/kg STZ.

Results : Our results showed that STZ caused a decrease in step through latency in the retention test (STLr) and increase the time spent in the dark compartment in the retention test (TDC) when compared to the control group ($P < 0.05$). Treadmill running and swimming exercise caused an increase in STLr and decrease in TDC when compared to the STZ group ($P < 0.05$). According to our results, STZ impairs PAL and regular exercise (Treadmill running and swimming exercise) improve PAL deficits in STZ group. Based on our results. Blood Low-density lipoprotein (LDL) and Triglyceride (TG) level in the STZ group was significantly higher than the control group ($P < 0.05$). Serum total antioxidant capacity (TAC), catalase (CAT) and glutathione peroxidase (GPx) decreased in STZ group compared with control group. Serum malondialdehyde (MDA) increased in STZ group compared with control group. The level of these parameters increased in exercise groups in compare with STZ group.

Conclusion : The present results indicate that regular exercise enhanced learning and memory in diabetic rats and this may be mediated through the activation of the antioxidant system.

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Keywords : Diabetes mellitus; exercise; Learning; Memory; Passive Avoidance; Rat



Count: 270

Abstract ID: 43

Presentation Type: Oral

Human object recognition relies on a set of dynamical diagnostic features under variations

Submission Author: Hamid KarimiRouzbahani

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Background and Aim : In spite of drastic changes in the appearances of objects, humans recognize them very accurately. Yet, the underpinnings of this ability have remained highly mysterious. Several studies have suggested that human's recognition is heavily dependent on intermediate-complexity features. However, they did not explain whether the features were fixed or could dynamically change depending on the object's condition.

Methods : To answer this question, we designed a psychophysical task in which the subjects had to discriminate between two objects as they were presented under variations in position, size, in-plane and in-depth rotations. A limited portion of the objects were only visible in each trial which allowed us to determine the diagnostic features by which the objects were recognized.

Results : Results showed that, not all object parts were equally diagnostic of its identity. Humans selected several diagnostic features and consistently used a sub-sample of them under different variations. Moreover, humans were also very flexible at finding new diagnostic features when they did not have access to more frequently used features. Using a hierarchical model of human visual processing, we also showed that humans used an invariant recognition strategy which relied on the extraction of intermediate- to high-complexity visual features from the objects. However, this strategy could not be explained by the pixel-space recognition strategies of an ideal observer.

Conclusion : Together these results suggest that, in object recognition, the human visual system relies on a set of features and dynamically chooses an optimum subset of them depending on the object's condition.

Keywords : invariant object recognition, psychophysics, diagnostic feature, computational model



Count: 271

Abstract ID: 514

Presentation Type: Poster

“Compare Difficulties of Emotion Regulation, Early Maladaptive Schemas and Executive Functions among Patients with Bipolar Disorder and Borderline Personality Disorder”

Submission Author: Nazila Karimzad

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2. Ph.D.in Psychology , Associate Professor 15 , Islamic Azad University Central Tehran Branch

Background and Aim : More than two decades ago Akiskal borderline personality disorder raised as bipolar affective disorder in the whole. However, there is currently no consensus about the theory. Zimmerman and colleagues study in 2008 showed that there is a possibility of false diagnoses of bipolar disorder that's why symptoms of borderline personality disorder may be misdiagnosed with bipolar disorder. In most studies, it was shown how bad emotion regulation in patients with borderline personality disorder reflected in the functioning of the central nervous system. In explaining the symptoms listed several ideas that is one of the most important neuropsychological perspective. Maladaptive cognitive schemas have been proposed as vulnerable points for both disorders. Both disorders are also disrupted recurrence and tried to commit suicide and social functions are specified. The similarities between the two disorders have questions about whether they are in a similar range or not?

Methods : In this study, convenience sampling was that people were admitted to Iran Psychiatric Hospital. In this study, 50 people, including 25 people with borderline personality disorder (males and females) and 25 patients with bipolar disorder (male and female) were selected by convenience sampling method. In addition to the Structured Clinical Interview for the intended patient diagnosis, diagnostic and patient records were complete background checks. It should be noted that in several cases to achieve certainty in the interpretation of diagnostic tests Profile meter multi-faceted personality of Minnesota Multiphase personality Inventory and were used in addition to information.

Results : the difficulty scores emotion regulation in patients with borderline personality (BPD) and patients with bipolar disorder (BIID) there is no significant difference. Between the scores of emotional deprivation schema, triggered, distrust, emotional inhibition and restraint in both groups of patients with borderline personality (BPD) and patients with bipolar disorder (BIID) there is a significant difference. The means of the two groups showed that the average in patients with borderline personality (BPD) is higher than patients

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with bipolar disorder (BIID). Therefore, patients with borderline personality (BPD) compared to patients with bipolar disorder (BIID) scheme of emotional deprivation, triggered, distrust, emotional inhibition and restraint higher. . The executive functions of planning between the two groups of patients with borderline personality (BPD) and patients with bipolar disorder (BIID) there is significant difference

Conclusion : Difficulties in emotion regulation and early maladaptive schemas and executive functions in bipolar disorder than the more severely border. These findings show that two different further disruption to the same. Overall, no significant correlation between high levels of emotional regulation schemes exist and ultimately failure in executive functions, with a particular combination of primary and difficulties in emotion regulation schema can be associated with psychopathology and when faced with the difficulty of diagnosis, use of the above components can be helpful.

Keywords : Emotion regulation, early maladaptive schema, executive function, borderline personality disorder, bipolar disorder



Count: 272

Abstract ID: 42

Presentation Type: Oral

Changes of Notch signaling pathway in absence epilepsy

Submission Author: Fariba Karimzadeh

Fariba Karimzadeh¹

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Background and Aim : Typical absence seizures appear in children with 6-7 years of age and may associate with developmental delays/intellectual deficits. Notch signaling is involved in the pathogenesis of some neurological disorders including cortical dysplasia, schizophrenia, brain tumors, and Alzheimer's disease. This study was aimed to investigate the role of notch signaling in the pathogenesis of absence seizures.

Methods : Experimental groups were divided into six groups of both WAG/Rij and Wistar strains with new born, two and six months of age. The gene expression of Notch1, NLE1, NeuN, and GFAP as well as the levels of their proteins was assessed in the somatosensory cortex and different thalamic nuclei. In addition, the effect of cortical microinjection of Notch1 agonist and antagonist was investigated on the spike and wave discharges (SWDs).

Results : In cortical assessment, a significant reduction was shown in Notch 1, NLE 1 and GFAP (the marker for astrocytes) expression in two- and six- month old WAG/Rij compared to age-matched Wistar rats. The expression of NeuN as a neural marker decreased significantly in two-month-old WAG/Rij compared to the same age Wistar rats. In thalamic assessment, the expression of GFAP significantly decreased in two-month-old WAG/Rij rats compared to age-matched Wistar rats. NeuN expression significantly increased in six-month-old WAG/Rij rats compared to newborns. Distribution of Notch1 receptor decreased significantly in 4th and 6th layers of somatosensory cortex as well as in the dorsal thalamic nuclei of six-month-old compared to two-month-old in WAG/Rij rats. In 4th and 6th cortical layer, distribution of NLE1 in six-month-old WAG/Rij rats significantly decreased compared to two-month-old WAG/Rij and six-month-old Wistar rats. In the dorsal and lateral thalamic nuclei, NLE1 significantly decreased in six-month-old WAG/Rij rats compared to age-matched Wistars. In lateral thalamic nuclei of WAG/Rij rats, GFAP-positive cells significantly decreased in six-month olds compared to two-month olds. In addition, a significant increase of GFAP-positive cells was indicated in two-month-old WAG/Rij compared to age-matched Wistar rats. Microinjection of Notch1 antagonist exacerbated the absence seizures in contrast with notch1 agonist.

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Conclusion : Our findings showed the changes of notch1 signaling pathway during the development of WAG/Rij rats. These findings suggest notch1 signaling pathway as a potential therapeutic target for absence epilepsy.

Keywords : absence epilepsy, brain, thalamus



Count: 273
Abstract ID: 488
Presentation Type: Oral

Localization of cyclic alternating patterns in relation to cognitive performance among patient with obstructive sleep apnea

Submission Author: Foroozan Karimzadeh

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Background and Aim : Obstructive Sleep Apnea Syndrome (OSAS) is a relatively common sleep disorder which negatively affect neurocognitive functions among such patients. Each episode of obstruction enforces a transient arousal from sleep to reopen the upper airway. These frequent arousals, which are a brain mechanism to recover breathing, negatively affects the sleep restorative properties, which decreases the brain capacity for creating periods of stable sleep. In this study, the relationship between the increments in an arousal phenomena known as cyclic alternating patterns (CAPs) in sleep electroencephalography (EEG) and neurocognitive decline in OSAS patients through source localization of the phase-A of CAPs was examined.

Methods : In order to investigate the correlation between CAP phase-A and cognitive functions in OSAS patients, the standardized low-resolution brain electromagnetic tomography (sLORETA) tool was used to source-localize the phase-A of CAPs in sleep EEG. The correlation is examined using all-night polysomnographic (PSG) recordings (containing 18-channel EEG, electrooculogram (EOG), electromyogram (EMG) recordings, breathing effort, air intake, snoring sounds, oxygen saturation) of 14 OSAS patients (mean age 60±8.5) along with their cognitive profile using the Addenbrooke's Cognitive Examination (ACE) test. Based on ACE test, five key domains including attention and orientation, verbal fluency, memory, language and visuo-spatial skills of OSAS subjects were assessed.

Results : Based on our findings, CAP rates are significantly increases among OSAS subjects versus well-established normative values. In addition, sLORETA revealed that the generator of CAP phase-A is frontoparietal cortices. As CAP rate increases, the activity of phase-A in such areas is dramatically increased leading to arousal instability, sleep inefficiency and a possibly impaired cortical capacity to

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consolidate cognitive inputs in frontal and parietal areas during sleep. As such, according to the result of the ACE test, cognitive domains including verbal fluency, memory and visuo-spatial skills which predominantly relate to frontoparietal areas tend to be affected.

Conclusion : The dramatic increment of CAP rate causes a significant activity in frontoparietal area in brain and sleep fragmentation in OSAS patients. Moreover, CAP activity may possibly be considered as a predictor of cognitive decline among OSAS patients.

Keywords : Sleep EEG, Cyclic Alternating Patterns (CAP), OSAS, Cognitive Function, Sleep microstructure



Count: 274

Abstract ID: 340

Presentation Type: Poster

Transplantation of Human Induced Neural Progenitor Cells to the Contusion Model of Rat Spinal Cord Injury

Submission Author: Maede Kashkouli

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Background and Aim : Traumatic injury to the spinal cord causes cell death, demyelination, axonal degeneration, and cavitation resulting in functional motor and sensory loss. Stem cell therapy is a promising approach for spinal cord injury (SCI). Various cell types have transplanted into the injured rat spinal cord and most of them resulted in functional recovery. Although neural progenitor cells (NPCs) had the best results because of the similarity of spinal cord to their favorable niche, but their major problem is that they are not autologous.

Methods : In this study, we transplanted human induced neural progenitor cells (hiNPCs) which were trans-differentiated from adult human fibroblasts by the force defined transcription factors into the injured spinal cord of adult Wistar rats at 6 days after injury. Behavioral analyses were performed from the time of the initial injury until 7 weeks after SCI.

Results : Our results show the presence of a substantial number of surviving hiNPCs in the injured spinal cord up to 6 weeks after transplantation. Grafted hiNPCs survived and differentiated into the three major neural lineages (neurons, astrocytes, and oligodendrocytes). these cells also migrate to the rostral and caudal parts of the rat spinal cord. Furthermore, we observed that injured rats receiving hiNPC transplants had improved functional recovery as assessed by the Basso, Beattie, and Bresnahan Locomotor Rating Scale and grid-walk analysis.

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Conclusion : Our data provide strong evidence in support of the feasibility of iNPCs for cell-based therapy in patient with SCI.

Keywords : spinal cord injury; trans-differentiation; induced neural progenitor cell; transplantation; rat



Count: 275

Abstract ID: 54

Presentation Type: Oral

Involvement of dopamine receptors in the dentate gyrus of the hippocampus in expression, acquisition of the morphine-induced conditioned place preference in the rats

Submission Author: Najme Katebi

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Background and Aim : HIP has a principle role in learning and memory and it has been shown to be involved in reward-related learning task such as CPP paradigm. Mesolimbic dopaminergic pathway projections have an important role in the acquisition of morphine in conditioned place preference (CPP). It is demonstrated that dopamine receptors in dentate gyrus (DG) region of HIP have a remarkable function in spatial reward processing, nevertheless, the role of dopamine D1/D2 like receptors in expression, acquisition are largely unclear. In this study, we investigated the role of intra-DG D1 receptors on acquisition, expression of CPP induced by morphine.

Methods : To find out the role of D1 like receptors within the DG in morphine-seeking behaviors, forty adult male albino Wistar rats weighing 220-280g were unilaterally implanted by a cannula into the DG. The CPP paradigm was done; conditioning scores and locomotor activities were recorded by Ethovision software.

Results : The results showed that different dose of SCH23390 (0.25, 1 and 4?g/0.5?l saline), as a selective D1-like receptor antagonist and sulpiride (0.25, 1 and 4?g/0.5?l DMSO), as a selective D2-like receptor antagonist just before the CPP test attenuated the acquisition and expression of the morphine-induced CPP dose-dependently. This effect was more significant in D2-like receptor antagonist -treated animals

Conclusion : The results suggested that D2Rs within the DG may be necessary for the morphine-induced acquisition and expression. Additionally, it seems that the existence of the D1/D2-like receptors in the DG was important for the maintenance of morphine rewarding properties during the extinction phase.

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Keywords : Dentate gyrus; D1-like receptor; D2-like receptor; Acquisition; Expression; Conditioned place preference



Count: 276

Abstract ID: 709

Presentation Type: Poster

The effects of methamphetamine and buprenorphine alone and in combination on anxiety and locomotion in male rats

Submission Author: Azin Kazemi

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Background and Aim : Methamphetamine (Meth) abuse and dependence are major global problems. The effects of Meth on anxiety are controversial. While buprenorphine (Bup) is used to treat anxiety-related behaviors, the effects of Meth alone or in combination with Bup on anxiety are unclear. In this study, we examined the effects of these drugs on anxiety with the elevated plus maze (EPM) and open field (OF) tests, which are widely used to assess anxiety in small rodents.

Methods : Forty male Wistar rats, weighing 250 to 300 g, were divided into four groups: sham, Meth, Bup, and Bup+Meth. The groups were administered their assigned treatments for 7 days. The time spent in the open arms, percentage of entries into the open arms, and number of total entries into the arms (total activity) in the EPM were recorded. In addition, locomotor activity, number of entrances into the center area, and percentage of time spent in the center area in the OF were recorded

Results : The 7-day administration of Meth or Bup increased open arm exploration in the EPM. In contrast, the combined administration of Bup and Meth had the opposite effects. In addition, Meth and Bup had no effects on total and locomotor activity. Furthermore, the rats in the Meth and Bup groups spent more time in the center of the OF, while the group given both Bup and Meth spent less time in the center of the OF.

Conclusion : The administration of Meth and Bup alone was anxiolytic in rats, whereas the coadministration of Bup and Meth was anxiogenic.

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Keywords : Methamphetamine; Buprenorphine; Anxiety; Locomotion; Interaction



Count: 277

Abstract ID: 207

Presentation Type: Oral

Evaluate the effects of extremely low frequency electromagnetic fields on the performance of the hippocampus with MRI and hormonal review in rhesus macaque male

Submission Author: Masoomeh Kazemi

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Background and Aim : In recent decades, with the increased usage of devices generating electromagnetic fields in modern industrial societies, Study the biological effects of electromagnetic fields of different frequencies and intensities as important factors in the environment is being considered. Due to the basic biological similarities, Behavioral and cognitive between monkeys and humans, extensive research has been done in different areas in this animal model. The aim of this study was to assess visual memory and hormonal and Anatomy of the hippocampus changes in male rhesus monkeys were exposed of ELF electromagnetic field.

Methods : Animals Including three male rhesus monkey the race was “mucaca mulatta”. The keeping of animals in Baqiyatallah University Storing conditions, In terms of light, temperature and humidity was standard. Also room was equipped with a camera and active fans. Animal in a cage the size of 1 × 1 × 1 m was maintained. Water and enough food for three meals were the days. For cognitive-behavioral tests, the animals 17 hours of fasting. Monkeys in the study protocol exposure to ELF radiation from 1Hz and 12 Hz, 0.7 micro tesla (for radiation) were 4 hours a day for a month. Before and after exposure on the exam Active visual memory test, using a device containing the bowls were coated (Invisible rewarded by the monkey) and were taken MRI. The 10 cc of blood from the femoral individual to assess changes in cortisol and melatonin concentrations were taken. This hormone is produced using a proprietary kit of America were analyzed

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“MyBiosource”. Hippo Camp anatomy using MRI before and after radiation extraction and using surveys volume was image J software.

Results : Finding: The results of this study showed that a significant increase in the frequency of 12 Hz. As well as hormonal changes increase by reducing cortisol and melatonin increased. While male monkey visual memory performance showed no significant changes in the frequency of 1 Hz and hormonal changes, decreased melatonin and cortisol increased. And the anatomical structure of the hippocampus with MRI in 12 and 1 Hz frequency in terms of volumetric significant difference before was not visible. Finding: The results of this study showed that a significant increase in the frequency of 12 Hz. As well as hormonal changes increase by reducing cortisol and melatonin increased. While male monkey visual memory performance showed no significant changes in the frequency of 1 Hz and hormonal changes, decreased melatonin and cortisol increased. And the anatomical structure of the hippocampus with MRI in 12 and 1 Hz frequency in terms of volumetric significant difference before was not visible.

Conclusion : Our experiment showed that of the monkey in the electromagnetic field, the ability of visual memory in monkey greatly improve in the frequency of 12 Hz, which is consistent with a decrease in cortisol and melatonin. Also unchanged (or too low) visual memory function decline occurred at a frequency of 1 Hz.

Keywords : Electromagnetic field, Male rhesus monkeys, Visual memory, Cortisol, Melatonin , MRI , Hippocampus



Count: 278
Abstract ID: 116
Presentation Type: Poster

A new Algorithm of gaze prediction: surprise entropy and Visual system properties

Submission Author: Sepehr Kazemi

Sepehr Kazemi¹

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Background and Aim : Over the past decade, it has been suggested that bayesian surprise, as a measure of the amount of information, attracts human visual attention. Although some important properties of the visual system such as receptive fields have been ignored in the models. Here we propose a new algorithm based on simple surprise entropy combined with receptive fields of neurons in visual pathway

Methods : To simulate human gaze heat maps, Shannon entropy in images is applied in Matlab and human data is downloaded from online database collected from 16 individuals attending 120 images.

Results : Simulated gaze heat maps by Shannon surprise entropy combined with visual pathway neurons receptive fields significantly fits better with human eye tracking data than previous entropy-based models.

Conclusion : Considering human visual pathway receptive fields improves Shannon entropy model of human gaze heat map.

Keywords : receptive fields, Gaze, Modeling, Attention, Bayesian Surprise



Count: 279

Abstract ID: 84

Presentation Type: Poster

Stem cell therapy for Alzheimer's disease: Which stem cell is more effective ?

Submission Author: Milad Kazemiha

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Background and Aim : Alzheimer's disease (AD) is the most common neurodegenerative disease affecting millions of people in the world. Today cell replacement therapy has been focused because of some limitation in current pharmacological treatment . Many kind of stem cells have been used to treatment of AD in animal models . This review was aimed to compare the effectiveness of different stem cells used in models of AD induced by beta amyloid injection .

Methods : : Article extracted from pubmed , scopus and google scholar databases . Articles published between 2009 to 2015 were analyzed.

Results : Alzheimer symptoms decrease by transplanting stem cells derived from human umbilical cord , amniotic membrane-derived epithelial cells in to the brains of Alzheimer models . In addition , in animal models of AD , cell therapy improved memory deficits and decrease $A\beta$. Transplanting of Neural stem cells (NSCs) enhances neuronal differentiation and survival of neurons in the animal models of AD induced by $A\beta$ injection . Bone marrow-derived mesenchymal stem cells (BM-MSCs) reduced amyloid beta deposition associated with restoration of defective microglial function. Twenty percent of evidence indicated that BM-MSCs therapy improve memory deficits but not $A\beta$ deposition . Human adipose-derived stem cells (hASCs) elicit no immune rejection responses, tumorigenesis, or ethical problems. The learning, memory and hippocampal damages in an AD mouse model greatly improved . The number of amyloid plaques and $A\beta$ levels decreased . . Comparing the effectiveness of different stem cells in AD indicated that NSCs were differentiated into neurons and astrocytes in the brains . This stem cells improved cognitive function and memory but access to the neural stem cells is difficult . According to the studies transplantation of BM-MSCs , hADSCs and HUMSCs improve cognitive and memory performance and increase neural survival , also reduce beta amyloid deposition in most studies . The advantages of hADSCs contain : (1) Provided appropriate environment to neural survival . (2) Were easily obtained in the large mass . (3) Is more available because of less side effects . In all studies NSCs (52/9%) , BM-MSCs (23/5%) , hADSCs

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(12/5%) and HUMSCs along with HAECs (11%) were used . But it should be considered that the number of studies focused on the hADSCs have been increased in the last 10 years .

Conclusion : According to the findings appear that hADSCs are more effectiveness in treatment of Alzheimer's disease .

Keywords : Alzheimer's disease, stem cells, memory, animal models



Count: 280
Abstract ID: 29
Presentation Type: Oral

A Simulation Environment to Enhance Education of Bioelectric Phenomena in Electrical Stimulation of Nerve Fibers

Submission Author: Ahmadreza Keihani

Ahmadreza Keihani¹, Amin Mahnam²

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2. Assistance professor, Isfahan University, Engineering department, Biomedical engineering group

Background and Aim : Understanding the behavior of nerve fibers, formation of action potentials and their propagation along the nerve fibers in response to intra and extra cellular electrical stimulation are not simple at the first glance and also depends on many different parameters which are usually discussed in electrophysiology, neuroscience and neural engineering courses. Previous simulation environments are either too simple to include extracellular stimulation or so complex that are only used in research. Here we present a virtual library that is developed to enhance comprehension of mechanisms underlying different fundamental bio-electrical phenomena including extracellular electrical stimulations.

Methods : Well-known Hodgkin-Huxley (HH) and Chiu-Ritchie-Rogart-Stagg-Sweeney (CRRSS) models of membrane were implemented in MATLAB and used as part of McNeal model of nerve fibers. The GUI was implemented in C# environment and the models were converted to dll files used in C#.

Results : The developed simulation environment allows the users to examine neural response to intra and/or extracellular stimulations with electrodes that can be located in any point in three dimensions related to the fiber. Not only pulsed stimulations but also low and high frequency stimulations are allowed to be applied. The neural response can be presented in different two or three dimensional plots.

Conclusion : The software that was developed can be used as a tool to enhance understanding of various bioelectric phenomena and mechanisms. It is also an excellent environment to perform simulation exercises for courses like bioelectricity, electrophysiology, and neural engineering. The students can also modify or add other membrane models to the environment.

Keywords : Extracellular electrical stimulation; Action potential, C#, Virtual library



Count: 281

Abstract ID: 96

Presentation Type: Poster

The evaluation of opipramole, a sigma receptor agonist, effects in the pentylenetetrazole-induced seizures in mice; involvement of NMDA receptors

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Background and Aim : It has been shown that sigma receptors in collaboration with the glutamate N-methyl-D-Aspartate (NMDA) receptors contribute to the pathophysiology of epileptic seizure. Therefore, the aim of this study was to evaluate the effects of opipramol, a sigma receptor modulator, against pentylenetetrazole (PTZ)-induced seizures in mice.

Methods : We used PTZ (100mg/kg) to induce clonic and tonic-clonic seizures in mice. Diazepam (5mg/kg) and distilled water used as the positive and negative control, respectively. Opipramol was used as 10, 20, and 50 mg/kg and ketamine (50 mg/kg) as a NMDA receptor antagonist. We recorded the onset of clonic and tonic-clonic seizures, and death protection after PTZ administration.

Results : Opipramol at doses of 20 and 50 mg/kg increased the latency of PTZ-induced clonic seizures and at doses of 10, 20 and 50mg/kg delayed the onset of PTZ-induced tonic-clonic seizure compared with the control group. Opipramol+ ketamine had a higher onset of clonic and tonic-clonic seizure compared with the control and only ketamine groups. Opipramol at dose of 50 mg/kg (25% protection), opipramol at dose of 10 mg/kg and ketamine (12.5%) provided highest protection against PTZ-induced mortality in mice.

Conclusion : Sigma receptors may have important roles in the myclonic and tonic-clonic seizures and Opipramol, as a sigma receptor agonist, may be a potential antiepileptic drug. Inhibition of glutamate NMDA receptors may enhance the anti-epileptic effects of opipramol against PTZ-induced seizure.

Keywords : opipramol, sigma receptors, N-methyl-D-Aspartate receptors, seizure



Count: 282

Abstract ID: 500

Presentation Type: Poster

Differentiation of Adult Human Mesenchymal Stem Cells in to Dopaminergic Neurons

Submission Author: Marjan Khademizadeh

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Background and Aim : Parkinson's disease (PD), after Alzheimer's disease, is the second most common progressive neurodegenerative disease in the world. Diseases caused by progressive destruction of dopaminergic neurons of nigrostriatal pathway in basal ganglia. The treatment of PD is based on compensation for the brain's supply of dopamine lost in the substantia nigra by drug therapy, deep brain stimulation (DBS), surgery, gene therapy and cell therapy. Some of these therapies not only didn't have positive effects on the progress of disease but caused new problems and complicated side effects for patients. Therefore, experimental and clinical studies have focused on the utility of stem cell-based therapies in several neurodegenerative diseases including PD. However, it is important to delineate the specificity and applicability of cell types and appropriate outcomes of the differentiated cell types before such cells can be safely used in clinical translation studies. A number of stem cells types such as embryonic cell type isolated from the inner cell mass of blastocysts, mesenchymal stem cells taken from different tissues including, bone marrow, blood and umbilical cord blood are widely used. Recently, adipose derived stem cells (ADSCs) have been considered as a suitable source of tissue for this purpose. In this project, ADSCs differentiated to dopaminergic neurons and the specificity and validity of the cell preparations were examined.

Methods : Human adipose tissues were collected from healthy volunteers undergoing liposuction. ADSCs were isolated by collagenase-based enzymatic method and confirmed by flow cytometry via surface CD marker. Then ADSCs were differentiated to dopaminergic neurons in neurobasal medium in the presence of differentiation factors and confirmed by immunocytochemistry via neuronal and dopaminergic markers.

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Results : The isolated ADSCs from human adipose tissues were cultured and identified by the expression of MSCs surface markers including CD90 and CD44. These cells did not express hematopoietic surface markers such as CD45 and CD14. Differentiated cell express neuronal marker NeuN and dopaminergic marker tyrosine hydroxylase (TH), the key enzyme of dopamine biosynthesis. The cells did not express glia marker GFAP.

Conclusion : ADSCs can be easily taken from the patient's own body, and differentiated into dopaminergic cells have lower risk of transplant rejection. However, further confirmation examination and animal model experiments are needed before using these cells in clinical trials of PD.

Keywords : Parkinson's disease ; adipose derived stem cells ;differentiation ; dopaminergic neurons

Count: 283

Abstract ID: 354

Presentation Type: Poster

Diazinon, an organophosphate pesticide, induces oxidative stress and neurotoxicity in brain tissue of adult rats

Submission Author: Mohammad reza Khaksar

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Background and Aim : One of the most classes of pesticides which widely used is an organophosphorus insecticide. Abundant scientific evidence elaborated that exposure with that is deemed to be pernicious threat originally. Thus, consequences of these damages are marked to various toxicities such as neurotoxicity which can be effected by induces organ injury and imbalance in cellular anti-oxidative potency. Therefore, the present study was designed to investigate the sub-acute effects of diazinon on oxidative stress markers in brain tissue of rats.

Methods : In this study, after determining the LD50 of diazinon, 1/5 of its LD50 were given to rats orally via gavage once a day for 2 weeks. In addition, control group of rats were received Tween oil as the solvent for diazinon. Ultimately, oxidative stress biomarkers were inquired at the end of the treatment in brain tissue.

Results : Effective dose of diazinon was determined as 70 mg/kg same as 1/5 of its LD50, (350 mg/kg of body weight for rat) from commercial grade on the basis of pilot studies. After 2 weeks of treatment, in rats belonging to diazinon group a considerable increase in lipid peroxidation (LPO) and reactive oxygen species (ROS) were observed when compared with control group ($P < 0.001$). Also, a significant reduction in total antioxidant capacity (TAC, $P < 0.001$), total thiol molecules (TTM, $P < 0.001$), and catalase activity (CAT, $P < 0.001$) were represented in diazinon group in compared to control group.

Conclusion : Generally, the changes in investigated biochemical parameters in rat brain tissue could serve as indicators of neurotoxicity due to the exposure to diazinon.

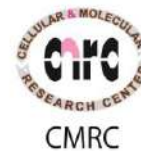
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Keywords : Brain; Diazinon; Neurotoxicity; Oxidative stress



Count: 284

Abstract ID: 272

Presentation Type: Poster

Gene expression of main members of mitogen activated protein kinase is decreased in the prefrontal cortex of a rat model of hepatic encephalopathy

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Background and Aim : Liver failure is the fourth leading cause of death in the world. Chronic liver failure resulting in a condition known as hepatic encephalopathy. In this disease, neurotransmitter systems are affected leading to cognitive and motor disorders. Mitogen-activated protein kinases (MAPKs) are target molecules in the signaling pathways of inflammatory and neurotransmitter receptors. It has been reported that MAPKs are affected at transcriptional and post-transcriptional levels in hepatic encephalopathy in response to inflammation induced by hyperammonemia. Therefore, the aim of the present study was to investigate gene expression of the main members of MAPK cascades including p38 MAPK, extracellular signal-regulated kinase 1/2 (ERK1/2), and c-Jun N-terminal kinase 3 (JNK3) in the prefrontal cortex of rats with hepatic encephalopathy.

Methods : Male Wistar rats weighing 300-350 g were used. A common bile duct was ligated and resected to induce hepatic encephalopathy in one group of rats but sham control operation consisted of laparotomy and bile duct identification without ligation and resection. On day 28 after the surgery, two groups of sham and model of hepatic encephalopathy were decapitated and their brain were removed, fixed in formalin (10%). After 72 h, brain sections at prefrontal area were prepared and stained with Hematoxylin and Eosin. The brains of two other groups from both experimental groups were also removed from the skull and the prefrontal cortex were bilaterally dissected. A RT-PCR method was used for evaluating gene expression of main members of MAPKs including the p38, ERK1/2 and JNK3 in the prefrontal cortex. An independent sample t-test was used to analyze the results of gene expression between the sham control group and the model group with hepatic encephalopathy. Statistical significant level was defined as $P < 0.05$.

Results : The results of histopathology at prefrontal area showed inflammatory signs including brain edema and gliosis in rats with hepatic encephalopathy. In addition, the results of gene expression revealed

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significant decreases in p38 ($P < 0.01$), ERK1/2 ($P < 0.05$) and JNK3 ($P < 0.05$) at mRNA level in the prefrontal cortex of rats with hepatic encephalopathy compared to sham control group.

Conclusion : It can be concluded that changes in MAPKs expression in the prefrontal cortex may underlie, at least partly, brain inflammation resulted from chronic liver failure and subsequent induction of hepatic encephalopathy.

Keywords : Hepatic encephalopathy, p38, ERK1/2, JNK3, Gene expression, rat



Count: 285

Abstract ID: 390

Presentation Type: Poster

Effect of lactation on memory disorder after global ischemia

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Background and Aim : Stroke is an acute event that results in sudden loss of brain functions following poor blood supply to brain areas. About 83 percent of strokes are obstructive (ischemic). Stroke, regardless of its etiology, results in a cascade of pathological events which damage brain tissue and causes neuronal death. This results in rapid loss of brain functions. Because of minimal neuronal regenerative capacity, only a small number (0.02%) of dead neurons are replaced. It has been postulated that pregnancy and lactation can improve maternal neurogenesis and may increase neuronal survival, following stroke. We designed this study to evaluate the effect lactation on neuronal recovery following ischemic stroke.

Methods : To assess the effect of lactation, in this study memory (Shuttle box) were assessed. A total of Thirty-two female Wistar rats were selected and divided into four groups of eight: Lactation sham (Lactation without ischemia), Virgin (No pregnancy with ischemia), Non lactation (No Lactation with ischemia) and lactation (Lactation with ischemia). Global ischemia by temporary occlusion of the common carotid arteries was induced for 20 minutes. memory test was performed on 5th-9th days following ischemia.

Results : During ten days after ischemia, the destructive effects of hypoxia on hippocampus and its dysfunction were observed. Furthermore, Lactation improved memory impairment as compared non lactating rats ($P<0.05$).

Conclusion : This study shows that lactation can induce protective effects against brain ischemia. These protective effects may be due to hormonal changes observed during lactation.

Keywords : cerebral ischemia, Lactation, memory disorders.



Count: 286

Abstract ID: 212

Presentation Type: Oral

Epigenetic Therapy: Effect of bmi1 inhibition oncogenic and tumor suppressor miRNAs in Glioblastoma Multiforme

Submission Author: Mohammad Khanalipour

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Background and Aim : Glioblastoma Multiforme (GBM) is the most common and most malignant type of brain tumor, despite of surgery, chemotherapy and radiation therapy, average survival of patients with close to 14 months. Cancer development is not only restricted to the genetic changes, but also to epigenetic changes. Epigenetic processes are very important in the development of hematological malignancies. The main epigenetic alterations are aberrations in DNA methylation, post translational modifications of histones, chromatin remodeling and microRNAs patterns, that these are associated with tumor genesis. PRC1 complex is one of the important regulators of epigenetic that plays a crucial role in the proliferation and differentiation of cells through epigenetic silencing of genes. The importance of this complex activity has demonstrated in most human malignancies such as cancer of the stomach, colorectal, breast, melanoma and bladder. Several studies have shown that increased expression of BMI1 associated with increased invasion and tumor progression .Also in Glioblastoma , BMI1 in Tumor and CD133+ cancer stem cells show increased expression. On the other hands Micro RNAs are Small regulators of intracellular which play a principal role in the development of cancer. The importance of this Molecular regulators to the extent that they can be divided into two categories oncogenic micro RNAs (OncomiR) and Tumor suppressor micro RNAs (TSmiR).

Methods : The current study, the effect of inhibiting the enzyme BMI1 (a major component of catalytic complex PRC1) was conducted it was investigated by using a specific chemical inhibitor on profile of OncomiR and TSmiR. For this purpose, after determining of the effective dose By cytotoxicity assay and treatment of cells with drugs , the expression level of Oncogene and tumor suppressor micro RNA profiles by qPCR were assessed

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Results : The results show that specific inhibition of BMI1 leads to reduction of cell viability and significant change in the expression profile of the micro RNA

Conclusion : So, it is suggested that BMI1 can be described as a new Targeted and effective treatment in Glioblastoma Multiforme. As well as, inhibiting of BMI1 Can have a significant effect in reducing of oncomiRs and increased of TSmiRs

Keywords : GBM ; Epigenetic alterations ; PRC1 complex ; Micro RNAs ; OncomiR ; TSmiR



Count: 287

Abstract ID: 310

Presentation Type: Poster

Comparing the Statistical Properties of the Brains of Children with ADHD and Normal Children

Submission Author: Reza Khanbabaie

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Background and Aim : Brain as a complex system has different statistical properties which can be calculated for different states of brain. Attention deficit hyperactivity disorder (ADHD) is a common behavioral disorder that affects 8-10% of children. In this study the brain waves of 12 normal and 12 ADHD children have been investigated using EEG system. Among the statistical properties of complex systems we calculate the clustering coefficient, global efficiency and small-world network to compare the brains of these two groups. Clustering coefficient is an index that is related to the modular functionality of the brain and can show how much different known cognitive regions are individually clustered. The existence of clusters in the active brain network anatomically indicates the possibility of individual clusters functionality and statistically it indicates the independent neural processing. The mean inverse path length which is called global efficiency is meaningfully calculated for discrete networks so that the path between discrete nodes has infinite length and therefore has zero efficiency. Spectral coherence indicates the functional connection between electrodes which is calculated for all electrode pairs. Small-world network is a state between ordered network and random network. The mean characteristic length and clustering coefficient are big for ordered network but are small for random network. But the small-world is something between these two states, with small characteristic length and big clustering coefficient.

Methods : A 19 channel EEG system is used for recording brain activities with a sampling rate of 250 samples/s and a band-pass filter of 0.1-40 Hz. The recording time is 5 minutes which 90 seconds is selected as data without noise and EEGLAB is used for analyzing the data. Then SPSS is used for statistical analysis and ANOVA.

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Results : By plotting the graphs corresponding to these properties we conclude that there is a difference between the two groups of normal and ADHD children. The clustering coefficient of ADHD group is more than normal group which indicates that the brain of these children operates like islands. The more affected band compared with others was alpha band. This wave is probably related to motion or readiness for movement, and we see that in ADHD children the concentration, attention and calm is attacked. The information processing in the brain of these people are less than normal, since the mind is thinking on different branches. The measure that is affected more than others is small-world network. In the small-world network, depending how much the result is greater than one, it indicates the more optimal brain functionality. Our results show that the small-world network in the brain of ADHD children is less than that of normal children.

Conclusion : This work concludes that by calculating the statistical properties of brain like clustering coefficient, global efficiency and small-world network using the recorded brain activity by EEG system it is possible to find a difference between the brains of ADHD and normal children. The most affected statistical parameter for distinguishing these two groups was small-world network.

Keywords : ADHD; Graph Theory; Statistical properties; Small-World Network; Clustering; Global Efficiency



Count: 288
Abstract ID: 138
Presentation Type: Poster

Direct effect of insulin within the hypothalamic arcuate nucleus increases the acute pain threshold

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Background and Aim : Pain is an unpleasant feeling that occurs by stimulation of free nerve terminals. Pain control is carried out through the use of nonsteroidal anti-inflammatory substance including beta-endorphins which are derivatives of pro-opio-melano-cortin(POMC). The POMC is produced in the hypothalamic arcuate nucleus and its release increases in response to pain. Since in the arcuate nucleus the insulin receptor exists and the cited role of the arcuate nucleus in the pain pathway, it has been decided to investigate the direct effect of insulin injection within arcuate nucleus in acute pain by hot-plate test.

Methods : In this study adult male albino Wistar rats were used which were divided into four groups. Eight rats were designated into each group and they were put into the surgical device. Arcuate nucleus coordinates were as follows: 2.28mm posterior to Bregma with a depth of 9.4mm in midline area. Three days after stereotaxic surgery, hypothalamic arcuate nucleus of the rats was microinjected. Group I received 0.5μL saline. Groups II, III and IV received 0.5μL Insulin 0.5U, 0.1U and 0.002U doses of insulin respectively. The rats were then placed on the hot plate device with a temperature of 52±0.5°C. For statistical analyses, T-test and ANOVA test (continued with Newman–Keuls post hoc test) were used in order to compare the two and several groups respectively. P-values less than 0.05 (P< 0.05) were considered to be statistically significant.

Results : All in all, it was observed that the microinjection of insulin within the hypothalamic arcuate nucleus caused significant increase in acute pain threshold/the levels of analgesia.

Conclusion : As insulin has receptors in the hypothalamic arcuate nucleus, research has shown that this nucleus plays a role in analgesia. For the first time the effect of local injection of insulin in arcuate nucleus has been illustrated in this study and it is shown that the microinjection of 0.5U dose of insulin in this nucleus increases pain thresholds or results into analgesia. It seems that local injection of insulin with dosage of 0.5U stimulates the secretion of POMC from arcuate nucleus and thereby reduces the acute pain.

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Keywords : Insulin, Arcuate Nucleus, Hot Plate, Acute Pain



Count: 289

Abstract ID: 139

Presentation Type: Poster

Inhibition of arcuate nucleus of hypothalamus increases the acute pain

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Background and Aim : Pain is the alarming-factor which is created by excitation of free nerve ending. Controlling the pain would be done by using beta endorphin derived from the pro-opio-melanocortin(POMC). Arcuate nucleus of hypothalamus is the main area of producing POMC in the brain. Peptides which derived from POMC are present in the arcuate nucleus neurons. There are wide neural circuits that originate from the arcuate nucleus and its terminals projects to several areas involved in pain. Since the arcuate nucleus is involved in analgesia, we decided to investigate if the arcuate nucleus has role in acute pain by hot-plate test.

Methods : In the present study, at all experiments were done on the male Albino Wister rats from (weighing 190-220 gr). The rats were divided into two groups of eight. Stereotaxic surgery was done within arcuate nucleus of hypothalamus that coordinates as follows: 2.28mm posterior to Bregma with a depth of 9.4mm in midline area. The rats were put in recovery period for 3 days. The microinjection was done in the current nucleus. The first group (control group) received 0.5 μ l Saline and the second one received 0.5 μ l lidocaine2% within the arcuate nucleus. The acute pain paradigm was done using the hot plate test. The temperature was set at 52 \pm 0.5 $^{\circ}$ c. In these experiments T-test was used for comparing two groups. P-values less than 0.05 (P< 0.05) were considered to be statistically significant.

Results : The results showed that microinjection of lidocaine 2% within the arcuate nucleus of hypothalamus had a significant effect on increasing the acute pain or decreasing the analgesia in the rats.

Conclusion : The experiments showed that arcuate nucleus of hypothalamus had a role in analgesia. For the first time, in this experiment, the role of arcuate nucleus of hypothalamus was investigated by the lidocaine microinjection within this nucleus in acute pain by hot-plate test. It may suppose that deactivating the arcuate nucleus of hypothalamus by lidocaine which is the main area of producing the POMC in the brain, caused the acute pain increase and decreasing the effect of analgesia due to excitation of the periaqueductal gray area which is placed at the ending of beta endorphin nerves.

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Keywords : lidocaine, arcuate nucleus, hot plate, acute pain



Count: 290

Abstract ID: 216

Presentation Type: Poster

Blockade of KATP channels provides anti-Parkinsonism effect in the 6-hydroxydopamine - induced animal model: the role of oxidative stress

Submission Author: Gilda Khandan chelarasi

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Background and Aim : Studies suggest that ATP-sensitive potassium (KATP) channels are a potential pharmacotherapeutic target for neuroprotection in some neurodegenerative diseases. In present study, we evaluated the effect of pretreatment with glibenclamide (Glib) and B vitamins supplement on the severity of behavioral symptoms of 6-OHDA-induced Parkinsonism.

Methods : 6-OHDA was injected into striatum of rats using stereotaxic surgery. Treatment with Glib and B vitamin supplement was began before of the surgery and continued to three weeks after that. Development and severity of the Parkinsonism were assessed by conventional behavioral tests. Also we measured malondialdehyde (MDA) concentration in the blood and brain suspensions.

Results : Pretreatments with Glib, at both doses of 1 and 5 mg/kg or B vitamins supplement attenuated significantly severity of the behavioral symptoms. Pretreatment with combination of Glib and B vitamins was more effective than pretreatment with each one alone. Also, Pretreatment with B vitamins or Glib or combination of them reduced malondialdehyde concentration in the brain suspensions. Again, the effect of B vitamins and combination of B vitamins and Glib was more effective than the effect of Glib alone.

Conclusion : Because severity of the behavioral symptoms in the 6-OHDA-induced Parkinsonism reflects the degree of lesion in the SN dopaminergic neurons, we suggest that Glib pretreatment has provided neuroprotective effect against 6-OHDA- induced neurotoxicity. Our data indicate that at least part of neuroprotective effect of Glib has been mediated by its antioxidant effect.

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Keywords : Parkinson's disease; 6-hydroxydopamine; glibenclamide; B vitamins; behavioral symptoms; malondialdehyde;KATP channel

Count: 291

Abstract ID: 542

Presentation Type: Poster

The effect of crocin on acquisition and retention in the male rats under chronic isolation stress

Submission Author: Fatemeh Khani

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Background and Aim : It is reported that stress as psychological responses can disturb the acquisition and retention processes in brain. Crocin is a natural drug carotenoid chemical compound that is found in the flowers *Crocus sativus* L (commonly known as saffron). In both traditional medicine and in modern pharmacology, crocin as the main component of saffron has been used in the treatment of a wide variety of diseases. In this study, we investigated the effects of different doses crocin on acquisition and retention in the male rats under chronic isolation stress.

Methods : Twenty-eight male Wistar rats were randomly allocated to four different groups (n=7 per treatment): control, chronic isolation stress, (6-h/day for 21 days), and two groups receiving daily intraperitoneal injections of crocin (30, and 60 mg/kg) accompanied by a period of 21 days isolation stress. Finally, memory functioning was evaluated using the passive avoidance test at before and after foot shock. For evaluation of acquisition and retention, initial and step through latency were determined at the end of study by using passive avoidance test.

Results : Data revealed that acquisition and particularly retention on one day was impaired in the chronic isolation stress group compared to the control group. The usage of 60 mg/kg of crocin especially enhanced retention in rats one day after learning compared to the stress group. Furthermore, stress group had a plateau trend in acquisition presses. Crocin administration (especially 60 mg/kg) in stress-crocin group not only protected the decline but even led to an ascending trend in acquisition improvement.

Conclusion : The results showed that chronic isolation stress severity impaired acquisition and retention. Furthermore, administration of especially 60 mg / kg crocin has beneficial effects on acquisition and retention. Therefore, high dose of crocin with respect to its low dose had better protective effects against retention loss is caused by chronic isolation stress.

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Keywords : Retention, Acquisition, Isolation stress, Passive Avoidance, Crocin, Rat.



Count: 292

Abstract ID: 124

Presentation Type: Poster

P.Gly269Val mutation in TFG identified as cause of disease in second Iranian HMSN-P pedigree

Submission Author: Marzieh Khani

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Background and Aim : Hereditary motor and sensory neuropathy with proximal predominance (HMSN-P) is a neuromuscular disease typically characterized by proximal dominant muscle weakness and atrophy, and also includes mild but obvious sensory dysfunction, fasciculation, decreased deep tendon reflexes, axonal degeneration in the peripheral nerves, and autosomal dominant inheritance. The disease appeared to be rare, and was originally reported only in patients of Japanese or Korean descent. In 2015, we described a large Iranian HMSN-P affected pedigree and thus showed that the disease is not confined to individuals with Far East ancestry. Here, we report genetic analysis in a large Iranian pedigree whose members are affected with a neurological disorder with manifestations suggestive of HMSN-P.

Methods : Exons of TFG, the known HMSN-P causative gene, were sequenced to obtain supportive evidence for diagnosis and to identify a causative mutation. Subjective, biochemical, electrodiagnostic (EDX), and muscle magnetic resonance imaging (MRI) data were obtained. The findings were compared with previously reported HMSN-P patients, including patients of an earlier described Iranian HMSN-P pedigree that has been the only HMSN-P pedigree without Far East ancestry.

Results : A mutation in TFG that causes p.Gly269Val and that was recently reported as cause of Charcot-Marie-Tooth (CMT) disease type 2 in a Taiwanese pedigree was identified in the Iranian pedigree. It segregated with disease among the Iranian patients. Clinical features were consistent with HMSN-P diagnosis. As in the earlier Iranian HMSN-P pedigree, comparable involvement of proximal and distal muscles was observed. Comparison of presentations with previously described HMSN-P patients revealed clinical variability.

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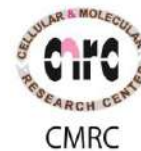
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Conclusion : The patients of the new Iranian pedigree are indeed affected with HMSN-P, further confirming that HMSN-P is not confined to patients with Far East ancestry. Furthermore, p.Pro285Leu that has been the only TFG mutation thus far reported in HMSN-P patients is not the only mutation that can cause the disease. We argue that the Taiwanese CMT and the Iranian HMSN-P pedigrees with the p.Gly269Val mutation are not affected with different diseases. As other authors have suggested, it is emphasized HMSN-P is a neuropathy.

Keywords : HMSN-P; Hereditary motor and sensory neuropathy with proximal predominance; TFG; p.Gly269Val; Neuropathy.



Count: 293

Abstract ID: 345

Presentation Type: Poster

Amelioration of propranolol-induced contextual fear deficit by transcranial direct current stimulation over left prefrontal cortex

Submission Author: Mozhgan Khani Abyaneh

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Background and Aim : Converging evidence points to transcranial direct current stimulation (tDCS) as a successful neuromodulator tool. Earlier findings robustly suggest tDCS interference with fear memory formation processes. On the other side, the impairing effect of propranolol, a beta-adrenergic receptors antagonist, on memory formation has been confirmed. This study investigates the efficacy of left prefrontal tDCS on propranolol-induced contextual fear memory impairment in male NMRI mice.

Methods : To test this, a unilateral epicranial electrode for the tDCS was positioned over left prefrontal cortex, and another electrode comprised of a carbon rubber electrode in the soaked sponge cover, placed onto the ventral thorax with a corset. Fear memory was assessed in the classical Pavlovian fear conditioning apparatus.

Results : The results indicated that pre-training, intraperitoneal administration of propranolol (0.1 mg/kg) decreased the percentage of freezing time and increased latency to freezing in the fear conditioning task, indicating a contextual fear memory acquisition impairment. However, pre- or post-training anodal stimulation did not alter fear memory acquisition, whereas the same application of cathodal tDCS facilitated fear memory acquisition. Anodal or cathodal stimulation improved contextual fear memory acquisition impairment induced by propranolol at all conditions. This improvement was more prominence in post-training anodal stimulation and pre-training cathodal tDCS.

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Conclusion : Collectively, our findings suggest an improving effect of left prefrontal tDCS application on propranolol-induced fear deficit, so that timing of applied tDCS is an important factor in production of this response.

Keywords : Transcranial direct current stimulation (tDCS); Propranolol; Contextual fear conditioning; Mice



Count: 294

Abstract ID: 653

Presentation Type: Poster

Does Negative Brain Stimulation Reduce Sexual Arousal?

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Background and Aim : Some studies have shown that the activity of the prefrontal cortex, as a part of the brain's reward pathway, can be effective in sexual arousal. The present study was conducted to measure the effects of cathodal transcranial direct current stimulation on reducing sexual arousal in men.

Methods : . In a semi-experimental, two-group, pretest-posttest study, 106 male students of Semnan university were selected using convenience sampling and after screening, final sample, include 32 students between 18-27 years of age were divided in two equal groups. In experimental group, participants were exposed to negative stimulation using tDCS in prefrontal area and control group participants received no intervention. The instruments used in this study included a modified Stroop task, Hurlbert Index of Sexual Desire, GHQ-28 and tDCS. Collected data in the pre-test and post-test were analyzed by one-way ANCOVA.

Results : The results showed that the negative stimulation had no significant effect on reducing sexual arousal ($p>0.05$).

Conclusion : It seems that adopted inhibition, simultaneously affected the moral inhibitory system in prefrontal cortex. It emphasizes the importance of sociocultural factors to understanding the role of neural pathways of sexual arousal.

Keywords : Brain stimulation; tDCS; Sexual arousal



Count: 295

Abstract ID: 649

Presentation Type: Poster

Wolfram syndrome: diabetes, eye atrophy, deafness and neurological damage ;case report

Submission Author: Payam Kheirmand parizi

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Background and Aim : Wolfram syndrome is a disease that affects many body systems. Wolfram syndrome is characterized by high blood sugar levels caused by a deficiency of the hormone insulin (diabetes Mellitus) and progressive loss of vision because of degeneration of the nerve that carries information from the eye to the brain (optic atrophy). In fact, a rare form of monogenic diabetes, including eye atrophy, deafness and nerve damage called Wolfram syndrome. Wolfram syndrome patients often have pituitary dysfunction, leading to excretion of excessive amounts of urine. (Diabetes insipidus), hearing loss caused by changes in the inner ear (sensorineural deafness), urinary tract problems, decreased testosterone in men (hypogonadism), and mental or nervous disorders or possess.

Methods : The present report relates to 18-year-old woman with type 1 diabetes from age 6 and at age 18 it is known that Wolfram's syndrome

Results : Diabetes mellitus is usually the first symptom of this syndrome from age 1 month to 16 years and the average age of 6 becomes apparent, Almost all patients require insulin therapy. The next sign is often optic atrophy That occurs around the age of 11, the patient at first, loses its color vision Then, his vision problems worse and worse. About 70 to 75 percent of patients with diabetes insipidus and about two-thirds are suffering from sensorineural deafness.

Conclusion : In this study a comprehensive review of this rare syndrome and discuss the reported cases in Iran Will discuss to introduce the 18-year-old female patient with type 1 diabetes at age six, bilateral visual loss and optic nerve atrophy and sensorineural decrease in hearing at a frequency of 8000 Hz, which is a consanguineous marriage in the city of Sabzevar.

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Keywords : Wolfram syndrome, diabetes, eye atrophy



Count: 296

Abstract ID: 430

Presentation Type: Poster

Duchenne muscular dystrophy and Becker; X-linked dystrophy, a gene with two phenotypes

Submission Author: Payam Kheirmand parizi

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Background and Aim : Duchenne muscular dystrophy and Becker (DMD & BMD) a progressive neuromuscular disease caused by mutations in the dystrophin gene in p21 region of chromosome X is created. Duchenne muscular dystrophy is a progressive, due to a lack of dystrophin protein in patients. While Becker's disease, is a mild form Duchenne's disease, and in which the protein to be produced is low. The reason for this is rooted in the mutation and the effects of mutation. That is, if the mutation in the dystrophin gene causes lack of dystrophin in DMD or not an activity and if mutant dystrophin protein leakage and the remaining activities have caused BMD. Duchenne disease risk in the most recent study report is one in every 4,000 newborn son. Remove and large repeat, are more common, but small mutations found. Usually removal and duplication can occur in any place of gene, but in the DMD deletions are Most somewhere between 45-55 and duplication of exon occur between exons 2-10. Dystrophin gene is the largest known human gene that Has 79 exons and 2.2 Mgbaz long. In this disease, the rate of new mutations is high. And the high rate of mutation is leading to a wide range of mutations. In fact one-third of cases are caused by new mutations. So even having the instruments prenatal diagnosis and genetic counseling for families, new cases will be created

Methods : in this article we've got through role of DMD is diagnosing and curing in patient. articles published from 1990 to 2016 are collected from data base NCBI titles "DMD and mutations, gene therapy" are searched in motor search

Results : Having a correct diagnosis in patients families, and to provide appropriate care to patients according to published guidelines, is necessary. With specific mutations developing treatments for DMD, is now correct diagnosis, to evaluate the whether patients are eligible for treatment is important

Conclusion : In this review different mutation causes DMD in Iran and around the world, and also diagnostic techniques for genetic diagnosis for children with DMD to discuss and to talk about prenatal

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diagnosis (PND) or preimplantation genetic diagnosis (PGD) and emerging treatments for DMD in the world here

Keywords : Duchenne muscular dystrophy and Becker, mutation, X linked

Count: 297

Abstract ID: 270

Presentation Type: Poster

The effect of hydroalcoholic extract of *Trigonella foenum-graecum* (fenugreek) on learning and memory impairments in streptozotocin induced diabetic rats

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Background and Aim : Streptozotocin (STZ) induced diabetes is reported that cause learning and memory impairment secondary to chronic hyperglycemia. In present study, we investigated the effect of hydro-alcoholic extract of *Trigonella foenum-graecum* (fenugreek) on learning and memory impairment in STZ-diabetic rats

Methods : The animals were randomly divided into six groups and treated as follow: 1) healthy control group (control), 2) single dose of STZ 60 mg/kg (i.p) before beginning the treatment period (Diabetic), (3-5) STZ with 50, 100 and 200 mg/kg of *Trigonella* extract for 6 weeks once daily (gavage) (Diabetic- Ext 50, 100 and 200). After treatment period, they examined in passive avoidance test.

Results : In diabetic group, STZ decreased latency time in 3, 24 and 48 hours after a shock for entering to the dark room in compared to control group . Three doses of the extract significantly increased latency time in 3, 24 and 48 hours after the shock for entering to the dark room compared to diabetic group . Diabetic group spent more time at dark room than control group at 3, 24 and 48 hours after shock . Three doses of the extract significantly decreased the time spent in dark room at 3, 24 and 48 hours after the shock compared to Diabetic group . STZ decreased the time spent in light room at 3, 24 and 48 hours after the

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shock in diabetic group compared to the control group ($P < 0.001$). All doses including 50, 100 and 200 mg/kg of the extract significantly increased the time spent in light room at 3, 24 and 48 hours after the shock compared to diabetic group .

Conclusion : The results demonstrated the *Trigonella foenum-graecum* extract has protective effects on diabetes-associated learning and memory impairment.

Keywords : Diabetes, streptozotocin, *Trigonella foenum-graecum*, learning, memory



Count: 298

Abstract ID: 343

Presentation Type: Poster

Etiology of ADHD

Submission Author: Arefe khorasanizade

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Background and Aim : attention deficit hyperactivity disorder is one of the most common psychiatric disorders in children and tripled among boys and girls is probable diagnosis. Based on the diagnostic criteria for the disease is a developmental disorder attention span, impulsivity or hyperactivity and behavioral rules in which this deficiency is significantly disproportionate to the child's mental age. It begins during childhood.

Methods : In this paper, a review of the latest articles and books which since 2000 has been more active in the field of databases Pubmed, Proquest, Google scholar, Science direct is chosen.

Results : : Some researchers believe that food allergies, heavy metal toxicity, low-protein diet, lack of minerals, essential fatty acids, thyroid disorders and lack of vitamins, especially B vitamins are the risk factors for developing ADHD. It seems that children with this condition are deficient in minerals such as magnesium, zinc and iron are. Genetics: attention deficit hyperactivity disorder often seen in a family of close relatives (25%) children, with the outbreak of the disease in the general population is 5%. Identical twins, suggesting a genetic study strongly confirms. The chemical imbalance and nervous dopamine deficit hyperactivity in children due to abnormally low. and alcohol during pregnancy may be related to the disease. Lead poisoning can also cause this disease. The prefrontal cortex controls thinking, behavior and emotion in reasoning and problem solving environmental and familial role: educational practices and responsiveness of parents, lack of agreement on the provision of parenting, authoritarian parenting

Conclusion : : Most researchers believe that biological agents cause disease. So we can confidently say that unduly his parents would not be blamed and not blame yourself. However, the factors may be involved in the creation or exacerbation

Keywords : : Hyperactivity Disorder, etiology, nutrition, genetics, chemical imbalance, brain damage



Count: 299

Abstract ID: 344

Presentation Type: Poster

The role of working memory in humans

Submission Author: Arefe khorasanizade

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Background and Aim : Working memory is a new term. Scientists working memory have to replace short-term memory as well as the manipulation of information takes place. Short-term memory capacity is replaced by the data processing capacity. Working memory is a combination of short-term memory and attention element to perform specific mental tasks. So an active system dynamics, which is the accumulation and manipulation of complex cognitive tasks such as data temporarily to carry out learning, reasoning, perception and thinking to be used. When you review the information mentally, recover and remember that you, in fact, that data from long-term memory and working memory you actively transmitted in connection with information, which will be transferred to long-term memory. In general, no clear boundaries between memory and thoughts can not be determined.

Methods : In this paper, a review of the latest articles and books which since 2000 has been more active in the field of databases Pubmed, Proquest, Google scholar, Science direct is chosen.

Results : The four components of executive function called working memory, phonological storage, visual-spatial mapping and reservoir is event data. Executive functions such as planning, coherence, focus attention, resistance to interference, the use of feedback and the ability to deal with new issues. Storage tank or similar phonological memory serves span. The components of these data stores and rehearsal of a mechanism underlying its operation. Visual-spatial mapping, spatial reactions are more severe than verbal reactions. had brain damage, a great deal of autonomy mechanisms, brain show the underlying components of working memory.

Conclusion : phonological loop in the temporal lobe of the left hemisphere is located. Visual-spatial memory in the right hemisphere is the central administrative activities associated with bilateral posterior frontal cortex. Effectiveness of active memory is dependent on the frontal lobes. Pre-frontal cortex is important in working memory processing. During childhood brain structures underlying the system continue to grow. Pre-frontal cortex is one of the last areas of the brain that evolves and developmental

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changes in the brain area that is parallel cognitive development during childhood. Brain development are associated with faster data processing capacity and short-term memory and reasoning abilities also increases. It seems that all will follow a trajectory similar time

Keywords : working memory, neurological multi-component system



Count: 300

Abstract ID: 182

Presentation Type: Poster

The Effect of Sertoli cells Allograft Transplantation On Ischemic Damages Induced by Ischemic Stroke Moedl

Submission Author: Nadia Khoshbaf khiabanian

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Background and Aim : Stroke is a major cause of death and disability after myocardial dysfunction and cancer worldwide. Its incidence and lethality keep increasing during last decades especially in developing countries. Cerebral ischemia was accounted as main cause for nearly 80% of stroke. The high morbidity and disability rate after stroke have given the focus from clinicians and researchers to explore more effective and safer treatments such as cell therapy, especially for those patients have problem for thrombolytic therapy and percutaneous intravascular interventions. As owing to early findings that Sertoli cells might be a new target in decreasing ischemic damages of neurodegenerative diseases especially ischemic stroke due to their ability in secretion of factors that actively inhibit the immune responses and also multiple trophic factors expression. The ultimate goal of the present study to determine if implantation of Sertoli cells can ameliorate ischemic injuries.

Methods : 21 male Wistar rats were divided into three groups (control, sham, and treatment) (n=7). The sham group received DMEM/F12 and FBS serum 10%. Treatment groups received Sertoli cells. Using stereotaxic surgery, Sertoli cells were injected to striatum. Seven days after injection, rats were subjected to 60 min MCAO surgery. 24 hours later, the neurologic defects scores and infarct volume in total, cortex, amygdala, and striatum of rat brain hemisphere were evaluated separately.

Results : The present result indicate that neurological defects was improved in the treatment group compared with control group (P<0.001). Furthermore, infarct volume in cortex and striatum of allograft group attenuated in comparison with control group (P=0.001).

Conclusion : Collectively, these results showed that neuroprotective effects of Sertoli cells caused the improvement of ischemic injuries partially via reduction of neurological defects and infarction volume.

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Keywords : Sertoli cells; Ischemic stroke; Transplantation; Stroke; Allograft



Count: 301

Abstract ID: 524

Presentation Type: Oral

Nonlinear Dynamic Evaluation of Stationary Balance in Helicopter Pilots

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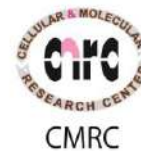
Background and Aim : Balance is a complex process which is related to three systems (vision, vestibular, and proprioceptive sense). Keeping balance is necessary for performing daily activities. Any changes in balance related systems would cause imbalance and endangers human body. It seems that nonlinear assessment would be more effective. The aim of this study was acquiring balance parameters of helicopter pilots for nonlinear dynamic assessment of postural control.

Methods : 15 helicopter pilots (age range of 29-40 years old) were arrived to study considering inclusion and exclusion criteria. They stood on a force plate in 2 phases (30 seconds with open and closed eyes). Matlab software was used for simulation, analyzing gathered data, and calculating maximum Lyapunov exponent. The final data were analyzed by SPSS using Kolmogorov-Smirnov and T-test tests.

Results : Maximum Lyapunov exponent was measured 0.28 and 0.82 (anteroposterior direction with open and closed eyes respectively). It was also measured 0.25 and 0.61 (mediolateral direction with open and closed eyes respectively). The results showed significant difference between balance of helicopter pilots (with open and closed eyes).

Conclusion : Conclusion: It is concluded that these helicopter pilots had good control on maintenance of their balance which is an important advantage with respect to occupational fitness.

Keywords : Vestibular system, Lyapunov exponent, Force plate, Balance, Center of pressure.



Count: 302

Abstract ID: 612

Presentation Type: Poster

Neuroprotection by Hyperbaric Oxygen for Traumatic Brain Injury.

Submission Author: Amir Khoshvaghti

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5. Health Research Center, Chamran Hospital, Aerospace and Subaquatic Medicine Faculty, AJA University of Medical Sciences, Tehran, IRAN.

Background and Aim : Traumatic brain injury (TBI) should be considered as a major public health issue. Immediate effective therapy is impossible due to its complexity. Neuroprotective effects have been mentioned for hyperbaric oxygen therapy (HBOT). The aim of this research was finding relation of HBOT neuroprotective effects in treating TBI.

Methods : A systematic review was done with relevant key words in Pubmed articles.

Results : Following mechanisms have been reported for HBOT: Enhancement of tissue oxygenation, and reduction of apoptosis and inflammation. Final effects would be decrease of intracranial pressure, reduction of mortality, and improvement of neurobehavioral recovery.

Conclusion : With consideration of neuroprotective effects in HBOT, we may conclude beneficial outcomes for TBI. It should be reminded that HBOT is a useful adjuvant treatment beside other modalities.

Keywords : Brain, Neuroprotection, Hyperbaric oxygen, Inflammation, Apoptosis.



Count: 303

Abstract ID: 389

Presentation Type: Poster

GW9662 chronic therapeutic effect on chronic neuropathy induced by paclitaxel in mice

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Background and Aim : Chemotherapy-induced peripheral neuropathy (CIPN) is the dose-limiting side effect of chemotherapy agents such as taxanes. Findings of recent studies indicate that manipulation of PPAR γ receptor has modulatory effects on the different types of neurotoxicity. Nowadays, pharmacological tools such as JW series drugs are available to evaluate the role of this system in the field of research. In this study, we evaluate the anti-neuropathic pain chronic effect of JW 9662 drug in Paclitaxel-induced peripheral and central neuropathic hyperalgesia models.

Methods : In this research, we had three groups. In the JW group, mice received JW 9662 drug (2mg / kg, IP) for two weeks, and in the third week paclitaxel (2mg / kg, IP) was added. In the control group, mice received saline for three weeks and in the paclitaxel group, mice received saline for two weeks and the third week paclitaxel (2mg / kg, IP) was added. In all groups, sensory neuropathy was evaluated by immersing the tail in the cold water and hot plate methods.

Results : After induction of hyperalgesia by paclitaxel, the mice which received JW drug showed a significant decrease of pain in response to cold water and hot plate stimuli tests.

Conclusion : The results of this study suggest that JW has an inhibitory effect on the neuropathic pain which is induced by paclitaxel and decrease the side effects.

Keywords : paclitaxel, GW9662, neuropathic pain, hyperalgesia, cold allodynia, mouse



Count: 304

Abstract ID: 756

Presentation Type: Poster

Determining the factors which affect the quality of life of parents with autistic children

Submission Author: Kiarash Kohansal

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2. Iran University of Medical Sciences
3. Iran University of Medical Sciences
4. Sadra Scientific Neuroscience Student Association

Background and Aim : Autism Spectrum Disorder [ASD] is defined as a developmental abnormality in childhood . In addition to patient's problems, engaging patient's family is a common complication of it . The sum of these complications can decrease family Quality of Life [QoL]. this study was conducted to determine the current QoL and prognostic factors for future QoL of parents with autistic children .

Methods : this cross-sectional study was carried out in Iran autism centre, Tehran, Iran, between january 2013 and march 2014. Parents of 90 autistic children were selected via convenient sampling method . Afterward, different types of questionnaires such as Parenting Stress Index [PSI], demographic and QoL were completed by them while they were oriented about the materials asked in the questionnaires. after collecting the completed questionnaires from parents the data was analysed using SPSS.16 software to evaluate the current QoL and prognostic factors for future QoL of autistic children's parents.

Results : In the QoL questionnaire, total score of 26-65 represents unsatisfying quality of life and total score of 96-130 shows good and satisfying quality of life. According to these total scores cases were divided into 2 groups; good and poor. The average of PSI total score was 125.620 in the poor group and 106.8485 in the good one. The average of PD total score was 34.1970 in the poor and 42.667 in the good group. The average of PCTI total score was 38.8848 in the poor and 45.4583 in the good group . Analysis show that the mean total scores of PD and PSI are significantly correlated with the quality of life($P < 0.05$). On the other hand, results show no specific relationship between the quality of life and PCTI, children's gender, parental educational condition .

Conclusion : In conclusion, according to this study total score of PSI and PD are valuable for determining and predicting the QoL of parents of autistic children .

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Keywords : Quality of life ; autistic children ; PSI ; PD ; PCTI



Count: 305
Abstract ID: 699
Presentation Type: Oral

Effect of Sleep deprivation on emotional memory consolidation and α -ketoglutarate dehydrogenase in right and left Amygdala in Male rat

Submission Author: Parastoo Kordestani moghadam

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Background and Aim : Introduction: Emotional processing is the important issue for survival. Amygdala is the crucial area for emotional memory and Fear conditioning test is the standard test for that. Pavlovian fear conditioning is one type of associated learning that allows us to study of emotional memory and post traumatic stress disorder (PTSD). Sleep has the essential role for memory consolidation. Off-line learning is the important issue for memory consolidation. Long term potentiation (LTP) is affected by many factors such as endogenous and exogenous variations. Quality and quantity of sleep has the critical role on LTP. Waste products produce due to stress, metabolic process, muscle activity, fatigue and many the other factors. NREM sleep is the most important time for removing waste products by glymphatic system. Waste products make alight oxidative stress. Mitochondria is the first area of cell which is sensitive to this critical conditions. Alpha-ketoglutarate dehydrogenase (α -KGDH) is one of the mitochondrial enzymes that is altered in response to oxidative stress. With regard to this knowledge we studied the effect of total sleep deprivation (TSD) and long nap (LN) on fear conditioning test and α -KGDH in right and left amygdala.

Methods : The subjects of the study were male Wistar rats with weight between 200 - 250 gr under the light and dark period for 12/24 h and environment temperature was between 22-24 °c. The Fear conditioning memory was trained for all subjects just before start of TSD (48/48h). Then 1hour after discharge from the TSD apparatus, fear conditioning test was performed for two stages (auditory and Context). Right and left amygdala was extracted separately. α -KGDH of each amygdala was measured by Spectrophotometer. We used the analytical statistic tests such as one-way anova for comparison between our groups.

Results : TSD induced amnesia in context more than auditory fear memory. LN returned the auditory memory more than context. Enzymatic evaluation demonstrated significant deference between level of α -KGDH in right and left amygdala in sleep deprived subjects. In TSD group, left amygdala had a higher level of α -KGDH than right, compare to Sham and control groups.

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Conclusion : Attending to the results, context fear memory is more vulnerable to sleep deprivation than auditory in rat. In the other hand, fear memory is an aversive memory. Negative emotions is processed in right hemisphere. Despite the extinction of fear after TSD, we observed the negative emotional behaviors in our subjects. α -KGDH increased in left amygdala after TSD and demonstrated the level of oxidative stress in left side more than right side. Positive emotion is processed in left amygdala, due to TSD and decreasing of freezing, stereotyping grooming and rearing was appeared in our subjects. Finally the study showed the vulnerability of positive emotion and left amygdala to TSD, even though LN can repair it, not totally but relative.

Keywords : Sleep deprivation, Fear conditioning Memory, Amygdala, Alpha-ketoglutarate dehydrogenase



Count: 306

Abstract ID: 148

Presentation Type: Poster

On the Formal Development of Behavioral Reactive Agents: A Systematic Braitenberg-Vehicle Approach

Submission Author: Matin Macktoobian

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2. Sharif University of Technology

Background and Aim : In this paper, a novel process has been developed to realize high-level complex cognitive behaviors into reactive agents, efficiently. This method paves the way for deducting high-level reactive behaviors from low-level perceptive information by autonomous robots. The aforementioned process lets us actualize different generations of Braitenberg vehicles, are which able to mimic desired behaviors to survive in complex environments with high degrees of flexibility in perception and emergence of high-level cognitive actions. The approach has been used to engineer a Braitenberg vehicle with a wide range of perception-action capabilities. Verification would be realized within this framework, due to the efficient traceability between each sequential pair of process phases. The applied simulations demonstrate the efficiency of the established development process, based on the Braitenberg vehicle's behavior.

Methods : The proposed strategy does map a predefined behavior into an agent's functionality within 4 sequential phases. Neural circuits have been used in order to realize the target cognitive behavior within the implementation phase. The operational tests have been applied to assess the accomplishments.

Results : The simulation results of the designed reactive agents with the presented approach show the appropriate embodiment of the desired cognitive capabilities into the agent.

Conclusion : Realization of the considered behaviors onto the agent's behavior and the successful assessment of its trajectories just prove the credibility of the presented formal development method to let us design reactive agents with capability of imitating cognitive abilities, artificially.

Keywords : Neural Circuits; Formal Development; Reactive Agent; Cognitive Robotics



Count: 307

Abstract ID: 567

Presentation Type: Poster

Internet addiction: Prevalence and relation with mental states in adolescents

Submission Author: Zahra Majdi

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3. Refah university college

Background and Aim : addiction disrupts the daily lives of adolescents. We investigated the prevalence of Internet addiction in junior high school students, elucidated the relation between Internet addiction and mental states, and determined the factors associated with Internet addiction in adolescents.

Methods : Junior high school students (aged 12–15 years) were assessed using Young’s Internet Addiction Test (IAT), the Persian version of the General Health Questionnaire (GHQ), and a questionnaire on access to electronic devices.

Results : Based on total IAT scores, 2.0% (male, 2.1%; female, 1.9%) and 21.7% (male, 19.8%; female, 23.6%) of the total 853 participants (response rate, 97.6%) were classified as addicted and possibly addicted, respectively. Total GHQ scores were significantly higher in the addicted (12.9 _ 7.4) and possibly addicted groups (8.8 _ 6.0) than in the non-addicted group (4.3 _ 4.6; $P < 0.001$, both groups). A comparison of the percentage of students in the pathological range of GHQ scores revealed significantly higher scores in the possibly addicted group than in the non-addicted group. Further, accessibility to smartphones was significantly associated with Internet addiction.

Conclusion : Students in the addicted and possibly addicted groups were considered ‘problematic’ Internet users. Use of smartphones warrants special attention, being among the top factors contributing to Internet addiction.

Keywords : Internet addiction, suicidal ideation, Young’s Internet Addiction Test



Count: 308

Abstract ID: 30

Presentation Type: Poster

Central administration of growth hormone does not improve the cognition of healthy elderly rats

Submission Author: Maryam Malek

Maryam Malek¹, Alireza Sarkaki²

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Background and Aim : The existence of growth hormone (GH) and its receptor in the brain shows GH may exert effects on brain functions. Our previous studies demonstrated that intrahippocampal administration of GH can ameliorate spatial learning and memory in the nucleus basalis magnocellularis-lesioned aged rats possibly through neurogenesis to repair the injury areas. But the effect of GH in healthy aging brain remains unclear. The purpose of the present study was to evaluate the effect of central injection of GH on spatial learning and memory in healthy elderly rats.

Methods : Elderly male rats (18-20 months of age) were subjected to intracerebroventricular (i.c.v.) injection of human recombinant GH (hrGH) (20 µg 2µl- , during 5 min, twice daily 9:00 am and 3:00 pm, for one week). The Morris water maze was used to study spatial memory.

Results : No significant difference was found in the escape latency, traveled distance and swimming speed to find hidden platform between central GH treatment rats and vehicle group.

Conclusion : These novel observations indicate that although GH therapy has positive effects on neurogenesis and cognitive functions in brain damaged areas and GH deficiency patients but cannot promote cognition in healthy aging brain. This different response may be due to a decline in GH responsiveness with normal ageing and shows brain respond to GH differently in various pathological and physiological conditions.

Keywords : growth hormone (GH); cognition; healthy elderly; central administration



Count: 309
Abstract ID: 511
Presentation Type: Poster

The Neurological examination of the role of working memory in dual tasks

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Background and Aim : Dual task requires performing two tasks simultaneously by person. When two tasks are performed simultaneously, the first task and the second task share their cognitive resources that this synchronization and sharing create demands on working memory. This happens during switching from one task to another task. In the dual tasks, hypothetical brain activity is required to do two tasks so that they become overlapped. One example in this regard is when it is required that information of a task to be maintained in working memory and the second task to be used in the case of another stimulus at the same time. Activation of parallel responses in dual task is resulting from the maintaining of second task rules on working memory, while the first task is performed.

Methods : Data of this study were obtained by examining the various articles of the valid scientific databases with a search range from 2000 to 2016.

Results : Frontal cortex activity during working memory activity, time required to perform dual tasks would be significantly more than that required to perform single tasks. In addition, dual task performance will show deficiencies compared to single task in patients who have frontal lobe deficiencies. Brain imaging studies have shown that during working memory activities and dual tasks, prefrontal area is active and it plays an important role in connecting them. In addition, neurological connections of dual tasks with central executive, which is important component of working memory, have been confirmed.

Conclusion : The results of this study indicated that several studies have confirmed the role of working memory in dual task, and they showed that shared neural centers are involved in this regard.

Keywords : Dual task; working memory; neural connections



Count: 310

Abstract ID: 22

Presentation Type: Poster

Investigating the expression of STAT1 and STAT3 genes in Iranian Multiple Sclerosis patients

Submission Author: Saba Manoochehrabadi

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3. MSC of medical genetics , shahid beheshti university of medical sciences
4. Msc student of medical genetics ,shahid beheshti university of medical sciences

Background and Aim : Multiple sclerosis (MS) is the most common chronic inflammatory demyelinating disease of the central nervous system (CNS). Autoimmune inflammation in the CNS is maintained by secretion of a large number of cytokines .Signal transducer and activator of transcription (STAT) family have essential roles in transmitting many cytokine-mediated signals .The binding of cytokines to their cognate receptors differentially activates STAT proteins which in turn regulate the expression of genes involved in T cell homeostasis, growth, differentiation, apoptosis and immune response. Failure in this process has been shown to contribute to the etiopathogenesis of MS. One of the most studied molecules in this context is STAT1 and STAT3 gene expression

Methods : In this case-control study, 50 patients with MS and 50 controls selected. All of them coordinated from sex and age aspects. A blood sample was taken from the participant with consent for the study. First total RNA was extracted and then DNA synthesis was done. STAT1 and STAT3 gene expression were compared, through Taqman Real-Time PCR. the results analyzed by Ling reg and Rest software

Results : STAT3 gene expression in patients with MS in comparison to controls did not show significant association (P-value: 0.892). But STAT1 gene expression in MS patient in comparison with control was upregulation (P-value :0.032).

Conclusion : These findings may possibly reflect differences in the pathogenic mechanisms associated with the change in expression of STAT1 observed in this group of MS patients.

Keywords : Multiple sclerosis , Taqman real time PCR, STAT gene

Count: 311

Abstract ID: 711

Presentation Type: Poster

Neuroprotective Effect of Sesamin on Rat Model of Parkinson's Disease Induced by 6-OHDA

Submission Author: Monireh Mansouri

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Background and Aim : According to studies, it has been found that deterioration of dopaminergic neurons of substantia nigra leads to Parkinson's disease. Increased oxidative stress and inflammation are known as the most important mechanisms involved in neuron death. As regards to antioxidant and anti-inflammatory effects of sesamin , in this study in addition to survey of protective effect of sesamin on behavioral and histological disorders related to striatum, the effect of sesamin on astrogliosis was evaluated.

Methods : For this purpose, unilateral intrastriatal 6-hydroxydopamine (12 µg in 5 µl saline - ascorbate) lesioned rats were pre-treated with intraperitoneally injection of the sesamin (10 and 20 mg/kg body weight). Two weeks after the surgery, apomorphine induced rotations, the number of neurons (Nissl and tyrosin hydroxylase- positive cell), oxidative stress indicators (Malondialdehyde, ROS) and GFAP positive cells in substantia nigra pars compacta were evaluated

Results : The results showed that sesamin administration could improved the rotation behavior and motor activity in lesioned rats ($P < 0.05$). Also sesamin pretreatment could protect tyrosin hydroxylase-positive neurons in midbrain against neurotoxins 6-OHDA ($P < 0.05$) and decrease oxidative stress indicators (MD, ROS) ($P < 0.05$) and GFAP activity ($P < 0.05$).

Conclusion : Taken together, this study reveals that sesamin pretreatment could attenuate 6-OHDA – induced behavioral and histological disorders by interaction with oxidative stress and astrogliosis pathways in dose-dependent manner.

Keywords : sesamin-parkinson's disease- 6-OHDA- GFAP



Count: 312

Abstract ID: 633

Presentation Type: Poster

preconditioning with left frontal anodal tDCS reverse the fear memory effects induced by ACPA in male mice

Submission Author: Fariborz Manteghi

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Background and Aim : Appropriate emotional learning and memory processing are the key elements to proportionate response to environmental aversive events, recent rising trend of anxiety and fear-related disorders prevalence imposes enormous costs to society, hence it is crucial to study them more thoroughly to find novel treatments.

Methods : Transcranial direct current stimulation (tDCS) is a non-invasive, cheap and available modality for modulating brain activity. Even though many aspects of its acting mechanisms are not yet known, but it has been currently used in different disorders and showed promising results. On the other hand, it is well shown that cannabinoids modulate emotional responses and play an important role in reducing traumatic memory consolidation and retrieval as well as enhancing traumatic memory extinction, but it has psychoactive effects that are undesirable. Therefore, this study investigates the effect of left frontal anodal tDCS on fear memory responses induced by Arachidonylcyclopropylamide (ACPA) as selective CB1 cannabinoid receptor agonist, in short-term . The Pavlovian fear conditioning tool was used for assessment of both contextual and auditory fear memories in male NMRI mice.

Results : The data showed that lone implementation of left frontal anodal tDCS with 0.2 mA intensity for 20 minutes one day prior to fear memory training (tDCS preconditioning), did not alter both fear memories in the short-term Moreover intraperitoneal pretrain injection of ACPA (0.1 mg/kg) alone, decreased both contextual and auditory fear memories in short-term The results interestingly indicated that left frontal anodal tDCS restored and improved ACPA-induced responses in short-term memories

Conclusion : These findings demonstrated that precondition use of left frontal anodal tDCS as a neuromodulator can alter ACPA-induced responses for short-term memories

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Keywords : tDCS; ACPA; preconditioning; Fear memory; Memory enhancement; Learning acceleration



Count: 313

Abstract ID: 560

Presentation Type: Poster

Effect of lactation on hippocampal neuronal density after global ischemia

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Background and Aim : After heart diseases, stroke is the most common cause of mortality worldwide and the leading cause of long-term acquired disability. Ischemic stroke is a devastating event caused by insufficient cerebral circulation of blood which triggers a cascade of pathophysiologic events resulting in tissue damage and brain dysfunction. One of the cerebral areas highly vulnerable to reduced blood flow is the CA1 region of hippocampus. Pregnancy and lactation are a time of enhanced neural plasticity associated with increased neurogenesis and neuronal survival. This effect is mediated by dramatic fluctuations of steroid hormones and peptide hormones. Therefore, it seems likely that pregnancy and lactation can confer neuroprotection against cerebral ischemic injury. The current study was designed to assess the effects of pregnancy and lactation on neural density in rats undergoing global ischemia.

Methods : Thus, we examined neural density after global cerebral ischemia (occlusion of the common carotid arteries was induced for 20 minutes) in Thirty-two female Wistar rats in the four groups (n=8): Pregnancy-lactation group (P-L), Virgin-ischemic group (V-Isc), Pregnancy-ischemic group (P-Isc) and Pregnancy-lactation-ischemic group (P-L-Isc).

Results : According to analysis, hippocampal neural density in Pregnancy-lactation-ischemic group was significantly more than Pregnancy-ischemic and Virgin-ischemic groups ($P < 0.05$).

Conclusion : the present experiment provide new evidence that reproduction experiences Protect brains toward ischemic attack by related hormones that leads to increase in neurogenesis.

Keywords : stroke, ischemic stroke, cerebral ischemia, Lactation, hippocampal neural density.



Count: 314

Abstract ID: 146

Presentation Type: Poster

Comprison of Executive Functions Between People with Borderline Personality Disorder and Healthy Group

Submission Author: Veladat Marzieh

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Background and Aim : Borderline personality disorder is one of ten personality disorders categories that creates severe damages in all spheres of life. The purpose of this study was cross-sectional and causal-comparative, comparing executive functions between people with borderline personality disorder and healthy people.

Methods : The study population consisted of all patients with borderline personality disorder who were referred for treatment to medical centers affiliated to Tehran University of Medical Sciences and professor of psychiatry at the university clinic. The control population consists of students and staff of Tehran University of Medical Sciences. 30 BDP people were evaluated after identification (using a clinical interview and Millon Clinical Multiaxial Inventory (MCMI-III)). They cooperated to be evaluated with Color Word Stroop test and Wisconsin Card Sorting Test (WCST). The 30 persons of control group were evaluated with these tests too. Additionally they underwent BAI and BDI-II and clinical interview to clarify their health. The results were compared with analysis of variance experiment and SPSS software.

Results : Data analysis showed that there is a statistically significant difference between the two groups in the index of "time-tested" and "response time" congruent and incongruent Color-Word Stroop test that indicated weaker performance of individuals with borderline personality disorder compared to healthy people. While there were no meaningful difference between the subscales of Wisconsin Card Sorting Test.

Conclusion : Results described challenging role of executive functions in infrastructure of BPD. Disability to inhibition of responses (impairment in executive function) arises as a probable axial insufficiency in patients with borderline personality disorder that is associated with clinical symptoms (impulsivity) of the disorder.

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Keywords : Borderline personality disorder, Executive function



Count: 315

Abstract ID: 596

Presentation Type: Poster

Reduce the adverse effects of formalin-induced neurotoxicity in rats using saffron (crocin)

Submission Author: Mahsa Mashak

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Background and Aim : Formalin is a potent neurotoxic in human and animal models. It was documented that crocin can inhibit inducible nitric oxide synthase expression and nitric oxide production in vitro. In vitro studies also indicate an interaction between nitric oxide and formaldehyde induced neurotoxicity. In this study, the effect of crocin, main constituent of *Crocus sativus* L. (Saffron) on formalin-induced hippocampus cytotoxicity was evaluated in rats

Methods : Formalin was administered intraperitoneally for 5 days to induced neurotoxicity. The effect of crocin (25-50-100 mg/kg) administration alone and its co-administration with formalin. Then, rat hippocampus was evaluated histologically. To determine the contribution of NO to crocin reduced hippocampal cell loss following formalin, L-arginine, the NO synthesis precursor, and a nonselective nitric oxide synthase inhibitor N(G)-nitro-L-arginine methyl ester (L-NAME) were used.

Results : The injection of rats with crocin reduced mortality, hippocampal injury induced by formalin. In conclusion, our results indicated that pretreatment with crocin protected central and peripheral neuronal cells from formalin-induced damage. Results of the present study suggest that inhibition of NO synthesis may exaggerate the neurotoxic effects of formalin

Conclusion : The injection of rats with crocin reduced mortality, hippocampal injury induced by formalin. In conclusion, our results indicated that pretreatment with crocin protected central and peripheral neuronal cells from formalin-induced damage. Results of the present study suggest that inhibition of NO synthesis may exaggerate the neurotoxic effects of formalin

Keywords : Neuroprotection, Crocin, Nitric Oxide, Formalin, Hippocampus, Rats.



Count: 316

Abstract ID: 225

Presentation Type: Poster

Inhibition of depression by Nitric Oxide in stress-induced in mice

Submission Author: Atousa Mashhadi

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Background and Aim : Stress can induce depression in the animal models and human. The role of nitric oxide (NO) is not well understood.

Methods : In the present study, attempts were made to exploring the effects of L-arginine (NO Precursor), and L-NAME (NO synthase inhibitor) on stress induced-depression in male mice (20-25 g). Forced Swimming Test (FST) was used and animals were received electro foot shock in the communication box. Electro foot shock (40 mV, 10 sec, 10 Hz) was applied to the animals for 4 consecutive days in a random manner. L-arginine (1, 5 and 10 mg/kg, i.p.) and L-NAME (1, 5 and 10 mg/kg, i.p.) were administered 30 min before each stress sessions. The FST test was conducted on the 5th day in drug free state. The time of immobility was recorded by video camera and considered as the sign of depression.

Results : Our data showed that stress can increase the immobility time in the mice, indicating depression. L-arginine (1, 5 m and 10 mg/kg, i.p.) reduces immobility time. The response was similar for L-NAME. None of the drugs induced depression by them self in non-stressed animals.

Conclusion : In conclusion, it is clear that stress -induced depression can be modulated by L-arginine and L-NAME pretreatment. The exact role of NO in this regard must be evaluated in the future studies.

Keywords : Anxiety; L-Arginine; L-NAME; Nitric Oxide; Stress



Count: 317

Abstract ID: 226

Presentation Type: Oral

Sluggish Cognitive Tempo (SCT): A Different and New Subtype in Attention-Deficit/Hyperactivity Disorder or a Distinct Disorder

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Background and Aim : Attention Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder that includes a series of cognitive and behavioral alterations. It has well-defined core symptoms such as inattention, hyperactivity, and impulsiveness. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), Inattentive (ADHD-I), Hyperactive/Impulsive (ADHD-HI), and Combined (ADHD-C) presentations have been defined. However, there are some individuals who display largely attentional problems but are qualitatively different than those with ADHD-I. The present study aimed to review the characteristics of individuals with Sluggish Cognitive Tempo (SCT).

Methods : The study method was explanatory research.

Results : The conceptualization of ADHD as a single disorder with three presentations has been challenged by recent research. In individuals with ADHD-I frequent lapses of attention impair the ability of an individual to focus/attend in a sustained manner. Regarding ADHD-I, some researchers have proposed deficit in processing speed and selective attention rather than behavioral inhibition. Sluggish Cognitive Tempo (SCT) has been described as a subtype suggesting this type of attention deficit. SCT is a cognitive-emotional style that is commonly described by five typical characteristics, which are “daydreaming”, “being confused”, “staring blankly”, “being sluggish” and “being unmotivated”. Especially, ADHD/I has been frequently linked to symptoms such as, daydreaming, staring, mental fogginess, confusion, hypoactivity, sluggish or slow movement, lethargy, apathy and sleepiness. Although initial attempts to define the SCT phenotype suggested that children with SCT composed a subset of children with ADHD-I who display high rates of inattention but few hyperactive-impulsive symptoms, research has not convincingly supported this hypothesis. While these children may display some cardinal ADHD inattentive symptoms, they are better

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characterized by their excessive daydreaming, mental confusion or seeming to be “in a fog,” Low in energy, sluggish or drowsy, and slowed behavior or thinking.

Conclusion : From the current literature, it can be concluded that SCT is a psychometrically valid construct with additive value in the clinical field of ADHD. Although there is a degree of correlation between the SCT symptom domain and inattention, it has been proposed as a distinct disorder independent of ADHD. It is nowadays recognized in disorders different from ADHD as well. It is central to the controversial reorganization of the diagnostic categorization of ADHD. Rather, research has shifted to focus on SCT as a symptom cluster distinct from the ADHD symptom domains.

Keywords : ADHD; Sluggish Cognitive Tempo (SCT); ADHD-I



Count: 318
Abstract ID: 583
Presentation Type: Oral

Comparison of Functional Brain Networks between Adults with ADHD and Normal Subjects, Using EEG Signals

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Background and Aim : Some neuroanatomical and neuropsychological studies have shown that there are structural and functional abnormalities in the brain of the patients with Attention Deficit Hyperactivity Disorder (ADHD). A fundamental hypothesis is that cognitive dysfunction can be illustrated and/or explained by a disturbed functional organization. Recently, the application of graph theory to electroencephalography data provides a useful method to study the relation between brain network structure and function. Hence, this article is aimed to compare the functional brain network organization between two groups of adults with ADHD and typically developing controls using graph theoretical analysis of EEG recordings.

Methods : This study is conducted through implementation of Continuous Performance Test (CPT), concurrent with recording EEG signals, on 20 adult participants (7 male) aged 29.8 ± 6.4 years. Ten Individuals had a formal diagnosis of ADHD inattention subtype based on a psychiatrist's interview according to DSM-IV criteria. This experiment was performed in accordance with the Declaration of Helsinki and Institute for Cognitive Science Studies (ICSS) approved its protocol. The refined EEG data was obtained after implementing the pre-processing steps including re-referencing to the average of ears, base line drift rejection, filtering and correction of the EOG artifact using Independent Component Analysis (ICA). In addition, abnormal values of amplitude, trend, power spectra and also improbable data were automatically rejected using EEGLAB toolbox of MATLAB. After that, the synchronization likelihood as a measure of functional connectivity was computed for each electrode pairs in all EEG's frequency bands. The resulting connectivity matrices were converted to unweighted binary graphs and then various network-derived measures were used to analyze them. These measures indicate local and global connectivity and characterize through mean clustering coefficient (C), characteristic path length (L) and degree correlation

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(R) respectively. All measures were normalized to the network size and submitted to Analysis of Variance (ANOVA) for comparison between two groups of subjects in the five frequency bands. A significant level of $\alpha = 0.05$ was used.

Results : The main finding was that with applying graph analysis to EEG data, we are able to demonstrate the significant differences of functional brain network organization between adults with ADHD and healthy controls. The results of evaluation of C, L and R show the structure of functional brain networks of ADHD, diverge from those related to normal individuals especially at low frequency bands.

Conclusion : Investigation of functional brain network patterns might provide more insight into pathophysiological processes underlying the neurodegenerative diseases including ADHD, and potentially can develop the new diagnostic or monitoring tools.

Keywords : Attention Deficit Hyperactivity Disorder (ADHD), Electroencephalogram, Synchronization Likelihood, Graph analysis



Count: 319

Abstract ID: 159

Presentation Type: Poster

Investigation of the effect of time change in cognitive function in people in Tehran

Submission Author: Gholam Hossein Meftahi

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Background and Aim : Since living in industrial societies has to be according to some rules and these rules are defined according to the needs of the society, the study about time changes and its effects on people's lives has been one of the concerns of the governments. Time change (which can lead to sleep duration decrements) can lead to brain dysfunction if repeated. The paced auditory serial addition test (PASAT) is one of the most often used tests by neuropsychologists, for the evaluation of awareness processing of patients. PASAT test is designed to evaluate the effects of brain damages on the cognitive function of the brain in the patients with a wide range of neural- psychological disorders such as multiple sclerosis (MS), brain damages caused by accident, chronic tiredness syndrome, tuberculosis, hypoglycemia and depression. Since, in this study time change has been considered as a stress pattern which in the long time can disturb the intellectual capacity, through the application of PASAT test, changes in cognitive function such as attention, mental tiredness, and general health are investigated in the individuals who volunteered for the study, before and after changes in working hours in Tehran city.

Methods : Eleven, voluntary healthy persons (21±2 year old) were evaluated for their cognitive functions including sustain attention, reaction time, and mental fatigue twenty-one days before the time changes and thirty-eight days after time change using PASAT software. In addition, plasma cortisol level was measured before and after the time changes.

Results : After the time changes salivary cortisol concentration increase, but general mental health was decreased. Sustain attention was shortened after time change which was significantly different compared with before the time changes. Reaction time was increased after the time changes in comparison with the before the time changes, but was not statistically significant. In addition, mental fatigue was increased after the time changes.

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Conclusion : It seems that time change may reduce brain cognitive functions which are manifested by general mental health, sustain attention reduction, reaction time as well as mental fatigue.

Keywords : PASAT software; Mental Fatigue; Reaction Time; Sustained Attention; Time Change.



Count: 320

Abstract ID: 162

Presentation Type: Poster

Study the effect of saffron (*Crocus Sativus L.*) hydro-alcoholic extract on short term memory capacity and memory retention

Submission Author: Gholam Hossein Meftahi

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Background and Aim : Short-term memory defines as the ability of brain in holding a small amount of information in an active, readily available state for a short period of time. Information, after a short time, is transmitted from short-term memory into long-term memory. Therefore, impairments in short-term memory can cause different problems for long-term memory. Saffron has been used as a spice in cooking and as an herbal remedy with different effects in traditional medicine since ancient times. It has been shown that saffron extract can improve memory formation in animal models. However, there is lack of information about the effect of saffron in human. Therefore in this study, we evaluate the effect of saffron (hydro-alcoholic saffron extract) on the two aspects of short-term visual memory: the retention of short-term memory and the capacity of this type of memory.

Methods : Twenty healthy men (18-20 years) were received capsules (two capsules/day) containing 30 mg of hydro alcoholic saffron extract for three weeks. Each subject was tested (psychophysical experiment) before and after completion of the experiments. The contrast sensitivity test, delayed match to sample (DMS) paradigm, and the n-back memory test for visual short-term memory was used.

Results : The results of the study indicate that hydro-alcoholic saffron extract has a significant impact on short-term memory capacity improvement while it did not improve the memory retention.

Conclusion : These results showed that saffron extract will improve cognitive abilities such as visual short term memory.

Keywords : Saffron; Short Term Memory; Contrast Sensitivity Test; Delayed Match to Sample Paradigm; n-Back Memory Test



Count: 321

Abstract ID: 323

Presentation Type: Oral

Stress and learning and memory and applications of it in the soft-war

Submission Author: Gholam Hossein Meftahi

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Background and Aim : Stressful stimuli lead to a lot of physiological responses that necessary for the maintenance of homeostasis, the most noticeable of which is the activation of the hypothalamic-pituitary-adrenal (HPA) axis. Although biological responses to acute stress are considered to be an adaptive survival mechanism, chronic stress may perturb normative brain development and negatively effect in learning and memory and eventually limit the quality of human life.

Methods : PubMed and MEDLINE databases were searched for English-language articles by using "stress", "learning", "memory", "prefrontal cortex", "amygdala" and "hippocampus" as primary terms.

Results : Stress has profound effects on brain areas related with conscious memory and executive functions. For instance, in the hippocampus, stress can disrupt long-term potentiation (LTP) and hippocampus-dependent learning and memory via glucocorticoid receptor (GR) activation. Also, to deficits in plasticity and behavior, long-term stress and GR activation can cause dendritic and synaptic loss in hippocampal neurons. Chronic and sustained GC increasing also disrupt prefrontal cortex (PFC)-dependent tasks such as spatial working memory and behavioral flexibility. In addition, chronic stress decreases PFC volume and causes dendritic reorganization in a GR-dependent pattern. There is lot of evidence supporting a pivotal role for the amygdala in stress and activation of the HPA axis. On the other hand, the studies demonstrating how stress impacts hippocampus amygdala-dependent learning and memory. Another mechanism which stress hormones modulate function within the brain is by altering the structure of neurons. For instance, it has been shown that repeated stress causes retraction and simplification of dendrites in the CA3 region of the hippocampus, which impairs hippocampal-dependent learning.

Conclusion : Here, we provide an overview of the neurobiology of stress memory interactions, and present some mechanism to explain how stress changes learning and memory in some area of brain.

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Keywords : Stress; learning, memory, prefrontal cortex, amygdala, hippocampus



Count: 322

Abstract ID: 108

Presentation Type: Poster

The Effect of Sensory Re-weighting as a Method of Balance Exercises on Postural Control in People with Parkinson's disease

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Background and Aim : Impairment of postural control is one of the most important problems in patients with Parkinson's disease (PD) which results in dependence in activities of daily living (ADL) and decreased quality of life in these patients. The aim of this study was to investigate the effect of Sensory Re-weighting as a method of balance exercises on postural control in patients with PD.

Methods : In this clinical trial study, 40 patients were randomly assigned to control group (which received traditional rehabilitation exercises) and treatment group (which received sensory re-weighting balance exercises). Evaluation of postural control using force platform was performed in different levels of visual perturbation (with or without visual perturbation) and proprioceptive perturbation (before, during and after proprioceptive perturbation) in quiet standing before and after treatment (12 sessions, 3 sessions per week and 45 minute per session). Postural sway parameters including path length (PL), total phase plane portrait (TPP), standard deviation of velocity (SDV) in anteroposterior (AP) and mediolateral (ML) directions were calculated. Moreover, Functional balance and mobility was evaluated. Barthel index (BI) and Fall efficacy scale-International (FES-I) questionnaire were used for evaluation of independence in ADL and fear of fall (FoF), respectively.

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Results : The results of this study showed that the main effect of group (control and treatment) was insignificant for all postural sway parameters ($P>0.05$). The main effect of time (before and after treatment) was significant for PL and mean velocity. The main effect of different levels of visual and proprioceptive perturbations was significant for all postural sway parameters with the exception of the main effect of different levels of visual perturbations for SDV along ML direction. Interaction effect of group \times time was significant for all postural sway parameters ($P<0.05$). The main effect of group and time as well as the interaction effect of group \times time were significant for functional balance and mobility, independence in ADL and FoF with the exception of the interaction effect of group \times time for TUG.

Conclusion : The results of this study indicated that Sensory Re-weighting balance exercises results in improvement of postural control, functional balance and mobility, independence in ADL as well as decreased FoF.

Keywords : Patients with Parkinson's disease, Sensory Re-weighting Balance Exercises, Postural Control



Count: 323
Abstract ID: 109
Presentation Type: Oral

The association between fear of falling and quality of life controlling for balance impairments based on hip and ankle strategy in drug On- and Off-phase of patients with idiopathic Parkinson' disease

Submission Author: Maryam Mehdizadeh

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Background and Aim : Despite the negative effect of fear of falling on function and social participation of patients with Parkinson' disease, so far, few studies have investigated its effect on quality of life in these patients. We aimed to investigate the association between fear of falling and quality of life controlling for balance impairments based on hip and ankle strategy in drug On- and Off-phase of patients with idiopathic Parkinson' disease.

Methods : In this non-experimental cross-sectional study, 139 patients with idiopathic Parkinson' disease (100 male, 39 female) by mean age of 60.16 ± 12.27 years, mean time since diagnosis of 6.69 ± 5.53 years and mean Hoehn and Yahr stage of 2.81 ± 1.49 were selected by simple non-probability method. Balance function was measured by functional reach test with hip and ankle strategy. The Persian version of self-completed Fall Efficacy Scale-International and Parkinson's disease quality of life questionnaire was used to evaluate fear of falling and quality of life, respectively

Results : The results showed that the score of all dimensions of quality of life (i.e., mobility, activities of daily living, emotional wellbeing, stigma, social support, cognition, communication and bodily discomfort) were significantly affected by the intensity of fear of falling. Multiple regression analysis indicated the significant association between fear of falling and quality of life so that fear of falling explained 11% to 47% and 12% to 43% of variance in drug On-phase, as well as 8% to 45% and 9% to 48% of variance in drug Off-phase in dimensions of quality of life after controlling for balance function based on hip and ankle

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strategy, respectively. In drug On-phase, the strongest association ($R=0.85$, $P(V) < 0.001$) was found between fear of falling and mobility dimension of quality of life. In drug Off-phase, the strongest relation was observed between fear of falling and mobility ($R=0.82$, $P(V) < 0.001$) as well as activities of daily living ($R=0.78-0.79$, $P(V) < 0.001$) dimensions.

Conclusion : This study found that fear of falling affects quality of life of patients with Parkinson' disease beyond its relationship with balance impairments based on hip and ankle strategy in both drug On- and Off-phase.

Keywords : Parkinson's disease, Quality of life, Fear of falling, Functional reach test with hip and ankle strategy



Count: 324

Abstract ID: 206

Presentation Type: Oral

Classification of Autistic and Typical Children Using Supervised Learning of Brain Connectivity Measures

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Background and Aim : Autism is a neurodevelopmental disorder that changes the normal brain function. Several studies have reported that the patterns of brain connectivity in autistic and healthy individuals are different. According to the clinical history of autism spectrum disorder, individuals with autism cannot interpret the emotional states of others. So, variety of protocols are designed in this area to measure the brain activity of the subjects in response to different emotions. In this study, functional and effective connectivities in autistic and healthy children are investigated and used as a distinctive features to separate the two groups.

Methods : To estimate the connectivity, EEG signals of six autistic children and 12 healthy ones (7-10 years old) were recorded in different emotional states (eyes- closed, eyes-open, watching happy, sad and neutral faces). Then the effective connectivity using Granger causality and its generalized forms are calculated. Also the imaginary part of coherency is extracted as a functional connectivity measure. Afterward the above mentioned Granger-based and iCoherence features are utilized to separate the two groups. Support Vector Machine classifier is used with rbf kernel.

Results : Using Granger-based connectivity (in this paper nDTF (normalized Directed Transfer Function) and nPDC (normalized Partial Directed Coherence)) and SVM classifier, accuracy rates of recognition of the two groups in states of eyes-closed, eyes-open, happy, sad and neutral, were obtained 87.6%, 89.4%, 86%, 91.9%, and 83.1%, respectively. Using iCoherence and SVM, accuracy rates were obtained 79.4%, 80.5%, 87.8%, 88%, and 74.3%, respectively.

Conclusion : Discrimination of autistic and healthy children in different emotional states, is improved using Granger causality-based connectivity features. This is due to consideration of temporal changes of all channels in measuring connectivity between two particular channels. This improvement is more evident in

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the sad emotional state. The results of using iCoherence are acceptable too. The imaginary part of coherency is not susceptible to volume conduction artifacts and therefore presents a credible view of brain activity.

Keywords : Autism Spectrum Disorder; Brain connectivity; EEG; SVM classifier; Granger causality



Count: 325

Abstract ID: 53

Presentation Type: Oral

The effect of sub effective dose of GABAA agonist on electrophysiological changes of WDR neurons in morphine tolerance in male rats

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Background and Aim : Systemic administration of morphine chronically develop the state of tolerance to anti nociception effect of morphine. There are several studies have reported the effects of GABA agonists in attenuating opioid tolerance . The possible contributory role of GABA in morphine analgesia has been given only limited consideration . Thus the present study was designed to test the effect of Muscimol(GABAA agonist) on morphine-induced tolerance in rats.

Methods : In this study Wistar rats (weighing : 180-220 gr) were used.They received Morphine sulfate 10 mg/kg ip from 1 up to 8 days. Rats divided to 3 groups .In first group extracellular single unit recording was performed in spinal WDR neurons in control, morphine tolerate, and morphine tolerate with Muscimol groups on day 1,3rd,5th,8th. Stimulation was applied at 3 times the threshold current for C fiber activation and a post-stimulus histogram (PSTH) was built and displayed by e-probe software(Science beam-Iran).

Results : The result showed that administration of Morphine increased activation of WDR neurons in dorsal horn and augmented the induction of Wind up in WDR neurons. Muscimol could suppress increased activity of WDR neurons in Morphine tolerance in wistar male rats but it Failed to restore neural activity to baseline state which suggests that other Mechanisms are involved in development of Morphine tolerance.

Conclusion : Muscimol can delay development of morphine tolerance in chronic administration of morphine and improve analgesic effect of Morphine.

Keywords : Muscimol;Morphine tolerance;WDR;wind up



Count: 326

Abstract ID: 719

Presentation Type: Poster

the effect of crocin on cholestasis induced forgetfulness in male rats

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Background and Aim : appropriate interaction between liver and brain is required to maintain normal brain function , so liver dysfunction that can affect brain action is in interest . cholestasis is one of the main reason for occurrence of liver disease . Liver is called cholestatic when bile flow from liver to intestine is blocked and this can lead to apoptosis , oxidative stress , default in mitochondrial biogenesis , anxiety and damage of memory . crocin is the effective ingredient of *C.sativus* and has protective effect against oxidative stress , inflammation , neuro dysfunctions , etc . from different studies , it had been demonstrated that crocin can promote memory and learning too . this study investigate the effect of crocin on forgetfulness caused by cholestasis in male rats.

Methods : the animal were divided in to 9 groups (n = 8) : normal control rats , BDL rats (BDL = bile duct ligation) , SHAM rats , BDL+15mg crocin rats , BDL+20mg crocin rats , BDL+30mg crocin rats , SHAM+15mg crocin rats , SHAM+20mg crocin rats , SHAM+30mg crocin rats . after 30 days daily treatment , the animal's behavior and memory was investigated by Y-maze method.

Results : the results showed that the BDL group memory was significantly reduced in comparison with normal rats (P< 0.05). But the results of SHAM groups and normal ones was similar . furthermore , the memory of BDL+30mg crocin group , was significantly improved compared to other BDL groups (P<0.05).

Conclusion : this study demonstrated that BDL causes memory disorders in male rats but daily injection of 30mg crocin can largely ceases this damages .

Keywords : BDL - SHAM - memory - brain - crocin - Y-maze



Count: 327

Abstract ID: 67

Presentation Type: Poster

Primary manifestation of brain tumors in patient with brain tumor referred to neurology clinical

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Background and Aim : Background & objections: Brain tumors are one of the most important challenges of neurology and they may occur at any age. Causative agent and risk factors for brain tumors are still not well understood. However, the relative abundance of different statistic of the clinical symptoms presented. The aimed of this study is determined of primary manifestation in patients with brain tumor which referred to private clinic have been studied.

Methods : Methods: This study was cross-sectional study in which all brain tumor diagnosis was confirmed by pathologic were included in statistical analysis and clinical symptoms, that studied on 100 patients from July 2013 to July 2014. A self-made questioner including demographic characteristics and primary manifestation of brain tumors used as a data compilation instrument That it's just reliability and stability were confirmed by content and α -coronback test respectively. Data was analyzed by SPSS16 software using descriptive and inferential statistics.

Results : Results: The results of this study showed that 57% of samples is men and 43% were female. Average age of patients was $47/8 \pm 15/5$ years. Most combined disease was hypertension which observed in 15 (15%) patients and in 15 (15%) patients a family history of brain was observed. The most common symptom was headache, which occurred in 40% of patients. In CT scan images 78% of lesions are in supra omentum and 22% are in the inferior of omentum. The most common tumors were meningioma and the region of metastatic tumors was from lungs, breast, melanoma, kidney and thyroid.

Conclusion : Conclusion: The results showed that Clinical symptoms of brain tumors, and age and sex of patients was partial compliance with domestic and foreign statistics. Because of clinical manifestations of brain tumors contains a varieties of symptoms and various factors are related in the incident of disease, a holistic and team-based care protocol would increase the quality of care.

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Keywords : Keywords: Brain tumor, Primary clinical symptom, CT-scan, MRI



Count: 328

Abstract ID: 203

Presentation Type: Poster

Evaluation of Gender differences, Neuroticism and Extraversion on QoL in Parkinson's Disease

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Background and Aim : According to recent studies, the prevalence of neurologic diseases within aging population is growing. One of them is Parkinson's disease (PD), which is a continuous neurodegenerative disease that affects 1% of all people over 60 and around 2% of the population over 80 years of age. Some personality features, such as neuroticism and extraversion, are supposed to be factors that contribute to the recognition of health status and thus lead to a worse perception of Quality of Life (QoL) by people with several chronic diseases. QoL is a complex and multidimensional concept. This study is focused on investigate whether gender difference, neuroticism and extraversion contribute to the variance in QoL in patients with PD when controlled for age, functional status and disease duration.

Methods : The present research was based on a group of patients (n = 73, 32 females, with mean age and mean disease duration of 65.4±5.8; 6.8±3.4 years respectively) who recruited from hospital wards and neuropsychiatry outpatient clinics throughout Tehran who filled out the pre-prepared questionnaire. The Parkinson's disease Quality of Life Questionnaire (PDQ- 39) was used to evaluate QoL and the Unified Parkinson's Disease Rating Scale (UPDRS) for disease severity. Neuroticism and extraversion were measured with the Eysenck Personality Questionnaire (EPQR-A). Multiple linear regression analysis was then used to assess the influence of neuroticism and extraversion to QoL. SPSS Amos version 21.0 was used to statistical analysis.

Results : The second most important variable associated with QoL in PD patients, after disease severity was Neuroticism. In particular for domains linked with psychological processes: emotional well-being, social support, stigma and communication. A higher score in extraversion was notably related with better emotional well-being in males, but unpredictably, with worse emotional well- being in females.

Conclusion : Successful management of PD patients should include a specific method to improve QoL in the course of treatment. These findings are important for neurologists and healthcare professionals. They can be used in the phase of diagnosis where patients with higher scores in neuroticism could worsen their

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symptoms, and also in the phase of the treatment where patients could differ in their insight of the efficacy of the treatment.

Keywords : Gender differences, Neuroticism, Extraversion, Parkinson's Disease, Quality of Life



Count: 329

Abstract ID: 619

Presentation Type: Poster

Effect of SKS38393, a D1 receptor agonist, microinjected into the hypothalamic paraventricular nucleus on food intake in 24 hours food-deprived rat

Submission Author: Zahra Mir mohammad sadeghi

Zahra Mir mohammad sadeghi¹, Afsaneh Eliassi², A. Haghparast³

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2. 2- Neurophysiology Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
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Background and Aim : Introduction: Dopamine plays an important role in the central nervous system to modulate food intake. Expression of D1 receptors is significant in the hypothalamic paraventricular nucleus (PVN). Therefore, the aim of this study was that to investigate if PVN D1 receptors are involved in the control of food intake.

Methods : Methods: Male Wistar rats were implanted with guide cannula directed to the PVN. Stereotaxic coordinates were: lateral: 0.4 mm from midline; dorsoventral: 7 mm from skull surface; anteroposterior: - 1.8 mm from the bregma. In addition, the reversible inactivation of PVN was done bilaterally with the same coordinates by lidocaine 4%. Drugs or vehicle was injected in a volume of 0.3 and 3 μ l into the PVN and ICV, respectively. The weight of food pellets was measured in an hour period. Assessment of spontaneous activity in rat occurred in standard activity chambers interfaced with a Digiscan Animal (autovision system). Feeding trials normally occurred from Saturday to Wednesday between 9:00 and 12:00 h. All drugs were administered in 0.9% saline.

Results : Results: According to our previous studies of multiple doses of SKS38393 increased food intake in a dose-dependent manner. Therefore, we chosen in this study, the best dosage of SKS38393. Intraparaventricular injection of SKS38393, a D1 receptor agonist, (1.2 μ g Effective Dose) in the presence of SCH23390, D1 receptor antagonist, (0.01 μ g Ineffective dose) decrease food intake, compared to the control group after the first hour of the injection and in a Time course manner. SKF38393-stimulated food intake was decreased after bilateral reversible inactivation -PVN. Analysis of the locomotor activity results revealed that PVN microinjection of SKF38393 (1.2 μ g) did not affect locomotor activity.

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Conclusion : Conclusion: In conclusion, the present study suggests that endogenous dopamine acts on the hypothalamic paraventricular nucleus to stimulate food intake. This stimulatory effect is probably mediated through D1-like dopaminergic receptors.

Keywords : Keywords: SKF38393; PVN; Food intake; D1 dopaminergic receptors



Count: 330

Abstract ID: 537

Presentation Type: Poster

Music therapy and the music effects on the neurodegenerative and neurodevelopmental disorders

Submission Author: Seyed mohammad sadegh Mirahmadi

Seyed mohammad sadegh Mirahmadi¹

1. researcher

Background and Aim : Music is widely used to enhance well-being, reduce stress, and distract patients from unpleasant symptoms. Music Therapy is the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program. Music therapy interventions can be designed to promote wellness, manage stress, alleviate pain, enhance memory, improve communication, and provide unique opportunities for interaction. A number of recent experimental studies have explored an association between autism and absolute pitch, autism and savant skills in music, and autistic traits in musician with absolute pitch. Some studies have reported psychological benefits for Alzheimer patients. this research looks at the process & results of the music therapy.

Methods : in this research we have a review of the research about the Music Therapy (1991 - until now) and we will analyze the process of improvement of patients related to music therapy especially Neurodegenerative and neurodevelopmental Diseases.

Results : On the basis of these analyses and researches we found Playing music for patients during or after surgery helps reduce pain and use of morphine and other sedatives, anxiolytics, and analgesics. The music can help patients with neurological disorders such as Depression, Alzheimer, Parkinson, ... to improve their mood and the quality of lives and reduce their pain. Recent findings based on interviews and other self-report measures of the value music to typically developing(TD)people suggested that it would be fruitful to use an alternative, nonexperimental, and qualitative approach to studying musical engagement in persons with ASD (autism spectrum disorder). Significant improvement was observed in memory, orientation, depression and anxiety in both mild and moderate Alzheimer cases; in anxiety in mild cases; and in delirium, hallucinations, agitation, irritability, and language disorders in the group with moderate Alzheimer disease. The effect on cognitive measures was appreciable after only 4 music therapy sessions.

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Conclusion : We can use music as an alternative treatment among the other cure and Providing music to caregivers may be a cost-effective and enjoyable strategy to improve empathy, compassion, and relationship-centered care while not increasing errors or interfering with technical aspects of care.

Keywords : music therapy;alternative treatment;neurological disorders;autism;Alzheimer;neurodevelopmental disorde



Count: 331

Abstract ID: 336

Presentation Type: Poster

Interaction between Morphinerbic and Gabaergic system of Dorsal Hippocampus on Anxiety-related behavior

Submission Author: Tahere sadat Mirahmadi

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Background and Aim : Anxiety is a mental state that is in effect the existing emergency factors create and disturbed the homeostasis of the organism. The hippocampus, including the structure of the limbic system is that in addition to participating in the process of the central nervous system, such as memory and learning behavior in the incidence of anxiety. GABAergic system and GABA-A receptors of the The most important systems involved in from anxiety. Systemic injection of morphine or other opioid μ agonists cause a memory corruption and cause anxiety-like behavior and learning tool and suppresses GABA is an inhibitory inputs. GABA-A receptor agonist muscimol as well as in models plus maze was used to assess memory and anxiety and as an agonist selective for inhibitory neurotransmitter GABA is the ionotropic.

Methods : The male Wistar rats, were used. At the time of surgery the animals were anesthetized and placed in the stereotaxic apparatus and were cannulated unilaterally . The elevated plus-maze was used to measure the anxiety .

Results : Intraperitoneal injection of morphine (4mg/kg) anxiolytic effect and increased the percentage of open arm. The highest dose of muscimol reduced the anxiety parameters in test session . Coadministration of muscimol (1 μ g/rat) and ineffective dose of morphine presenting the anxiolytic response.

Conclusion : The results show that opioidergic and gabaergic systems have the same effects on anxiety. but these effects are independent of each other.

Keywords : Gabaergic system ,dorsal hippocampus, Elevated plus maze, muscimol, Anxiety



Count: 332

Abstract ID: 576

Presentation Type: Oral

Role of mysterious basal ganglia in decision making and behavioral manifestation of its disorder

Submission Author: FatemehSadat Mirfazeli

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Background and Aim : Until recently basal ganglia was considered as a modulatory structure for motor behavior however currently it is discovered that basal ganglia play also an important role in decision making and motivation through its association with cortex and limbic system .Therefore lesion in basal ganglia will result in a variety of non-motor behavioral disorders along with abnormal movements. In addition, Knowing different functional circuits of basal ganglia may give us better understanding for the possible future treatment of basal ganglia disorders.

Methods : Through review of literature,

Results : in the coming panel, I will talk about the mysterious basal ganglia, its role in decision making

Conclusion : and behavioral symptoms of its disorder.

Keywords : basal ganglia, reward system, behavior



Count: 333

Abstract ID: 554

Presentation Type: Poster

Effectiveness of Cognitive Behavioral Group Therapy on Suicidal Ideation in Patients with Major Depressive in Yasouj Shahid Rajae Hospital

Submission Author: Amir hossein Mirgalooye bayat

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Background and Aim : Depression is one of the common mood disorders. According to World Health Organization depression disorders will become the second disorder throughout the world in 2020. In a recent study it was reported that the prevalence of depression in Iran is 21%. So, the present study was designed due to the serious social, economic and familial consequences of depression to assess the effects of cognitive behavioral group therapy in major depressive patient.

Methods : Forty patients in Shahid Rajae hospital was selected, randomly, in the present study as a clinical trial investigation. Major depression was emphasized in them by Beck examination and DSMV criteria. The selected subjects were divided by Control and experimental. Cognitive behavioral Group therapy sessions was planned for four continuous week and there are two 90 minutes sessions every week. Data acquisition consisted demographic, Beck's suicidal ideation, Beck's depression questionnaires. Beck's suicidal questionnaire (including 19 multiple choice questions) assess attitude, behavior and planning for suicide in major depressive patients. Data collection by the mentioned tools was established one week after the group therapy. Furthermore, all the patients in control and experimental groups did not give up their routine antidepressant drugs. Finally, the results in both steps of experiment (pre-& post- cognitive behavioral group therapy) was analyzed by paired t-test in SPSS 21, statistically.

Results : This investigation showed that the mean and standard deviation of suicidal ideation before and after Cognitive Behavioral Group Therapy in experimental group was 22.85 ± 10.25 and 6.75 ± 2.82

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respectively. There was a significant difference between suicidal ideation in experimental group before and after the cognitive behavioral group therapy ($p < 0.05$). In contrast, there was a reduction in mean of suicidal ideation in control group before (28.95 ± 5.3) and after (17.35 ± 6.19) the experiment, but it wasn't a significant difference.

Conclusion : Although routine antidepressants can reduce the suicidal ideation during hospitalization but cognitive behavioral group therapy accompany to drugs may be more effective to prevent suicidal thoughts and consider as a complementary treatment beside the usual health care for major depression.

Keywords : Cognitive Behavioral , Major Depressive, Group Therapy, Suicidal Ideation



Count: 334

Abstract ID: 438

Presentation Type: Oral

Electrical Activity of Striatal Neurons in Methamphetamine Induced Reward

Submission Author: Amir hossein Mirgalooye bayat

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Background and Aim : Methamphetamine (MA) is known as one of the important psychostimulants that abused throughout the world. Several lines of study have investigated diverse mechanisms for rewarding effects of MA that one of the primary mechanisms is stimulating the excessive release of dopamine from nucleus accumbens dopaminergic terminals. On the other hand, diabetes mellitus is one of metabolic diseases that occurs as a result of deficiency in insulin system engaged in reward process and inducing dependency and addiction. The major aim of the present study is to elucidate behavioral and electrophysiological aspects of interaction between insulin and MA-induced reward.

Methods : Eighteen Wistar male rats weighing between 220 to 250 gr were used in this study. There are 3 electrophysiological groups including 1 control and 2 experimental groups. The Conditioning place preference (CPP) procedure was accomplished with two effective doses of MA (0.5 and 2 mg/kg, ip injection) experimental groups and control group did not undergo this step of experiment. Finally, extracellular single unite recording from nucleus accumbens has been recorded immediately after the final session of CPP protocol by single unite recording apparatus and the acquired data was analyzed by Spike and GraphPad Prism 5 softwares.

Results : The basal firing rate of accumbal neurons in control and two other experimental groups (0.5 and 2 mg/kg) was 3.79 ± 0.83 , 11.97 ± 2.8 and 11.68 ± 3.73 spike/min, respectively. Furthermore, in the statistical assays Unpaired student t-test showed that there were significant differences between neuronal basal firing in control and both of the experimental groups ($P < 0.0001$).

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Conclusion : Although there are many mysterious concepts about the neurobiology of psychostimulants, it appears that MA may play a critical role in modifying the conditioning scores. Therefore, NAc area is a potential site to mediate the rewarding and euphoric effect of MA.

Keywords : Methamphetamine, Reward, Nucleus Accumbens, Single Unit Recording



Count: 335

Abstract ID: 239

Presentation Type: Oral

Transdifferentiation of Mesenchymal Stem Cells into Oligodendrocyte Progenitor Cells by Sox10 Overexpression

Submission Author: Sara Mirsadeghi

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Background and Aim : Mesenchymal stem cells (MSCs) are multipotent cells which can be differentiated into neural and glial cells in vitro though they normally differentiate into bone, cartilage and fat. In fact, the novel property of MSCs raised the possibility of autologous cell transplantation as a therapeutic strategy against devastating neurodegenerative disorders such as Multiple Sclerosis (MS). In this study, we aim to directly transdifferentiate Bone marrow-MSCs (BM-MSCs) into oligodendrocyte progenitor cells (OPCs) through single transcription factor overexpression considering the tumorigenic and immunogenic properties of MSCs.

Methods : We have demonstrated that BM-MSCs may differentiate into OPCs upon Sox10 overexpression which has been previously introduced as central driver of oligodendrocyte lineage cells.

Results : We have observed a modified cell morphology from spindle into bipolar form upon Sox10 overexpression and presence of transduced cells in permissive medium harboring effective growth factors like shh, PDGF-AA and bFGF. Subsequently, we observed an Olig2 and Nkx2.2 upregulation upon Sox10 overexpression which would determine oligodendrocyte cell fate.

Conclusion : Thus, we herein state that a single transcription factor upregulation in MSCs may activate oligodendrocyte generation pathway which is a coordinated function of Sox10, Olig2 and Nkx2.2. Our

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findings would open new windows toward stem cell knowledge through unravelling an in vitro process of fate alteration which in turn would have profound implication in cell therapies including MS.

Keywords : Sox10, mesenchymal stem cells, Oligodendrocyte progenitor cells, Transdifferentiation



Count: 336
Abstract ID: 95
Presentation Type: Poster

Neuroprotective effects of gallic acid on brain edema and inflammation through promotion of antioxidant defenses in rat model of traumatic brain injury

Submission Author: Mohammad Ali Mirshekar

Mohammad Ali Mirshekar¹

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Background and Aim : Cytokines are important intermediaries of cerebral inflammation following traumatic brain injury (TBI). The oxidation cellular potential is specified by the oxidant/antioxidant ratio. Redox potential is disturbed in case of TBI leading to oxidative stress (OS). The aim of this study was evaluation of the effects of gallic acid (GA; 100 mg/kg, p.o. from 7 days before TBI induction) on neurological score, brain water content (BWC), blood brain barrier (BBB) permeability, intracranial pressure (ICP) change, levels of cerebral antioxidant enzyme and cytokines following TBI have been evaluated.

Methods : Ninety six adult male Wistar rats were divided into three main groups of Vehicle (Veh)+Sham, Veh+TBI and GA+TBI. Brain injury was induced by Marmarou's method. All tests were measured at 48 h post TBI.

Results : GA treatment reversed increments of BWC and BBB permeability significantly observed after TBI induction in rats. It also altered brain content of cytokines, antioxidant enzymes levels and ICP enhancement significantly after TBI with respect to control group. The results suggest that GA has neuroprotective activity against TBI neurological outcomes, brain edema, BBB permeability and ICP disorders; and brain level of cytokines due to TBI.

Conclusion : Our results showed that neuroprotective activity of GA probably mediated by promoting antioxidation and anti-inflammatory effects.

Keywords : Traumatic brain injury; gallic acid; ICP; BBB; Oxidative stress; Inflammation; rat



Count: 337

Abstract ID: 97

Presentation Type: Oral

Gallic acid adjusts hyperemia and extracellular neuronal discharge in a rat model of traumatic brain injury

Submission Author: Mohammad Ali Mirshekar

Mohammad Ali Mirshekar¹

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Background and Aim : Traumatic brain injury (TBI) and its subsequent Consequences result in different adverse effects such as brain edema and BBB disruption. We investigated the effect of gallic acid on some physiological parameters including brain vascular responses, BBB disruption, and electrophysiological activity following TBI.

Methods : Brain injury was induced by Marmarou's method. Rats were treated with GA (100 mg/kg, i.p.) for 7 consecutive days after TBI (once daily). Brain vascular responses, hyperemia, BBB disruption, and electrophysiological activity (single unit recording from hippocampal dentate gyrus) were evaluated following the TBI induction. Based on the veterinary coma scale (VCS), neurological outcome after TBI in living and awake animals was scored in the range of 3-15 showing the sum of motor response score, visual response score and respiratory response score. Cerebral blood flow (CBF) with laser doppler flowmetry (LDF) was continuously monitored for 15 minutes. To measure the endothelial responses to a vasoconstrictor, we used different doses of phenylephrine (10⁻¹¹, 10⁻⁹ and 10⁻⁴ M) were administrated by Hamilton syringe. Cognitive test was performed with shuttle box. BBB permeability was determined by measuring extra-vascular Evans blue dye concentration using a spectrophotometer device. In single unit recording A parylene-coated tungsten microelectrode (WPI; with extra fine tip; 1MΩ impedance tip) was stereotactically advanced into the Dentate gyrus (DG) (AP=3.8mm, ML=3.2mm, DV=2.7mm) of the left side of the brain. Then, the electrode was guided to the DG using a manual microdrive until maximum spike activity was detected with a signal-to-noise ratio of more than 2 was isolated from the background noise. ELISA kit for IL-10, IL-6 and TNF-α was purchased from eBioscience and the assay was performed according to the manufacturer's guidelines. The concentration of the cytokines was quantified as a picogram of antigen per milligram of whole brain tissue Data analyzed by one-way and repeated measures ANOVA followed by Tukey's post hoc test.

Results : GA attenuated neurological score, brain vascular responses, BBB disruption in TBI rats compared with the untreated TBI rats (p < 0.001). Electrophysiological records indicated that GA increased spike

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rates in the TBI rats comparing with not cured rats ($p < 0.001$). The brain tissue level of IL-10, IL-6 and TNF- α was reduced significantly ($p < 0.001$) in treated group with GA.

Conclusion : GA decreases brain content of IL-1 β and IL-6 (compared with TBI induced rats) which may lead to restoring hippocampal electrical recording, restoring neurological behaviors and also maintenance of BBB, which may show the effects of GA on astrocyte recovery due to its anti-inflammatory actions. We established a regulatory role for GA in vascular and electrophysiological responses to TBI.

Keywords : Traumatic brain injury; gallic acid; memory; long-term potentiation; cerebral cytokines; rat



Count: 338
Abstract ID: 98
Presentation Type: Poster

Neuroprotective effects of diosmin in a rat model of traumatic brain injury: behavioral, electrophysiological and molecular studies

Submission Author: Mohammad Ali Mirshekar

Mohammad Ali Mirshekar¹

1. Department of Physiology, School of Medicine, Zahedan University of Medical Sciences, Zahedan, Iran

Background and Aim : Traumatic brain injury (TBI) remains one of the main clinical problems globally and is a common cause of death among youth. Cognitive defects such as thinking, memory and behavior or mental health disorders are considered as the most frequent effects of severe and moderate TBI. It has been reported that diosmin (DM), a natural polyphenol, exhibits protective effects against oxidative damage. This study was performed to examine the DM preventive effects on cognitive impairments, long-term potentiation (LTP) deficits in hippocampus and brain inflammation induced by diffuse TBI in rat.

Methods : Main methods: Subchronic oral administration of 100 mg/kg DM, 7 consecutive days before induction of trauma (once daily) was used to elucidate the DM effects on passive avoidance memory and hippocampal LTP following TBI. For LTP recording the animal's skull was drilled and small holes were made to implant the electrodes. A pair of stimulating metal wire microelectrode (stainless steel, 100 μ m diameter, tip separation 500 μ m, CFW, USA) and a pair of recording metal wire microelectrodes (tungsten, 50 μ m in diameter, tip separation 1 mm, CFW, USA) were implanted into the perforant pathway (PP) at AP = -7.5 mm from bregma; ML = -4 mm; DV = -3.9 mm from dura and granular cells of DG with stereotaxic coordination of AP = -3.8 mm from bregma; ML = -2.3 mm; DV = -3.5 mm from dura, respectively. To illustrate the possible mechanisms related to the preventive effects of DM on brain function following TBI, brain content of TNF- α and blood-brain barrier (BBB) permeability were determined. ELISA kit for TNF- α was purchased from eBioscience (San Diego, USA) and the assay was performed according to the manufacturer's guidelines. The concentration of TNF- α was quantified as picograms of antigen per milliliter of the supernatant.

Results : Key findings: DM pretreatment significantly ($P < 0.001$) prevented TBI-induced memory and hippocampal LTP impairments in rat. Furthermore TBI induced elevation in brain content of TNF- α and BBB permeability were decreased significantly ($P < 0.001$) due to DM pre-treatment

Conclusion : Significance: Our findings suggest that DM can prevent cognitive and LTP deficits and also prevent brain inflammation following TBI.

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Keywords : Traumatic brain injury; Diosmin; memory; long-term potentiation; brain inflammation; rat



Count: 339

Abstract ID: 444

Presentation Type: Poster

Effect of Empowerment Model on the Status of Empowering in Patients with Multiple Sclerosis in the Shahid Beheshti Hospital of Yasouj 1395

Submission Author: MOHAMMAD SAEED MIRZAEI

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Background and Aim : The most common neurological disease in young adults is multiple sclerosis (MS). About 64 thousand people in Iran and 4 hundred thousand in United States suffer from MS. Principally, the nature of such a chronic disease exposes the patients to several individual and social complication. Empowerment increases the ability of patient to problem solving by changing the attitude of him about himself. Empowerment emphasizes on the ability of a person to improve situations and priorities of his/her life. So, it was important for us to elucidate the effect of empowerment self-management model on the status of empowering in patients that suffer from MS.

Methods : This is a clinical trial study that was investigated on the fifty MS patients that were hospitalized in Shahid Beheshti hospital in Yasooj. The patient were divided by to two experimental and control groups. At first, it was received the ethical code for the present project and the proper testimonial letter was achieved. Then, the pre-intervention data was collected by using the empowerment questionnaire. In fact, the intervention included two 30 minutes session and each session has five stages. Finally, all the questionnaire experiments was based on the empowering aims. SPSS 20 was used to analyze data by descriptive and quantitative statistic approaches (Mann Whitney, Chi-squared, paired/unpaired t-test).

Results : There was not any a significant difference between control and experimental groups regarding to the demographic factors. Although, there wasn't a significant difference between empowerment of patients before the intervention but it was showed that after the intervention the mean of empowerment in experimental subjects was higher than the control clients, significantly ($P < 0.0001$).

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Conclusion : Empowerment can be helpful for Shahid Beheshti hospital MS patient in improvement and promotion of his/her awareness about any alterations in his/her related factors such as role, independence, adaptation, sense of control and self-satisfaction and improvement his/her life quality. So, it is very important and necessary to have such integrative, sufficient and suitable planning to rehabilitate personal and social aspects of MS patients.

Keywords : empowerment, multiple sclerosis, Yasouj



Count: 340

Abstract ID: 589

Presentation Type: Poster

NRG1 expression study in paranoid personality disorder patients

Submission Author: Kamelia Mirzazadeh

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Background and Aim : Paranoid personality disorder (PPD) is a mental disorder characterized by paranoia and a pervasive, long-standing suspiciousness and generalized mistrust of others. Neuregulin 1 is one of four proteins in the neuregulin family that act on the EGFR family of receptors. NRG1 gene, locating at 8p21.1-22, is essential for the normal development of the nervous system and the heart. At least six major types of neuregulin 1 exist in humans. Present study aimed to assess the expression level of NRG1 gene in PPD patients in compare with normal subjects.

Methods : Blood samples of 55 PPD, and 40 non psychiatric subjects collected. RNA extracted and cDNA synthesized by random hexamer method. Finally expression level of NRG1 gene in total blood by using quantitative Real time PCR in comparative method with GAPDH as housekeeping gene evaluated. In addition PANSS(positive and negative syndrome scale) and Wechsler intelligence version III, as psychological tests assessed.

Results : Results showed significant down regulation of NRG1 mRNA level in patients in compare with non-psychiatric patients. Also down regulation of NRG1 was significantly correlated with increase in severity of positive symptoms in PPD patients.

Conclusion : Results presented NRG1 as a potential peripheral marker for paranoid personality disorder. In addition down expression of NRG1 could be related to severity of symptoms in patients.

Keywords : NRG1 – paranoid personality disorder - gene expression



Count: 341

Abstract ID: 41

Presentation Type: Oral

Chronic administration of Docosahexaenoic acid in mice inhibits drug resistance in 6Hz model of epilepsy

Submission Author: Melika Moezifar

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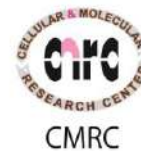
Background and Aim : Epilepsy is a chronic neurological disorder. Despite discovery of effective antiepileptic drugs (AEDs), more than 30% of patients are still resistant to AEDs. Polyunsaturated Fatty Acids (PUFAs) such as Docosahexaenoic acid (DHA) are commonly used as nutritional supplement. There is some in vitro evidence that DHA can prevent resistance to anticancer drugs. The 6-Hz model of seizures is the known model of limbic epilepsy, in which if the current increases to 44mA, most AEDs such as Lamotrigine (LTG) and Phenytoin (PHT) lose their efficacy and AEDs resistance happens. We evaluated the effect of acute and chronic administration of DHA on prevention of resistance to LTG and PHT in the 6-Hz model in mice.

Methods : In acute experiment, 6 separate groups of male NMRI mice (n=10) were used. LTG 25mg/kg or PHT 25mg/kg were injected intraperitoneally (i.p.) to group 1 and 2. 45 min after injection of LTG and 105 min after injection of PHT, DHA (1mM) 10 µl was injected intracerebroventricularly (i.c.v). Groups 3 and 4 received solvent of LTG with DHA or solvent of PHT with DHA. Control groups (5 and 6) received the solvent of the LTG and solvent of DHA or solvent of PHT and DHA solvent. 15 minutes after injection of DHA or DHA solvent, the animals were stimulated by a 44 mA current with 6 Hz frequency and occurrence of limbic seizures was monitored. In chronic treatment, 10 groups of mice (5 control and 5 test groups) were used. Test groups received DHA (0.1 ml of 97% solution) by oral gavage for 30 days. Control groups received sesame oil for 30 days. At day 31, group one of control and group one of test group received 6-Hz electroshock. Group 2 (both test and control) received LTG (25mg/kg, i.p.). Group 3 (both test and control) received PHT (25mg/kg, i.p.). Group 4 and 5 (both test and control) received solvent of LTG or PHT. Two hours after injection of PHT or PHT solvent and 1 hour after injection of LTG or LTG solvent electroshock was exerted to the animals and occurrence of limbic seizure were monitored.

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Results : Acute administration of DHA alone or with LTG and PHT did not inhibit seizures. DHA itself had no protective effect against 6-Hz seizures when administered chronically. However, chronically administered DHA inhibited limbic seizures resistant to LTG and PHT.

Conclusion : Chronically administration of DHA inhibits resistance to LTG and phenytoin in 6-Hz model of epilepsy. Chronic consumption of DHA can be considered as a good candidate to overcome drug resistant epilepsy.

Keywords : drug resistant epilepsy, Docosahexaenoic acid, 6-Hz model, mice

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Keywords : SNARC,Event related potential, number representation



Count: 343

Abstract ID: 260

Presentation Type: Poster

TIME PERCEPTION IN ELITE MARTIAL ARTISTS

Submission Author: Maryam Moghadam salimi

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Background and Aim : Timing is the basic principle for many cognitive processing and motor action. Time perception and the mechanism that control the timing of motor performance, rely on similar brain processes and There is a great overlap between neural networks involved in time perception and motor timing. Regarding the shared activity of the regions devoted to time and motor processes and the effect of the exercise on the neural plasticity, we want to know the possible difference between elite athletes and non-elite in time perception. The purpose of this study was to investigate the impact of sport upon the perception of time, through two different groups: elite martial artists and non- athletes.

Methods : Nineteen martial artists, and non-athletes completed the Time Reproduction Task with two durations, 500ms (short duration) and 2000ms (long duration). shorter lengths of time reproduction by the participant, is the time that estimated below the expected duration (underestimation) and longer length of Time reproduction by the individual, is the time that estimated above expected duration(overestimation).

Results : Repeated measure ANOVA demonstrated that the relationship between physical activity and time perception is higher for long durations in athletes. There is no difference between two groups in the estimation of the shorter time durations.

Conclusion : Any factor that could improve cognitive performance, such as physical activity may affect higher level activity such as working memory and attention. It's assumed that the process of long time durations requires working memory. As a result, the athletes, as compared to the non-athletes, were more accurate in reproduction of longer durations due to better cognitive performance. However, no difference was seen between two groups for reproduction of the short periods. It's implied that the perception of short times is an automatic process that could not affect by physical activity and cognitive augmentation.

Keywords : Time perception, Motor timing, Time reproduction, Athlete, martial arts



Count: 344

Abstract ID: 733

Presentation Type: Poster

Sport-Related Concussion: Neuropsychological assessment

Submission Author: Ali Moghadam Zadeh

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Background and Aim : To critically review the literature from the past 6 years regarding the following key issues in sports-related neuropsychological assessment: (1) the advantages and disadvantages of different neuropsychological assessment modalities; (2) the evidence for and against the current paradigm of baseline/post injury testing; (3) the role of psychological factors in the evaluation and management of concussion; (4) advances in the neuropsychological assessment of children; (5) multi-modal assessment paradigms; (6) the role of the neuropsychologist as part of the sports healthcare team and (6) the appropriate administration and interpretation of neuropsychological tests.

Methods : Design Targeted computerized literature review (MEDLINE, PubMed, CINAHL and Psych Info) the present using key words: neuropsychological, neurocognitive, assessment, testing, concussion and sports.

Results : More than 76 articles were identified using key word searches of the databases, including many duplicates. Several books were also reviewed. The articles were pared down for review if they specifically addressed the key areas noted above.

Conclusion : Traditional and computerized neuropsychological tests are useful in the evaluation and management of concussion. Brief cognitive evaluation tools are not substitutes for formal neuropsychological assessment. At present, there is insufficient evidence to recommend the widespread routine use of baseline neuropsychological testing. Although scant, research suggests that psychological factors may complicate and prolong recovery from concussion in some athletes. Age appropriate symptom scales for children have been developed but research into age-appropriate tests of cognitive functions lags behind. Neuropsychologists are uniquely qualified to interpret neuropsychological tests and can play an important role within the context of a multifaceted-multimodal approach to manage sports related concussions.

Keywords : neuropsychological assessment, Sport, concussion



Count: 345

Abstract ID: 213

Presentation Type: Oral

Comparison of Auditory Stream Segregation using spectral cues in sighted and early blind individuals

Submission Author: Fatemeh Moghadasi Boroujeni

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Background and Aim : Human beings receive a variety of sounds in their everyday lives. These sounds are generated by different sources, and are heard simultaneously or with a small time sequence. A characteristic of the auditory system is its ability to analyze complex sounds, and to make decisions about the source of each constituent part of these sounds. After the early loss of vision, blind individuals compensate the lost visual information through an increase in the use of the inputs from other undamaged senses such as auditory and somatosensory senses so that they can assess their position in the environment designed for sighted people. The present study intends to make a comparison between sighted and early blind individuals' auditory stream segregation through frequency discrimination using a psychoacoustic ASS test.

Methods : This study has a comparative-sectional design and was conducted on 16 sighted and 16 early blind individuals with the age ranging from 18 to 35. The applied stimuli were presented in the form of pure A and B sounds sequentially and as a triplet ABA-ABA pattern at the intensity level of 40 dB SL . In the sequence of the presented triplets, the A tone frequency was selected as the basis at the values of 500, 1000 And 2000 Hz. The B tone was presented with a difference of half to twelve and half semitones above the basis tone frequency in each phase.

Results : The FB threshold was obtained in 500-2000 frequencies. Blind individuals had lower thresholds at all frequency compared to sighted individuals. There was a significant difference in the FB threshold between the blind and sighted individuals at all the frequencies ($p < 0/05$).

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Conclusion : Early blind individuals' better performance in auditory stream segregation can be influenced by these factors: a) the stronger tonotopic map created as a result of neural structurability subsequent to the early loss of vision, b) reinforced auditory attention, and c) participation of non-auditory cortex areas in auditory processing as a result of neural structurability in early blind individuals.

Keywords : blindness, Auditory stream segregation, attention, neural plasticity, auditory cortex, compensation



Count: 346

Abstract ID: 716

Presentation Type: Poster

Electrophysiological effects of Haplophillum Robustum hydroalcoholic extract as a proconvulsant plant model and comparison with PTZ model in wistar rat

Submission Author: Ali Moghimi

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Background and Aim : The incidence of epilepsy is over 1% of the total population. The exact mechanism of epilepsy is unknown. It is obvious that brain shifts into the activity of a seizure with excessive electrical synchronizations. In most studies PTZ is used for induction of epileptiform convulsions. Developing new models for epileptiform seizures has a great value. Haplophillum robustum injections show convulsive seizures that behaviorally is similar to PTZ induced seizures and induced convulsive stages are according to Racine criterion. In this study electrophysiological changes resulting from the injection of this plant hydroalcoholic extract studied and compared with PTZ.

Methods : The Haplophillum Robustum plant was collected from Ferdows (south Khorasan province, Iran). Leaves were dried and the hydroalcoholic extract was prepared to administer in two experimental groups of male Wistar rats, (in two doses: 250 and 500 mg/kg BW, N=7 for each group). For control were used two groups) PTZ, 50 mg/kg and diazepam, 5 mg/kg, both via IP injections, N=7 for each group). For EEG recordings, bipolar concentric stainless steel electrodes were implanted and fixed on the frontal and temporal areas of skull using stereotaxic surgical procedure under deep anaesthesia. After recovery period, extracts and control substances were injected and EEG was recorded during preictal, ictal and post ictal periods of seizures. For EEG analysis were used the LAB VIEW and MATLAB software to characterize the frequency and amplitude of recorded signals.

Results : Generalized tonic-clonic seizures, the same as PTZ but with more severity. At different periods (preictal, ictal and postictal) epileptiform spikes with significantly higher frequencies and amplitudes were

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observed. Injection of 500mg/kg of the extract strongly increased brain electrical activities and lead to death. Diazepam injection could diminish the induced electrical activities and behavioral features of evoked convulsions in both experimental groups.

Conclusion : The results showed that Haplophillum Robustum (sodabi) extract injection can provoke epileptiform convulsions similar to PTZ with more severe symptoms than PTZ. So, we introduce this plant extract as a good model and substitute of PTZ for experimental epilepsy studies. Different doses of the plant extract may be recommended for partial and generalized seizures. According to these investigation findings, the extract may induce its effects through GABAergic systems. Identification of plant chemical components and their in-vivo effects are necessary for future and detailed studies.

Keywords : Haplophillum Robustum, sodabi, epilepsy induction model, PTZ



Count: 347

Abstract ID: 706

Presentation Type: Poster

The effect of auditory feedback in speech production

Submission Author: Nazanin Mohamadi

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3. The Department of Speech & Hearing Sciences, Arizona State University

Background and Aim : Auditory feedback plays a very important role in fluent speech acquisition and production. As it can be seen in deaf people, if there is no auditory feedback during learning speech production, we could not speak. Therefore, studying the role of auditory feedback on speech production would be worthwhile. The pitch (or the fundamental frequency (F0)) is one of the important parameters that the effect of its manipulations needs to be examined. Vocal pitch, which is the vibration rate of vocal cords, approximately indicates that how bass or treble of our voice is. Preliminary studies in this area showed that when a subject produce vowels or a phrase consisting of several sounds, if their voice were altered and fed back to them through headphones, the subjects would tried to change their voice in the opposite direction to compensate the mentioned manipulation.

Methods : In these experiments, subjects were asked to produce a sound, word, phrase, or a sentence repeatedly. Then their voice has been fed back to them by tools like headphones. The feedback was altered by a hardware device or a computer. Tests were done in a very quiet environment

Results : The intensity or masking noise of this feedback on compensatory response magnitude or latency had little effect. The amount of compensation varied in different stress patterns. This result has been also observed in the disyllabic sequences. The magnitude of the response during the sentence production was more than when only a vowel was pronounced. This compensation has also been reported for speakers of different languages. The magnitude of this response in reading was more than in speaking. A research shown that as the age increased, the magnitude of this compensatory response was further. However, the latencies was less. Changes of the auditory feedback at a high voice F0 led to a different answer in comparison with a low voice F0. At a high voice F0, the magnitude of the response was larger and latencies were shorter than at a low voice F0. This issue did not depend on the magnitude or direction of the perturbation. Women shown a larger but slower responses than men. In this series of studies, being aware or not of the purpose of the experiment had not any effects on the results of the compensation or adaptation.

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However, the predictability of changes, both in children and in adults, caused sensorimotor learning, and its amount was greater in adults.

Conclusion : According to this review it can be concluded that if fundamental frequency of subject's auditory feedback was changed, he could compensate it. It has been also resulted that age, sex, native language, consciousness, F0 level, predictability, stress patterns, sequence length and also auditory feedback's intensity and masking noise may have effect on the direction, magnitude or latency of the compensatory response. The results of these studies can be used to update the brain internal models for speech and offered new suggestions for the rehabilitation of patients who have speech disorders.

Keywords : speech production; auditory feedback; fundamental frequency; perturbation; compensation



Count: 348

Abstract ID: 707

Presentation Type: Poster

Sensorimotor adaptation to altered feedback: Speech production study

Submission Author: Nazanin Mohamadi

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Background and Aim : Sensorimotor adaptation (SA) is a well-known phenomenon in the field of human movement control. Many studies have shown that the sensorimotor system modify its motor programs to adapt to alteration in sensory feedback. For example, when we look through prism glasses to reach to a visual target, we gradually learn and adapt to the shifted visual feedback by changing the trajectory of our hand movements toward the target. Although less Similar phenomenon exists in speech domain. Surprisingly, little is known about the nature of SA in speech. Given the importance of auditory feedback human communication, here, we examine the role of auditory feedback in speech production using an adaptation paradigm.

Methods : Eight adults (ages 22- 34) participated in this study. Participants were instructed to produce vowel /a/ for 3 seconds in each trial while at the same time they heard their own voice through headphones. None of the subjects had hearing or speech-languages disorders. The test consisted of four phases and subjects completed 210 trials. In the first phase (110 trials), their own voice was fed back to them without any perturbation . In the second phase (50 trials), we experimentally increased fundamental frequency of their voices gradually and eventually up to 100 cents. We kept this maximum perturbation (100 cent) in the next 20 trials of third phase. In the last phase (i.e., after-effect phase) no perturbation was applied (30 trials).

Results : Seven subjects responded to the F0-shift by lowering their F0 (i.e., the opposite direction of the perturbation). One subject followed the perturbation (increased her F0). Additionally, in the after-effect phase we found that the fundamental frequency of five out of eighth subjects was decreased.

Conclusion : These preliminary results indicated that subjects adapted to the F0 perturbation. The adaptation was evident after removing the perturbation of auditory feedback. Overall, these preliminary results confirm sensorimotor adaptation for F-perturbation. Currently we are conducting a series of studies based on sensorimotor adaptation paradigm to understand the role of auditory feedback in speech production system.

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Keywords : speech production; sensorimotor adaptation; pitch-shift; fundamental frequency



Count: 349

Abstract ID: 176

Presentation Type: Oral

Changes in CD4 marker expression after ischemia and the effect of Combined estrogen-progesterone treatment

Submission Author: Salime Mohamadi

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Background and Aim : Stroke is the third leading cause of death in industrialized countries and the most frequent cause of permanent disability in adults worldwide. Although different mechanisms are involved in the pathogenesis of stroke, increasing evidence shows that ischemic injury and inflammation account for its pathogenic progression. Although many efforts have been done for the treatment of stroke, but still there is no effective treatment. According to the neuroprotective effects of estrogen and progesterone hormones, in this study the effect of combination estrogen-progestin dose on CD4 expression after ischemia in the border region of MCAO induced ischemic brain was studied.

Methods : Adult male Wistar rats were subjected to transient middle cerebral artery occlusion (tMCAO) using an intraluminal filament technique for 1 h followed by 24 h reperfusion. Estrogen and progesterone were immediately injected after tMCAO subcutaneously. expression of CD4 were determined in the penumbra region of the ischemic brain using immunohistochemistry. Sensorimotor functional tests were performed 24 and 72 h after ischemia and reperfusion (I/R). Rats were sacrificed 24 hours after I/R to evaluate the infarct volume by TTC staining.

Results : A single dose of estrogen-progesterone combination immediately after focal ischemia significantly reduced infarct area size and improved sensory-motor test. The number of CD4 + cells in ischemic border area was dropped significantly and thus reduced inflammation.

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Conclusion : The results showed that a combination dose of estrogen and progesterone has an anti-inflammatory effect via reducing CD4 + cells in ischemic region after focal ischemia.

Keywords : Stroke, Estrogen, Progesterone, Inflammation, CD4, MCAO



Count: 350

Abstract ID: 528

Presentation Type: Poster

The Hypothesis detect Multiple Sclerosis in early stage with saliva testing

Submission Author: Masoomeh Mohamadpour

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5. Student of electrical engineers, student research comitee, university azad tehran markaz. Tehran . Iran
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Background and Aim : Recent studies point to the clinical and research efficacy of saliva as a respected diagnostic aid for observing Multiple Sclerosis. The objectives of this Hypothesis are to identify novel biomarkers recognized to Multiple Sclerosis in early stage in saliva and to determine if the levels of these markers correlate with level of these Cerebrospinal fluid, blood assays and urine of diagnostic in multiple sclerosis

Methods : In total, 200 MS patients (100 women) will recruit (in early and late level). Paired samples of saliva, cerebrospinal fluid (CSF) , blood serum and urine will collected to detect osteopontin, Melatonin, Uric acid (UA), malonic dialdehyde (MDA)and oligoclonal IgG an using multiplex proteomic immunoassa

Results : we hope to changes of osteopontin, Melatonin, Uric acid (UA), malonic dialdehyde (MDA)and oligoclonal IgG in saliva testing

Conclusion : if these parameters changes in secretion of salivary gland we can design Microchip to diagnose MS in early stage with saliva testing

Keywords : Multiple Sclerosis , saliva testing , Cerebrospinal fluid, Microchip



Count: 351

Abstract ID: 552

Presentation Type: Poster

Combination Therapy of Lithium and Human Pluripotent Stem Cell-derived Neural Stem cells in Rat Spinal Cord Contusion Model

Submission Author: Atiyeh Mohammad Shirazi

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Background and Aim : Spinal cord injury (SCI) is a common, severe and medically untreatable disease, lots of treatment approaches have been suggested so far and stem cell transplantation is seem to be a promising strategy. Combination therapy improve the efficiency of treatment and improve rate of cell survival. Lithium is using for major depression and bipolar disorder and inhibits GSK-3-beta enzyme which decreases apoptotic factors in the cell. The main objective of this study is to demonstrate that combination therapy of human embryonic stem cell-derived neural stem cells (hES-NSC) with Lithium can improve cell survival and proliferation as well as cells tendency to differentiate into neural fate instead of glial cells.

Methods : Wistar male rats (250-280gr) were used in this research and contusive spinal cord injury performs by using NYU-impactor (25mm. 10gr). Experimental groups including: hES-NSC, Lithium chloride (85 mg/kg, ip), hES-NSC and Lithium chloride, and control group. We used BBB scores for hindlimb functional recovery and score each animal from 0 to 21 once a week during the experiment. Electrophysiological assessments performed to evaluate motor and sensory recovery. One week prior to SCI, Screw implanted in somatosensory-motor cortex area for recording motor and somatosensory evoked potential (MEP, SSEP) in first and fourth weeks.

Results : Lithium and neural stem cells treatments significantly improved locomotor scores. Our electrophysiological assessments shows this combination therapy can help to recover the corticospinal tract neurons.

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Conclusion : Our data suggested that combination therapy of human embryonic stem cell-derived neural stem cell transplantation and Lithium Chloride injection can be a good approach in spinal cord injury regeneration.

Keywords : Spinal cord injury; Lithium Chloride; Cell transplantation; Motor evoked potential; Somatosensory evoked potentials



Count: 352

Abstract ID: 385

Presentation Type: Poster

The effect of β -amyloid on HMGCR protein expression in Isolated astrocytes of C57BL/6J mice

Submission Author: Asma Mohammadi

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Background and Aim : Amyloid beta peptide ($A\beta$) play important roles in the pathogenesis of Alzheimer's disease (AD). However, the molecular mechanism underlying these interactions has not been fully understood. Recently, it was shown that APP processing is sensitive to cholesterol and other lipids. The homeostasis of cholesterol including synthesis, removal, storage or transport in brain is strictly regulated. HMG-CoA reductase (HMGCR) is the main enzymes that regulates cholesterol biosynthesis which catalyzes the formation of mevalonate. In this study we investigate effect of amyloid beta 1-42 on expression of HMGCR in mouse and human astrocytes .

Methods : In the present study, we investigated the mRNA and protein levels of HMGCR in $A\beta$ 1-42 treated human and mouse astrocytes , based on real-time PCR and western blotting analyses.

Results : Our results indicated that mRNA and protein levels of HMGCR was significantly reduced by $A\beta$ 1-42 treatment in both human and mouse astrocytes. ($P < 0.05$)

Conclusion : Our results demonstrate a biological function for $A\beta$ 1-42 and also a mechanism for the link that has been observed between cholesterol homeostasis and Alzheimer's disease (AD). Indeed, the presence of contradictory results indicates that further investigations are required to delve deeper into the causality between cholesterol alteration and brain disorders.

Keywords : Alzheimer's disease, amyloid beta , cholesterol , HMGCR



Count: 353

Abstract ID: 618

Presentation Type: Oral

A deep structure for option discovery in Reinforcement Learning

Submission Author: Jahanbakhsh Mohammadi

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Background and Aim : Hierarchical learning as another way to scale up reinforcement learning and enable its applications to very hard learning problems. Hierarchical learning is a divide-and-conquer technique a complex learning problem is decomposed into small pieces so that they can be easily solved. The option framework is one way to using hierarchical learning in reinforcement learning. In this paper we have used the free-energy based function approximation (FE-RBM) to determine the option initiation set. Our proposed method calculates the output for each of the input (including state and subgoal) according to negative free energy of an RBM. Learning is done by stochastic gradient descent and mean-squared error. The experimental results showed that this method has efficient functionality to select the best subgoal in different states of the environment for option discovery. Moreover, it has a reasonable generalization ability for unvisited states.

Methods : In this paper we have used the free-energy based function approximation (FE-RBM) to determine the option initiation set. Our proposed method calculates the output for each of the input (including state and subgoal) according to negative free energy of an RBM. Learning is done by stochastic gradient descent and mean-squared error.

Results : Results are presented as graphs in the paper.

Conclusion : In this paper, a deep learning method was proposed which conducts the agent to recovery options in a four rooms maze problem. Furthermore the generalization capability of neural networks has been used for selecting the best option in each unvisited states.

Keywords : reinforcement learning, free energy, subgoal, option discovery, RBM.



Count: 354

Abstract ID: 527

Presentation Type: Poster

The Effect of Hydro-alcoholic Nettle Extract (*Urtica dioica*) on improving learning and memory disorders of Alzheimer's in the rats injected with streptozotocin (ICV)

Submission Author: Shima Mohammadi

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Background and Aim : Alzheimer is a neurodegenerative disease which leads to great loss of memory. Brain oxidative stress plays an important role in aging and neurodegenerative disorders. This study was done to evaluate the effect of hydroalcoholic extract of Nettle on memory impairment induced by Intracerebroventricular (ICV) injection of streptozotocin (STZ) in animal model of Alzheimer's disease.

Methods : In this study, we were selected 30 adult male Wistar rats weighing 280 ± 20 . Then, the animals were divided into three groups, control, rats with Alzheimer's disease, rats treated with tree different dose of hydroalcoholic extract Nettle (50, 100, 150 mg/kg BW). For inducing Alzheimer's disease, we were used Intraventricular injection of streptozotocin (3 mg/kg). Rats treated with the extract of Nettle, injected intraperitoneally for 21 days. In this research, we were used Morris water maze and shuttle box test for assess learning and memory in rats.

Results : Intracerebroventricular injection of STZ caused severe memory impairment in all tests. In rats without any treatment in comparison with rats treated with extract nettle (21 days, 50, 100, 150 mg/kg BW), time to reach the hidden platform significantly decreased ($P < 0.05$) in Morris water maze test, also Latency to enter the dark compartment of passive avoidance memory test significantly increased ($P < 0.05$).

Conclusion : Data showed that extract of nettle is probably helpful in the improvement of cognitive impairments in Alzheimer's disease.

Keywords : Alzheimer; Nettle; streptozotocin; learning; memory



Count: 355

Abstract ID: 507

Presentation Type: Poster

The effect of extract silymarin (*Silybum marianum*) in passive avoidance memory and pain from cerebral ischemia-reperfusion in rats.

Submission Author: Mohammad hussain Mohammadi mehdiabadi hassani

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Background and Aim : Cerebral ischemia-reperfusion injury causes loss of structural and functional in area of the brain , sparticularly the hippocampus. The aim of the present study was to investigate the effect of silymarin extract on memory disorders andpain caused by ischemia.

Methods : In this experimental study we were used 40 male Wistar rats with the average weight (270 ± 20)g. The rats were randomly divided into 3 groups: control, ischemia and ischemia treated with silymarin extract (75, 100 and 150 mg/kg). Ischemia was created with blocking both common carotid artery (CVA) for 20 minutes, The groups treatment were treated by intraperitoneal injection of silymarin for 14 days, Animals were tested by passive avoidance method (shuttle box) for check the evaluate memory impairment, also the pain test was performed by tail filick.

Results : Silymarin extract at concentrations of 75, 100 and 150 mg per kg increased passive avoidance memory significantly in rats ischemia, Moreover silymarin extract caused a significant increase reaction time delayed in Tail flick method and it was shown that the concentration of 150 mg per kg of extract had a greater effect than other concentration.

Conclusion : These finding demonstrated that silymarin extract have protective effects against avoidance memory disorders and pain caused by ischemia, probably due to this plant has a antioxidant, anti-inflammatory and protective effect against Oxidative stress.

Keywords : Cerebral ischemia; Silymarin; memory; learning; pain.



Count: 356
Abstract ID: 89
Presentation Type: Poster

Exercise & its effects on neurogenesis in the language of serotonin

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Background and Aim : In numerous studies the relations of exercise and the serotonergic system has been proven and it has been seen that exercise can increase serotonin in CNS . serotonin itself regulates glucocorticoids and plays an important role in the HPA axis and in the hippocampus the main purpose of this study is to illustrate how daily and standard exercise can cause neurogenesis via the serotonin pathway

Methods : The generation of Tph2 $-/-$ mice has been described in many studies These are mice that can not produce neural serotonin due to lack of an enzyme called tryptophan hydroxylase2 Tph2 $-/-$ mice are established on a C57BL/6N background (F10 generation backcross; Charles River) . Young-adult [6 weeks of age, postnatal day (P)42], adult (3 months of age, P80), and 1-year-old female Tph2 $+/+$ mice, their Tph2 $+/+$ littermates, or C57BL/6N mice (as control for P42) is used to investigate the role of serotonin on proliferation and increased hippocampal neurogenesis following physical activity. as approved by institutional guidelines and relevant authority [Landesamt für Gesundheit und Soziales (LaGeSo), Berlin, Germany]. Sixty animals are divided into two groups for “baseline” conditions (standard cage 3-6 mice per cage), and “RUN” conditions (single housed in a standard cage plus running wheel), and are held for 6 d with a 12 h light/dark cycle and ad libitum access to food and water. Mice in RUN conditions had unlimited access to the running wheel for 6 d , and running distance was monitored. . Mice were deeply anesthetized with isoflurane and perfused transcardially. Brains were removed from the skulls, postfixed in 4% PFA at 4°C overnight, and transferred into 30% sucrose. Sequential 40 μ m coronal sections were cut on a microtome (Leica Bensheim) and cryoprotected. Sections were stained free-floating with all antibodies diluted in TBS containing 3% donkey serum and 0.1% Triton X-100. one-in-six series of sections of each brain were stained for light microscopy (peroxidase method), and immunoreactive cells were counted throughout the rostrocaudal extent of the dentate gyrus. Results were multiplied by six to obtain the total number of BrdU-positive cells per dentate gyrus

Results : In mice that were TPH $+/+$ hippocampal neurogenesis was observed but in TPH $-/-$ mice no significant increase in neural numbers was seen

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Conclusion : based on the results exercise can induce hippocampal neurogenesis via the path of serotonin and based and Exercise can induce precursor proliferation requires central serotonin

Keywords : neurogenesis;serotonin;exercise



Count: 357

Abstract ID: 59

Presentation Type: Poster

The protective effect of ischemic preconditioning and local Hypothermia on ischemic/reperfusion injury of the rat sciatic nerve

Submission Author: Masumeh Mohammadpour

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Background and Aim : The purpose of this study, protective effects of combination ischemic preconditioning (IPC) and hypothermia on ischemic-reperfusion injury of the rat sciatic nerve.

Methods : Twenty Wistar rats were used in this study. Male rats were anesthetized with ketamine (90 mg/kg) and xylazine (10mg/kg) via intraperitoneally injection. After making a midline laparotomy incision, the left common iliac artery was exposed. The animals were divided in 4 groups: control group (CG): ischemia for 3 h; Ischemic Preconditioning group (IPG): ischemia for 10 min, reperfusion for 10 min, then ischemia for 3 h; local hypothermia group (LHG): left lower limb were cold by cooling adhesive pads (26° c) + ischemia for 3 h; and hypothermia + ischemic preconditioning group (LHPG): ischemic preconditioning (10 min), reperfusion 10 min and combination local hypothermia (26° C) + ischemia for 3 h. The left common iliac artery was clamped for 3 hours with mini aneurysm clamps followed by reperfusion for 48 h. The right lower limb was kept intact group. Motor deficit index (MDI) was scored using the assessment of ambulation using the hind limbs and by the placing/stepping reflex. After neurological assessment, the sciatic nerve removed and serial coronal sections (5µm) were obtained from blocks. The slides were stained with the toluidine blue and evaluated the mean of myelinated axon diameters.

Results : All rats in the groups LHPG had a normal neurological status. The mean of MDI scores were 3.5, 2,1, 0 in groups CG, IPG, LHG, and LHPG, respectively. There were statically significant differences in the mean MDI in groups LHG and LHPG compared with group control ($p < 0.05$). In the histopathological analysis, the mean myelinated axon diameters (µm) were 10.1 ± 3 , 12.8 ± 2.17 , 15.11 ± 3.1 for CG, LHG, and LHPG, groups respectively ($p < 0.05$).

Conclusion : The resulted showed that combination therapy of local hypothermia and IPC were the protective effect on ischemic – reperfusion injury of the rat sciatic nerve.

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Keywords : ischemia, preconditioning, hypothermia, sciatic nerve



Count: 358
Abstract ID: 652
Presentation Type: Oral

Dopamine enables the induction of associative long-term potentiation at thalamo-amygdala synapses

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Background and Aim : Emotional arousal, linked to a surge of dopamine (DA) in the amygdala, leads to creation of stronger and longer-lasting memories. However, little is known about the synaptic mechanisms of such modulatory DA influences. Long-term potentiation (LTP) in auditory inputs to the lateral nucleus of the amygdala was recently linked to the acquisition of fear memory. Therefore we explored whether LTP induction at thalamo-amygdala projections, conveying the acoustic conditioned stimulus information to the amygdala during fear conditioning, is under dopaminergic control.

Methods : Using whole-cell recordings from amygdala slices, we show that DA suppresses GABAergic inhibition of projection neurons in the lateral amygdala and enables the induction of LTP at thalamo-amygdala synapses under conditions of intact GABAA receptor-mediated inhibition

Results : Our data indicate that the DA effects on the efficacy of inhibition could result from a decrease in excitability of local circuit interneurons, without direct effects of DA on release machinery of the GABA-containing vesicles or the size of single-quanta postsynaptic GABAA receptor-mediated responses.

Conclusion : Thus, dopaminergic modulation of local interneurons may contribute to the formation of fear memory by gating LTP in the conditioned stimulus pathways.

Keywords : LTP, Dopamin, Amygdal, synapses



Count: 359

Abstract ID: 350

Presentation Type: Poster

Effect of L-arginine on lipopolysaccharide induced brain tissue oxidative stress

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Background and Aim : The effects of L-arginine (LA) as a precursor of NO on lipopolysaccharide (LPS)-induced brain tissues oxidative damages was evaluated

Methods : The animals were grouped and treated: control (saline), LPS (1mg/kg, 2h before retention test), LA - LPS (200 mg/kg LA 30 min before LPS) and LA.

Results : Malondialdehyde (MDA) and NO metabolite concentrations in the brain of LPS group were higher than control ($p < 0.001$ and $p < 0.05$) while, in LA-LPS group they were lower than LPS ($p < 0.05 - p < 0.01$). The thiol, superoxide dismutase (SOD) and catalase (CAT) in the brain tissues of LPS group were lower than control ($p < 0.001$) whereas in LA-LPS group they were higher than LPS ($p < 0.05$ and $p < 0.001$).

Conclusion : LA improved brain tissues oxidative damages caused by LPS.

Keywords : L-arginine; Lipopolysaccharide; Oxidative damage



Count: 360

Abstract ID: 529

Presentation Type: Poster

Effect of thalidomide on lps-induced depressive-like behavior in mice: involvement of NO pathway

Submission Author: Rezvan Mokhtari

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Background and Aim : Depression is the most common neurologic disorder. Nervous system inflammations are associated with the neurodegenerative disorders. bacterial endotoxin lipopolysaccharide (Lps) induces pro inflammatory factors including cytokines and nitric oxide(NO). Thalidomide is an old glutamic acid derivative which was initially used as a sedative medication but withdrawn from the market due to the high incidence of teratogenicity. Recently it has reemerged because of the potential for counteracting number of diseases, including neuronal disorders. Some investigations revealed that thalidomide could elicit neuromodulatory and immunomodulatory properties by affecting different targets including nitric oxide.

Methods : In this regard we have utilized lps-induced depression model to investigate the behavioral consequences of thalidomide administration and its possible mechanism through nitric oxide pathway. It has been shown that peripheral administration of lps induces depressive-like behaviors in mice, measured by increased duration of immobility in both the forced swim(FST) and tail suspension(TST) tests.

Results : We have shown that, injection of lps(0.85 mg/kg i.p) induces depressive like behavior in animals. Moreover, thalidomide(20 mg/kg i.p) significantly decreased immobility time in TST and FST tests(, $p < 0.05$). On the other hand, co-administration of an inducible NOS inhibitor, AG(50 mg/kg i.p), with subeffective doses of thalidomide(5mg/kg i.p) significantly reduces the mice immobility time in FST and TST tests.

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Conclusion : the results demonstrated the involvement of nitric oxide signaling pathway in the antidepressant-like effect of thalidomide in mice.

Keywords : Thalidomide; nitric oxide



Count: 361

Abstract ID: 332

Presentation Type: Poster

7Days Amygdala Deep Brain Stimulation decreased freezing behavior of Post-Traumatic Stress Disorder Syndromes Induced By Contextual Fear Conditioning In Rat.

Submission Author: Mina Mokhtari hashtjin

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Background and Aim : Post-traumatic stress disorder (PTSD) as a kind of anxiety disorders consequence of a traumatic event which followed by an intense fear and shock. Over activity of amygdala as a key factor for PTSD symptoms recorded by FMRI imaging, moreover, there is a direct relation between level of amygdala activity and severity of PTSD syndrome. Nevertheless, Old treatments such as SSRI medicine and psychological treatment failed in releasing all syndrome in PTSD patients. Deep brain stimulation by implantation an electrode in certain part of the brain therefore by transferring an electrical signal practically could change cerebral target activity. As well contextual fear conditioning as a PTSD modeling mimics symptoms by inducing inescapable foot shock in a context. Freezing behavior is the symptom shown in traumatized rats in the electrical foot shock context, according to context re-exposure in absence of the foot shock.

Methods : Accordingly, the DBS via an electrode in the BLn-amygdala considered as a treatment. Consequently, after 7 days predicted responses measured in the context at re-exposure time. Exactly after last behavioral test animals sacrificed for Blood sampling and brain sampling.

Results : Data indicated, amygdala DBS did decrease shock induced hyper arousal measured by a lower freezing time, and however no significant changes recorded in general anxiety measured by EPM.

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Conclusion : Attenuating amygdala function by DBS is the fact that other studies implied, and also eliminate trauma- depended anxiety symptoms. Our PTSD modeling and DBS protocol treatment seems more reasonable than pharmacological or psychological treatment.

Keywords : PTSD, Deep brain stimulation, amygdala, contextual fear conditioning, foot shock, freezing behavior



Count: 362

Abstract ID: 555

Presentation Type: Oral

Effects of exercise on anxiety like behavior in asthmatic rats

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Background and Aim : Chronic asthma is the most common respiratory diseases, characterized by airway inflammation. However, little is known whether asthma-induced airway inflammation might influence the brain. Several epidemiology studies also consistently documented that anxiety and depression were prevalent in patients with asthma. Human studies suggest that exercise could have benefits for psychological disorder. The aim of the present study was to evaluate the effects of exercises on anxiety like behavior in asthmatic rats.

Methods : Thirty two male Wistar rats divided into four groups (n=8 in each group): saline-sedentary, asthma-sedentary, asthma- exercise, and saline-exercise. Asthmatic rats were sensitized via 2 intraperitoneal injections of 1 mg of ovalbumin with alum adjuvant on days 0 and 7 of the experiment. Starting on day 14, the rats, challenged to 1% aerosolized ovalbumin for 30 min a day, 3 days a week, for 4 weeks. For treadmill exercise, rats were run on treadmill half an hour for 3 days a week, for 4 weeks, from day 14. After exercise training, their anxiety like behavior was examined by elevated plus maze (EPM) task.

Results : The results showed that exercises ameliorate anxiety like behavior in asthmatic rats.

Conclusion : Our findings indicated that the physical activity is an appropriate tool and useful therapeutic strategy for psychological disorder in asthma patients.

Keywords : exercise, asthma, anxiety



Count: 363

Abstract ID: 503

Presentation Type: Poster

The Comparison of Cognitive Emotion Regulation Strategies in Addiction to Stimulants, smoker and Normal Individuals

Submission Author: MEHRANGIZ Morabbi

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Background and Aim : Consumers difference smoker s and stimulants can help topics better understanding of pathology and treatment process addiction. .Cognitive emotion regulation is one of the most important topics thesis in recent years has occupied the minds of addiction specialist. In addiction treatment and relapse prevention positive and negative emotional states and are important factors in relapse risk. In previous research the differences in consumer smoker s and normal cognitive emotion regulation has been. But so far no research to examine the differences in consumer has paid smoker s and stimulants this study is carried out with the aim of assessing the compare cognitive emotion regulation strategies in addiction to stimulants, smoker s and normal individuals.

Methods : In this descriptive-explanatory study, 30 smoker users and 30 stimulants addicts and 30 normal subjects with matched on age, education, marriage and jobs with sampling accessible selected. The sample of study, with the permission of Tehran Welfare Organization, comprised all the clients that referred to private clinics in Tehran, drug rehabilitation centers, Community-based therapy centers and attended Narcotics Anonymous. It should be noted that all patients were included in this study with informed consent. After submitting comments on the subject to the Questionnaires were given. Subjects after passing the detox center and psychiatric diagnosis were included the subjects completed a Cognitive Emotion regulation Questionnaire. Data were analyzed using analysis of variance and descriptive statistic.

Results : this findings are consistent with findings from previous studies Based on differences in consumers and normal cognitive emotion regulation strategies. The result of this study indicated that there was significant difference between stimulants dependent and smoker s dependent with normal individuals in maladaptive Cognitive Emotion Regulation strategies (Catastrophizing, Other-blame, Rumination) and adaptive Cognitive Emotion Regulation strategies(Acceptance, Putting into perspective, Positive reappraisal).

Conclusion : finding revealed, was significant difference between stimulants dependent and smoker s dependent in maladaptive Cognitive Emotion Regulation strategies (Catastrophizing and other blame) and

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adaptive Cognitive Emotion Regulation strategies (Acceptance and Putting into perspective). One reason for this difference in consumers' cognitive emotion regulation stimulants and smokers can have different effects on the structure of the brain As a result of the use of smokers and stimulants. The limitation of this study is the small sample size of single-sex, and lack of control over the use of the time, who wish to be considered in future research.

Keywords : cognitive emotion regulation strategies, addiction to stimulants, addiction to smokers



Count: 364

Abstract ID: 634

Presentation Type: Poster

Mirror neuron system activation in MS patients: rTMS Study

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Background and Aim : Introduction: Mirror neuron system is the group of neurons when observes the activity, arouse that, make enough condention in involved muscle for movement. These neurons are in these areas: inferior frontal gynus, the rostral part of the inferior parietal lobule, premotor cortex. The stimulation and deliberation of that are measured by rTMS. Mirror neuron system activity are very important for MS patients who need movements to care but are not able to do it. This study has been done to activate Mirror neuron system via rTMS in MS patients.

Methods : This investigation, purposely is operational and administratively is semi-empirical. Samples have chosen 14 persons from MS patients and Iran's MS society who have the study entrance factors. These factors are: age range between 25 up to 35 years old, MS grade under 3 and 4, doesn't have medical prevention to attend the study, doesn't have cognitive and sight problems, and voluntarily consent. The way that project goes, is that recording basic mindoro system frequency via rTMS, and then patients observed the balance movements and during the observation , mindorodo system frequency was being recorded. Also the muscle activity, was being studied, by EMG recorded. This intervention have longed for 6 sessions. For this aim, the factor such as Thersould, amplitude, area, and onset and electrominography activity have been studied.

Results : The project's discoveries have shown: the mean of Thersould's basic form was 76.21+- 5.7 when the MNS activated, dropped to 64.14+-7.48. The mean of onset's basic form decreased from 25.7+-1.63 to 22.97+-1.99 and also the amplitude changed from 0.27+-0.3 to 1.42+-0.8 and area also has reported a significant difference from 0.74+-0.09 to 4.40+-1.09. Besides, Mauchly's statistic test has shown an expressive difference in meaningful level (PS 0.001) over every factors such as Thersould, onset, area, and amplitude. And also about balance(equilibrium) test results: there is an expressive difference between before and after test.

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Conclusion : rTMS can truly show activity of mirror neuron system and also this action has been seen not only in normal persons but also in persons who suffer from MS. Mirror neuron system activity causes to muscular electromyography activity involved movement, too. Because of that it seems that can use rTMS as a reforming protocol to look after sick person who suffers from MS patient .

Keywords : . Transcranial Magnetic Stimulation. mirror neuron system, Multiple Sclerosis



Count: 365

Abstract ID: 235

Presentation Type: Oral

Effect of deep brain stimulation in subthalamic nucleus in the 6-hydroxydopamine rat model of Parkinson, s disease

Submission Author: Fatemeh Moradi

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Background and Aim : Parkinson's disease (PD) is a neurodegenerative disorder. The typical motor symptoms of this disorder are dyskinesia, postural instability, progressive loss of dopamine neuron in the substantia nigra pars compacta and impaired nigrostriatum pathway. The subthalamic nucleus (STN) is now target of selection for deep brain stimulation (DBS), which allows reduction of dopaminergic medication.

Methods : The subthalamic nucleus (STN) has been introduced as target for deep brain stimulation (DBS) to cure motor disorders in Parkinson, s disease (PD). We tested whether the 6-hydroxydopamine (6-OHDA) PD rat model can be used to study the mechanism of DBS of the STN. In male Sprague- Dawley rats with unilateral 6-OHDA- induced medial forebrain bundle (MFB) lesion and an electrode implanted into ipsilateral STN for stimulation-induced was at a frequency of 130 Hz, 50-550) μ A(micro ampere) , 60 μ s (micro second) pulse width for one hours.

Results : After 48 hour stimulation the rats were tested for limb use contralateral to lesion (cylinder test), Bradykinesia and postural instability (pole test), for locomotor activity (open field). In lesioned rats DBS improved postural instability in the pole test, limb use contralateral to lesionin cylinder and locomotor activity in open field. Additionally 130 HZ improved TH gene expression in right striatum in PD models. Sham- lesioned rats were not affected by stimulation.

Conclusion : Stimulation with frequencies and intensities had different effects on behavioral function test.

Keywords : DBS, Parkinson's models, Behavior tests



Count: 366

Abstract ID: 80

Presentation Type: Poster

Mild Cognitive Impairment (MCI) Revisited: Executive Cognitive Functions and Acute Lymphoblastic Leukemia (ALL) Treatments Among Adolescents

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Background and Aim : Acute lymphoblastic leukemia is the most prevalent cancer in childhood and comprises about 26.8 percent of all diagnosed childhood cancers. This type of cancer is a disease of lymphocyte cells that causes malfunctioning of white blood cells and their unbridled proliferation in patient's body. Treatments used for this disease include chemotherapy, radiotherapy and bone marrow transplantation. Due to intense and numerous side effects of radiotherapy on the central nervous system, today chemotherapy is widely used instead of radiotherapy in treatment of acute lymphoblastic leukemia patients. One of the most common problems that has attracted the attention of most physicians is declining of neurological functions. Executive cognitive functions are described as a set of higher cognitive functions and processes that are responsible for controlling and regulating a variety of cognitive, behavioral and emotional functions (Anderson, 2002). These functions are some kind of important brain structures related with psychological processes that are responsible for controlling consciousness, thought and action. The basic origin of cognitive functions is prefrontal lobe which is sensitive to any injury. Many cancer survivors often indicate problems with memory, attention, concentration and other cognitive abilities that prevent them from continuing a "normal life" one to two years after the end of the treatment process. This study has indicated that these downfalls in cognitive functions are associated with decreased activity in the hippocampus region, left occipital lobe and right amygdala (Kesler et al., 2011). Considering the role of cognitive functions in targeting behavior and their impact on quality of life, the present study assesses the executive cognitive functions of acute lymphoblastic leukemia cancer survivors.

Methods : The present research is causal-comparative. The sample includes 40 teenagers cured of acute lymphoblastic leukemia disease one year after the final stage of their treatment and the follow-up after the end of the treatment. The members of this group were selected from visitors and were compared to 40 normal teenagers with no history of any chronic physical disease chosen as a cluster random sample from



schools in Tehran. Both groups of experimental and control subjects were age-, sex- and education-matched. Stroop and Wisconsin tests were used to evaluate executive cognitive functions. The data were analyzed using one-sample T-test with SPSS software version 22.

Results : The results of the analysis showed a significant difference between executive functions in teenagers cured of acute lymphoblastic leukemia and the healthy control group ($P > 5\%$). This means that people cured of leukemia using chemotherapy show weaker results in cognitive function compared to their normal counterparts.

Conclusion : Chemotherapy is one of the most common methods in treating cancers that has numerous side effects, and one of its ingrained side effects is decline in executive cognitive functions. According to the results of this study, people with a history of chemotherapy treatment are vulnerable to executive cognitive function problems. This study examined evaluations of executive cognitive function in teens cured of acute lymphoblastic leukemia, as this group of teenagers have shown basic weakness in selective attention and cognitive flexibility compared to healthy controls. Most of the concerns reported by parents of blood cancer survivors issue such problems with attention and concentration, frequent forgetfulness, poor short-term memory, weaknesses in information processing and completion of assignments, problems in organization and specific problems in educational aspects, which are all considered as instances of the general category of executive functions (Campbell et al., 2009).

Keywords : Mild Cognitive Impairment; Executive Cognitive Functions; Cognitive Flexibility



Count: 367

Abstract ID: 285

Presentation Type: Poster

Induction effect of deprenyl and newborn rat brain extract on the differentiation of P19 embryonic carcinoma cells into neuronal phenotype cells

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Background and Aim : Recently, the cellular therapies of the damaged neuronal tissues are considered as the potentially efficient strategies to cure human neurological diseases. Stem cells have the capability to differentiate into many cells types as well as neurons. Thus, the design of this study was to investigate differentiation of stem cells into neuronal phenotype cells influenced by combination of the induction effects of deprenyl and newborn rat brain extract. The aim of the study was to differentiate P19 embryonic carcinoma cells into neuronal phenotype cells. Then, both molecular and morphological determinations of the differentiated cells were achieved.

Methods : P19 cells cultured in α -MEM medium containing 10% fetal bovine serum (FBS). To induce differentiation of stem cells into the neuronal phenotype cell, 100 ng per ml of newborn rat brain extract and deprenyl at 10⁻⁸ mM concentration were used. As the stem cells were in the process of differentiation, the FBS content reduced to three percent. The cresyl violet staining procedure completed to confirm the morphology of the differentiated cells. In addition, the real time-PCR method was performed to track the expression of tyrosine hydroxylase as a neural-specific gene.

Results : Real time-PCR procedure confirmed the neural-specific tyrosine hydroxylase gene expression in the differentiated cells. Furthermore, the differentiated cells revealed to have neuronal phenotype morphology as the Cresyl violet staining protocol accomplished.

Conclusion : The results of this study indicated that P19 embryonic carcinoma stem cells may differentiate into neuronal phenotype cells under the combination of induction effects of deprenyl and newborn rat brain extract. Then, the differentiate neuron like cell have the capability for the cellular therapies of the damaged neuronal tissues.

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Keywords : P19 embryonic carcinoma cells, deprenyl, newborn rat brain extract, neuronal differentiation, tyrosine hydroxylase gene



Count: 368

Abstract ID: 586

Presentation Type: Poster

The effects of flaxseed oil on learning and memory in rats

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Background and Aim : Learning, memory and retrieval of the acquired information are all the highly developed fine functions of the nervous system. Learning is the process of acquiring new or changing and strengthening the existing information, behaviors and skills that involve a huge number of synaptic activities in the brain. Memory is the process in which the acquired information is encoded and stored for retrieved as needed. The retrieval of the information or remembering is simply recalling of what the learned and stored information. The areas of the brain associated with learning, memory and retrieval processes, include cortex, cerebellum, hippocampus, amygdala and entorhinal cortex. Among the mentioned areas, the hippocampus is the main processing unit for learning and memory functions. During the periods of pregnancy and lactation, fatty acids are required for the optimal development of the nervous system of the fetus and then the newborn. Flaxseed oil (FSO) is a rich source of the fatty acids like omega-3. The design of this project was to investigate the effects of FSO on learning and memory in rats born to the mothers received FSO during pregnancy.

Methods : Twenty female rats weighing 200 ± 20 were distributed into four groups of five each including control, placebo, low-dose and high-dose. The animals in the low and high dose groups received FSO daily at the levels of either 1 or 5 mg/kg/BW respectively on the days 3 through 18 of pregnancy via gavage. The animals in the placebo group received distilled water using the same method and the animals in the control group received no treatment. Isolated male and female groups of five new rats selected from different litters to investigate learning and memory at the age of 8 weeks using a shuttle box. Step through latency and the time spent in the dark room recorded.

Results : The results of this study indicated that FSO independent of the dose affected learning and memory.

Conclusion : FSO may positively affect the embryonic development of the nervous system in rats.

Keywords : learning, memory, flaxseed oil, rats, pregnancy, shuttle box



Count: 369

Abstract ID: 643

Presentation Type: Poster

Determination of plasma selenium and total antioxidant capacity in Alzheimer's patients

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Background and Aim : In this study the plasma levels of total antioxidant capacity (TAC) and selenium (Se) in Alzheimer's patients with severe AD and control group were investigated. Recent studies have shown decreased levels of antioxidants in neurodegenerative diseases and on the other hand, oxidative stress plays an important role in the pathogenesis of Alzheimer's disease.

Methods : Thirty patients with severe AD and 30 sex-and age-matched control subjects were participated. Patients Diagnosed based on National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer's disease and Related Disorders Association (NINCDS/ADRDA) criteria. Also for the patients, computed tomography (CT) scan and Mini-Mental State Examination (MMSE) brain magnetic resonance imaging (MRI) were done. Plasma levels of TAC and Se were determined by ferric reducing antioxidant power (FRAP) assay and atomic absorption spectrometry, respectively.

Results : The average of MMSE score in the patient and control groups were 3.66 ± 0.8 and 28.30 ± 0.24 , respectively ($p < 0.001$). Plasma levels of Se and TAC significantly decrease in AD compared to control group ($p < 0.025$, $p < 0.002$), respectively. The value of area under the ROC curve for Se and TAC in discriminating AD from controls were and 0.32 and 0.33, respectively. There is a positive correlation between Se and TAC ($r = 0.354^{**}$, $p = 0.006$)

Conclusion : Our findings indicate that low plasma levels of selenium and TAC in Alzheimer's patients.

Keywords : Alzheimer's disease, selenium, TAC.



Count: 370

Abstract ID: 448

Presentation Type: Poster

Protective effects of Melatonin against Methamphetamine induced apoptosis, oxidative stress and inflammation in rat isolated hippocampus via Modulation of NF- κ B protein expression

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Background and Aim : Usage of Melatonin for management of oxidative stress, neuro-inflammation and attenuation of apoptosis has been developed in recent years. This hormone has been found to prevent cell death and neurodegeneration but the mechanism of its effect was not clarified precisely. On the other way it was approved that abuse of Methamphetamine can induce apoptosis and cause inflammation and oxidative stress damage of brain cells. NF- κ B (nuclear factor kappa) plays as a therapeutic target in neurodegenerative disorder. In this study effect of Melatonin against Methamphetamine induced inflammation, oxidative stress and apoptosis in rat hippocampus was evaluated. Also the role of NF- κ B in Methamphetamine induces neurodegeneration and its function in Melatonin neuro-protective effect was investigated

Methods : 50 adult male wistar rats were divided randomly into five groups. Group 1 and 2 received Methamphetamine (15mg/kg) and normal saline (0.2ml/rat) respectively for four weeks. Groups 3, 4 and 5 concurrently were treated by Methamphetamine (15mg/kg) and Melatonin (10, 30, 50 mg/kg) respectively for four week. After drugs treatment a standard behavioral test, open field tests, was used for evaluation of behavioral aspect of neuro-degeneration and total distance moved, mean velocity and percentage of total duration of the movement was evaluated. After that rat hippocampus cell were isolated and their oxidative, anti oxidant, apoptotic, anti apoptotic and inflammatory factor was evaluated in the isolated hippocampus cell. Also the expression of NF- κ B gene and protein was measured by Real-time PCR and Western blotting Methods.

Results : Methamphetamine significantly disturbed and attenuated total distance moved, mean velocity and percentage of total duration of the movement in open field test but various dosage of melatonin neutralized



these effects of Methamphetamine. Methamphetamine significantly increased lipid peroxidation, TNF- α and IL-1 β content and also decreased Mitochondrial GSH levels, superoxide dismutase and glutathione peroxidase activity in rat hippocampus mitochondria. Also Methamphetamine induces the apoptosis factors such as Bax, caspase-3 and caspase-9 and inhibited the antiapoptotic factors such as Bcl-2 in the isolated hippocampus cell. Various dosages of Melatonin significantly attenuated methamphetamine induced in lipid peroxidation, GSSG, TNF- α and IL-1 β level. Also this protein prevented the inhibition of GSH level, superoxide dismutase and glutathione peroxidase activity which was induced by Methamphetamine. Various dosages of Melatonin significantly prevented the Methamphetamine induces increase in Bax, caspase-3 and caspase-9 and Methamphetamine induce decrease in Bcl-2 in isolated hippocampus cell. Methamphetamine increase the NF- κ B gene and protein expression, but various dosages of Melatonin significantly decrease the NF- κ B expression.

Conclusion : We conclude that Melatonin can be applied as an antioxidant, anti apoptotic and anti inflammatory agent against oxidative stress and apoptosis which was by Methamphetamine administration, and possibly inhibition of NF- κ B protein by melatonin has an important role in this protective effect.

Keywords : Melatonin, Methamphetamine, neurodegeneration, NF- κ B



Count: 371

Abstract ID: 449

Presentation Type: Oral

The neuroprotective role of Curcumin against alcohol-induced hippocampus neurodegeneration through Phospho-CREB/BDNF signaling pathway in rats

Submission Author: Majid Motaghinejad

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3. Ganji

Background and Aim : Alcohol abuse is one of the main damage causes in central nervous system neurons. Although the neuroprotective effects of Curcumin have been reported in several studies, but its exact mechanism of action remains unclear. The current study evaluates the role of Phospho-CREB/BDNF signaling in neuroprotective effects of Curcumin against alcohol induced apoptosis, oxidative stress and inflammation in rat isolated hippocampus.

Methods : A total of 60 rats were equally divided into 6 groups (10 rats in each group). Group 1 received normal saline (0.7ml/rat) and group 2 was injected with alcohol (2g/kg/day) for 21 days. Groups 3, 4, 5 and 6 were concurrently given alcohol (2g/kg/day) and Curcumin (10, 20, 40 and 60 mg/kg respectively) for 21 days. Open Field Test (OFT) was used to investigate motor activity and hippocampus of the rats was isolated and the apoptotic, oxidative, anti-oxidative and inflammatory factors were measured. Furthermore, phosphorylated and total form of brain Cyclic adenosine monophosphate (cAMP) response element binding protein (CREB), and derived neurotrophic factor (BDNF) levels were measured by Reverse transcriptase polymerase chain reaction (RT-PCR) and western blot, while Bax and Bcl2 were measured by western blot.

Results : Alcohol, by oral administration changes motor activity in OFT, and Curcumin by mentioned doses inhibit this effect. In addition, alcohol administration caused increases in lipid peroxidation, mitochondrial GSSG level, Interleukin-1 beta (IL-1 β) and Tumor necrosis factor alpha (TNF- α level) and Bax in isolated hippocampal cells. Also alcohol significantly decreased superoxide dismutase, glutathione peroxidase, glutathione reductase activity and CREB, BDNF and Bcl2 protein levels. Various doses of Curcumin by activation of CREB/BDNF, suppressed alcohol induced apoptosis, oxidative stress and inflammation in isolated hippocampal cells and caused decrease in lipid peroxidation, mitochondrial GSSG level, Interleukin-1 beta (IL-1 β) and Tumor necrosis factor alpha (TNF- α level) and Bax in isolated hippocampal

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cells. Curcumin also significantly increased superoxide dismutase, glutathione peroxidase, glutathione reductase activity and CREB, BDNF and Bcl2 protein levels.

Conclusion : Curcumin can be used as a neuroprotective against neurodegenerative effects of prolonged alcohol exposure by CREB/BDNF signaling pathway mediation.

Keywords : Alcohol, Curcumin, neurodegeneration, Phospho-CREB/BDNF



Count: 372

Abstract ID: 450

Presentation Type: Poster

Neuroprotective effects of various doses of topiramate against methylphenidate-induced oxidative stress and inflammation in isolated rat amygdala : the possible role of CREB /BDNF signaling pathway

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Background and Aim : Methylphenidate (MPH) abuse damages brain cells. The neuroprotective effects of topiramate (TPM) have been reported previously but its exact mechanism of action still remains unclear. The current study investigated the *in vivo* role of various doses of TPM in the protection of rat amygdala cells against methylphenidate-induced oxidative stress and inflammation.

Methods : 70 adult male rats were divided into seven groups. Groups 1 and 2 received normal saline (0.7ml/rat) and MPH (10mg/kg) respectively for 21 days. Groups 3, 4, 5, 6 and 7 were concurrently treated with MPH (10mg/kg) and TPM (10, 30, 50, 70 and 100 mg/kg) respectively for 21 days. Open field Test (OFT) and Elevated Plus Maze (EPM) was used to assess motor activity disturbances and anxiety like behavior. And oxidative, antioxidant and inflammatory factors and CREB, Ak1, CaMK4, MAPK3, PKA, BDNF and c FOS gene levels were measured by RT-PCR and also CREB and BDNF protein levels were measured by WB in isolated amygdala.

Results : MPH significantly increased anxiety and disturbed motor activity and TPM (70 and 100 mg/kg) neutralized its effects. MPH significantly increased lipid peroxidation, mitochondrial GSSG levels and IL-1 β and TNF- α level and CaMK4 gene expression in isolated amygdala cells. In contrast, superoxide dismutase, glutathione peroxidase and glutathione reductase activities and CREB, BDNF Ak1, MAPK3, PKA, BDNF and c FOS expression significantly decreased. The various doses of TPM not only attenuated these effects but also significantly decreased lipid peroxidation, GSSG, IL-1 β and TNF- α level. TPM by mentioned doses increased GSH levels, superoxide dismutase, glutathione peroxidase, glutathione reductase and CREB and BDNF levels.

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Conclusion : The results of the present study supported the hypothesis that TPM might be beneficial against MPH-induced oxidative stress and inflammation in rat amygdala and could be applied for the treatment of patients abusing MPH and suffering from its neurodegenerative effects. We suggested that topiramate was useful in the management of problems associated with the use of MPH which was mediated by phosphorylated form of CREB and BDNF protein expression and it's up and down stream pathways, but further studies were required with human subjects.

Keywords : Methylphenidate, Topiramate, Oxidative Stress, Inflammation, BDNF, Amygdala

Count: 373

Abstract ID: 462

Presentation Type: Oral

The role of PKA/Phospho-CREB/BDNF signaling pathway in neuroprotective effect of Topiramate against alcohol-induced hippocampus neurodegeneration in rats

Submission Author: Ozra Motaghinejad

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Background and Aim : Alcohol abuse is one of the main cause's of damage in central nervous system neurons. Although the neuroprotective effects of Topiramate have been indicated in several studies, but its exact mechanism of action remains unclear the current study evaluates the role of PKA/Phospho-CREB/BDNF signaling pathway in neuroprotective effects of topiramate against alcohol induced apoptosis, oxidative stress and inflammation in rat isolated hippocampus.

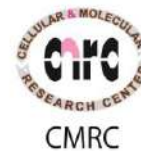
Methods : A total of 60 rats were equally divided into 6 groups (10 rats in each group). Group 1 received normal saline (0.7ml/rat) and group 2 was injected with alcohol (2g/kg/day) for 21 days. Groups 3, 4, 5 and 6 were concurrently given alcohol (2g/kg/day) and Topiramate (30, 50, 70 and 100 mg/kg respectively) for 21 days and. Open Field Test (OFT) was used to investigate motor activity and the apoptotic, oxidative, antioxidative and inflammatory factors were measured in isolated hippocampus. Furthermore, protein kinase A (PKA), phosphorylated brain Cyclic adenosine monophosphate (cAMP) response element binding protein (CREB), and derived neurotrophic factor (BDNF) levels were measured by Reverse transcriptase polymerase chain reaction (RT-PCR) and Western blot technique , while Bax and Bcl2 were measured by western blot.

Results : Alcohol, by oral administration, changes motor activity in OFT, and Topiramate inhibit this effect. In addition, alcohol administration caused increase in lipid peroxidation, , mitochondrial GSSG level, Interleukin-1 beta(IL-1?) and Tumor necrosis factor alpha (TNF-? level) and Bax in isolated hippocampal cells. Also, a significant decrease was observed in GSH content, superoxide dismutase, glutathione peroxidase, glutathione reductase activity and PKA, CREB, BDNF and Bcl2 levels. Various doses of Topiramate by activation of PKA/CREB/BDNF, suppressed alcohol induced decrease in lipid peroxidation, , mitochondrial GSSG level, Interleukin-1 beta(IL-1?), Tumor necrosis factor alpha (TNF-? level) and Bax

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in isolated hippocampal cells and cause increase of in GSH content, superoxide dismutase, glutathione peroxidase, glutathione reductase activity in isolated hippocampal cells.

Conclusion : Topiramate by mediation of PKA/CREB/BDNF signaling pathway and also phosphorylation of CREB can be used as a neuroprotective agent against neurodegenerative effects of prolonged alcohol abuse.

Keywords : Topiramate , alcohol, hippocampus , PKA/Phospho-CREB/BDNF



Count: 374

Abstract ID: 463

Presentation Type: Poster

The neuroprotective role of Curcumin against Methamphetamine-induced hippocampus neurodegeneration through PKA/Phospho-CREB/BDNF signaling pathway in rats

Submission Author: Ozra Motaghinejad

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Background and Aim : Methamphetamine abuse is one of the main damage causes in central nervous system neurons. Although the neuroprotective effects of Curcumin have been reported in several studies, but its exact mechanism of action remains unclear. The current study evaluates the role of Phospho-PKA/CREB/BDNF signaling in neuroprotective effects of Curcumin against Methamphetamine induced apoptosis, oxidative stress and inflammation in rat isolated hippocampus.

Methods : A total of 60 rats were equally divided into 6 groups (10 rats in each group). Group 1 received normal saline (0.7ml/rat) and group 2 was injected with Methamphetamine (10mg/kg) for 21 days. Groups 3, 4, 5 and 6 were concurrently given Methamphetamine (10mg/kg) and Curcumin (10, 20, 40 and 60 mg/kg respectively) for 21 days. Open Field Test (OFT) and Elevated Plus Maze (EPM) was used to measurement of motor activity and anxiety and hippocampus of the rats was isolated and the apoptotic, oxidative, anti-oxidative and inflammatory factors were measured. Furthermore, protein kinase A (PKA), phosphorylated and total form of brain Cyclic adenosine monophosphate (cAMP) response element binding protein (CREB), and derived neurotrophic factor (BDNF) levels were measured by Reverse transcriptase polymerase chain reaction (RT-PCR) and Western blot, while Bax and Bcl2 were measured by Western blot.

Results : Methamphetamine (10mg/kg) changes motor activity in OFT and induced anxiety in EPM, and Curcumin by mentioned doses inhibit this effect. In addition, Methamphetamine (10mg/kg) caused increases in lipid peroxidation, mitochondrial GSSG level, Interleukin-1 beta(IL-1?) and Tumor necrosis factor alpha (TNF-? level) and Bax in isolated hippocampal cells. Also Methamphetamine by mentioned dose significantly decreased superoxide dismutase, glutathione peroxidase and glutathione reductase activity and PKA, CREB, BDNF and Bcl2 protein levels. Various doses of Curcumin by activation of

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PKA/CREB/BDNF, suppressed Methamphetamine induced apoptosis, oxidative stress and inflammation in isolated hippocampal cells and caused decrease in lipid peroxidation, mitochondrial GSSG level, Interleukin-1 beta(IL-1?) and Tumor necrosis factor alpha (TNF-? level) and Bax in isolated hippocampal cells. Curcumin also significantly increased superoxide dismutase, glutathione peroxidase, glutathione reductase activity and PKA/CREB, BDNF and Bcl2 protein levels.

Conclusion : Curcumin, by PKA/CREB/BDNF signaling pathway, can be used as a neuroprotective agent against neurodegenerative effects of prolonged Methamphetamine (10mg/kg) abuses.

Keywords : Methamphetamine, Curcumin, neurodegeneration, PKA/Phospho-CREB/BDNF.

Count: 375

Abstract ID: 467

Presentation Type: Poster

Possible Involvement of PKA/Phospho-CREB/BDNF signaling pathway in neuroprotective effects of lithium against nicotine induced neurodegeneration in rat isolated hippocampus

Submission Author: Ozra Motaghinejad

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Background and Aim : Nicotine abuse causes neural damage to the brain cells. The neuroprotective effects of Lithium have been reported in several studies but the putative mechanism of the action still remained unclear. The current study evaluates the role of PKA/Phospho-CREB/BDNF signaling in neuroprotective effects of lithium against nicotine induced apoptosis, oxidative stress and inflammation in rat isolated hippocampus.

Methods : 60 adult male rats were divided as Group 1 (received 0.7ml/rat normal saline), group 2 received nicotine (6mg/kg) for 21 days. Groups 3, 4, 5 and 6 concurrently were treated by nicotine (6mg/kg) and lithium (20, 40, 60 and 80 mg/kg) respectively for 21 days. Open Field Test (OFT) and Elevated Plus Maze (EPM) was run to observe the motor activity and anxiety, apoptotic, oxidative, anti oxidant and inflammatory factors were measured in isolated hippocampus. Also, the protein kinase A (PKA), brain cAMP response element binding protein (CREB), derived neurotrophic factor (BDNF) level was measured by RT-PCR and Western blot.

Results : Nicotine changed motor activity in OFT. Lithium (60 and 80mg/kg) decreased nicotine induced motor activity disturbance and anxiety. Meanwhile, nicotine significantly increased lipid peroxidation, Mitochondrial GSH level, IL-1 β and TNF- α level and Bax in isolated hippocampal cells. Also superoxide dismutase, glutathione peroxidase, glutathione reductase activity and PKA, CREB, phosphorylated and total form, BDNF and Bcl-2 levels significantly decreased. Various doses of lithium attenuated nicotine induced apoptosis, oxidative stress and inflammation and caused an increase of CREB, phosphorylated and total form, and BDNF level.

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Conclusion : Lithium, by mediation of PKA/Phospho-CREB/BDNF signaling pathway, can be used as a neuroprotective agent against apoptosis, oxidative stress and neuroinflammation induced by frequent use of nicotine.

Keywords : Nicotine, lithium, neurodegeneration, PKA/Phospho-CREB/BDNF.



Count: 376

Abstract ID: 748

Presentation Type: Poster

The effect of metformin on learning and memory in streptozotocin diabetic rats

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3. Professor at Shahed University, Tehran

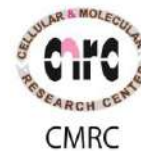
Background and Aim : Increasing evidence has shown that diabetes induces cognitive dysfunction and impairs learning and memory. Metformin is a biguanide with multiple pharmacological effects on diabetes. Thus, we investigated the effect of Metformin on diabetes-induced cognitive dysfunction in rats.

Methods : 32 male Wistar rats were randomly selected and allocated in 4 groups: control, control-metformin treated, diabetic metformin-treated, diabetic group, and a diabetic group treated with Diabetes was induced by STZ administration at dose of 60mg/kg through Intraperitoneal injection route. Metformin were administered at doses of 200 mg/kg/day 1 week after STZ injection for a period of 7 weeks. Blood samples were taken from the tail vein 1, 4, 8 weeks after STZ injection to measure blood glucose levels. Behavioral tests were performed at the end of the study.

Results : diabetic Metformin-treated group has significant improvement rather than diabetic group in behavioral tests.

Conclusion : metformin administration for 7 weeks improves motor function impairment in streptozotocin-induced diabetic rats.

Keywords : diabetes, cognitive dysfunction, learning and memory, streptozotocin, metformin



Count: 377

Abstract ID: 743

Presentation Type: Poster

The effect of L-Carnosine on learning and memory In Streptozotocin-induced Diabetic rats

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Background and Aim : Diabetes induces learning and memory impairment. L-Carnosine is a dipeptide that has multiple pharmacological effects including anti-diabetic and antioxidant activity.

Methods : 32 male wistar rats were randomly selected and allocated to 4 equal groups: Control, Control L-Carnosine treated , diabetic, and L-Carnosine- treated diabetic .Diabetes was induced by STZ injection intraperitoneally at the dose of 60 mg/kg. L- Carnosine was administered intraperitoneally at doses of 100 mg/kg/day 1 week after STZ injection for a period of 7 weeks. Blood samples were taken from the tail vein in 1, 3, 5, and 7 weeks after STZ injection to measure blood glucose levels. Behavioral tests were performed at the end of 6th and 7th weeks.

Results : L-carnosine-treated diabetic groups has significant improvement rather than diabetic group in behavioral tests.

Conclusion : L-Carnosine administration for 7 weeks improves learning and memory dysfunction in L-carnosine-treated diabetic groups compared to diabetic rats.

Keywords : Diabetes; learning and memory; L-Carnosine



Count: 378

Abstract ID: 422

Presentation Type: Poster

A new model for seizure by coadministration pilocarpine and pentylentetrazol

Submission Author: Morteza Mousavi hasanzadeh

Morteza Mousavi hasanzadeh¹, Dr. Mohammad Reza Palizvan²

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2. Dr. Mohammad Reza Palizvan, Ph.D, Associate Professor, Department of Physiology, Faculty of Medicine, Arak University of Medical Sciences.

Background and Aim : Epilepsy is one of the major neurological diseases in humans. A variety of in vivo animal models was used in the studies of epilepsy. In these models seizure was induced in animals whether by increasing the activity of excitatory cholinergic system or by reducing the activity of inhibitory GABAergic system. Given that epilepsy in humans affects both excitatory and inhibitory systems, simultaneous stimulation of cholinergic and inhibition of GABAergic systems may produce an experimental model that was more analogous to human epilepsy. The purpose of the present study was to investigate the effect of coadministration of pentylentetrazol and pilocarpine on induction of seizure activity in the rat.

Methods : Forty eight male Wistar rats weighting from 200 -250 g were randomly divided into 6 groups (8 rats/group) that were intraperitoneally injected as follows: pilocarpine(200 mg/kg) in group 1, pentylentetrazol (37.5 mg/kg) in group 2, pilocarpine(100 mg/kg) plus the pentylentetrazol (30 mg/kg) in group 3, pilocarpine(100 mg/kg) plus the pentylentetrazol (37.5 mg/kg) in group 4, pilocarpine(50 mg/kg) plus the pentylentetrazol (30 mg/kg) in group 5 and pilocarpine(50 mg/kg) plus the pentylentetrazol (37.5 mg/kg) in group 6. After drug injections rats were observed and seizure activities in each group compared with PTZ and pilocarpine-alone groups.

Results : All rats that had received 200mg/kg dose of pilocarpine, showed repeated tonic convulsions and 60% of rats died during seizure. Rats that had received 37.5 mg/kg pentylentetrazol only showed the second stage of seizure and none of the rats in this group showed stage five of seizure and none of them died. Stage five of seizure was detected in 37.5% of rats that had received 100 mg/kg pilocarpine and 30 mg/kg pentylentetrazol simultaneously, and 25% just showed stage two and 37.5% did not show seizure activity. In this group the percentage of mortality after injection was 12.5%. Injection of the 100 mg/kg pilocarpine and 37.5 mg/kg pentylentetrazol simultaneously produced stage five seizure in 75% and 25%

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of animals in this group did not showed seizure and 25 % of rats died after injection. Seizure was not detected at all in the animals that received 50 mg/kg pilocarpine and 30 mg/kg pentylenetetrazol simultaneously. Injection of 50 mg/kg pilocarpine and 37.5 mg/kg pentylenetetrazol simultaneously induced stage five of seizure in 62.5% and stage two in 12.5% of animals and 25% did not showed seizres.,12.5% of the rat in this group died after injection.

Conclusion : As injecting 100 mg/kg pilocarpine and 37.5 mg/kg pentylenetetrazol led to stage five of seizure in 75% of rats and the mortality based on the severity of such seizing was low, this combination could be used as a new model evaluating seizure and also anticonvulsant effect of the medications.

Keywords : seizure, pentylenetetrazol, pilocarpine

Count: 379

Abstract ID: 724

Presentation Type: Poster

Biochemical Analysis of progesterone Effect in Intracerebroventricular Streptozotocin Model of Alzheimer Disease in Rats

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Background and Aim : Alzheimer's disease (AD) is a progressive neurodegenerative disorder and heterogeneous mental illness, which is characterized by an age dependent loss of memory and an impairment of multiple cognitive functions. one of the factors that play an effective role in pathogenesis of Alzheimer's disease and memory impairment is oxidative stress. Oxidative stress occurs because of an imbalance in the oxidant and antioxidant levels. In AD brain, the levels of the antioxidants were found to be decreased, Preventive antioxidants such as catalase , MDA and SOD enzymes have also been shown to be essential for neural survival and neuronal protection against oxidative damages. Injected intracerebroventricularly (i.c.v), STZ can produce oxidative stress in the brain and cognitive impairment that probably cause sporadic Alzheimer's disease. Progesterone has potential from neurogenesis to memory improvement by reduce oxidative stress. Beside the observation that PROG and its metabolites exert functions relevant for the physiology of the CNS, they are also protective agents in the CNS. progesterone reduces lipid peroxidation and oxidative stress and reduce the production of free radicals and therefore can reduce the damage induced Alzheimer's disease The present study was undertaken to assess the potential of AA and Progesterone as Alzheimer's disease via the mechanisms of reduction of free radica

Methods : 42 adult male Wistar rats weighing 250-270 g were used in this study. The animals were divided in 6 groups : controls, sham(sesame oil), Alzheimer's model, Alzheimer model + progesterone (2 μ g/kg), Alzheimer model + progesterone (1.5 μ g/kg), Alzheimer model + progesterone (0.5 μ g/kg). All groups except the control were cannulated bilaterally ventricular area by stereotaxic device. Alzheimer's model was induced by intracerebroventricularly injection of streptozotocin (3mg/kg), 20 days later of injection STZ. 24 hours after the last injection (At day 21), progesterone injected through the cannula and control groups received sesameoil. Progesterone were microinjected as a pretreatment for five days. At the end, the level of superoxide dismutase, catalase, as FRAP and MDA were measured in rat's hippocampus. Data analyses was carried by one way ANOVA.

Results : The level of super oxidative dismutase , catalase, as glutathione peroxidases and MDA significantly increased in Alzheimer's group in comparison control group(p<0.001). Administration of

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progesterone in all groups reduced the level of superoxide dismutase, catalase, FRAP and MDA in comparison to Alzheimer's group ($p < 0.001$).

Conclusion : It seems that pretreatment with progesterone by inhibiting the oxidative stress has the ability to prevent the impairment in the experimental models of Alzheimer's ra

Keywords : Alzheimer, oxidative stress, progesterone, SOD, MDA



Count: 380

Abstract ID: 520

Presentation Type: Poster

The effect of exercise preconditioning on stroke outcome in ovariectomized mice with permanent middle cerebral artery occlusion

Submission Author: Soudabeh Naderi

Soudabeh Naderi¹, mohammad allahtavakoli², ali roohbakhsh³

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Background and Aim : Stroke is a major cause of mortality and long term disability in adults. The risk of stroke is rapidly increases in women after menopause. Exercise preconditioning has been shown to be effective in improving behavioral and neuropathologic indices after cerebral ischemia. However, the mechanisms underlying this neuroprotection remain poorly understood. Therefore, We hypothesized that the effect of exercise preconditioning on stroke outcome in the permanent middle cerebral artery occlusion in ovariectomized (OVX) mice

Methods : In this experimental study, Ovariectomized mice (25-35g) were randomly assigned to four groups as following (ten mice in each groups): control (OVX and stroke induction), Exercise (OVX, exercise and stroke induction), Estrogen (OVX, estrogen agonist and stroke induction), Exercise+ Estrogen (OVX, exercise, estrogen agonist and stroke induction). Exercise preconditioning performed on a treadmill 5 days per week, for 40 min/day at a speed of 18 m/min for four weeks. Estrogen agonist gavaged with estradiol valerate 40 µg/kg/day for four weeks. Five weeks after the OVX, stroke was induced by permanent middle cerebral artery occlusion (pMCAO) method. Neurological deficits were evaluated at 24, 48, 72 h and 1 week after stroke, and blood and brain tissues were then collected for serum levels of MMP-9 and IL-10 by ELISA and assessments of infarct volume, respectively.

Results : Our data show that, The data indicated that exercise preconditioning significantly improved the ischemia-induced impairment by decrease in serum level MMP-9 ($p < 0.05$), promoted serum levels of IL-10 ($p < 0.05$), attenuated sensory motor disorder ($p < 0.01$) and neurological deficits ($p < 0.05$) and diminished the infarct volume ($p < 0.05$) compared to control. These changes were followed by significant changes in neurologic deficits ($p < 0.05$), cerebral infarct volume ($p < 0.01$), sensory motor disorder ($p < 0.01$) and serum levels of IL-10 ($p < 0.05$) and MMP9 ($p < 0.05$) in estrogen group.

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Conclusion : These data support the hypothesis that, although exogenous steroid therapy protects female estrogen-deficient, but the consumption of exogenous steroid may not be safe in the female, Therefore suggested that exercise preconditioning in ovariectomized females was neuroprotective as assessed by smaller infarct volumes and improved neurological deficits via the regulation of MMP9 and IL-10.

Keywords : Exercise preconditioning, ovariectomy, Permanent middle cerebral artery occlusion



Count: 381

Abstract ID: 129

Presentation Type: Oral

Blockade of D2 Receptors within Hippocampus CA1 Attenuates the Rewarding Effect of Intra-Ventral Tegmental Area Orexin

Submission Author: FarzanehSadat Naghvi

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Background and Aim : Mesolimbic dopaminergic pathway is one major type of dopamine signals in mammals originating from ventral tegmental area (VTA) and playing pivotal role in reward processing. The VTA innervates different cortical and limbic region like the hippocampal complex and receives several inputs from this region, therefore constituting regulatory mechanisms of reward system. These regions has been the focus of intense study in the reward literature and are the focus of current study, in which we tried to determine the effect of intra-hippocampal CA1 administration of Sulpiride as a D2-like receptor antagonist on the acquisition of orexin-induced conditioned place preference (CPP).

Methods : In this experiment, Cannulas were implanted unilaterally into the VTA and HIP of adult male albino Wistar rats weighing 200-250 g. For induction of conditioned place preference (CPP), orexin A (10ng/0.3 µl saline) microinjected into the VTA daily during a three-day conditioning phase. Thereafter, various doses of sulpiride (0.25, 1 and 4 µg/0.5 µl DMSO) were unilaterally injected into the CA1 during a 3-day conditioning phase after an intra-VTA injection of orexin A (10ng/0.3 µl saline). The conditioning score was then calculated.

Results : Our finding revealed that intra-hippocampal CA1 administration of D2 receptor antagonists during a 3-day conditioning phase attenuated the acquisition of place preference by orexin A (10ng/0.3 µl saline) in a dose dependent manner.

Conclusion : It is concluded that orexin-induced conditioned place preference may be mediated, at least in part, by stimulation of dopamine receptors in the CA1.

Keywords : Addiction; Reward; Dopamine receptors; Hippocampus; Orexin; Ventral tegmental area.

Count: 382

Abstract ID: 16

Presentation Type: Poster

A comparison between unilateral trunk muscles onset time during rapid arm abduction in healthy and non-specific Chronic Low Back Pain populations: Pilot study

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Background and Aim : Purpose: To compare the onset time of trunk muscle activity during rapid arm abduction between individuals with and without chronic low back pain (LBP). Summary of background data: In activity daily livings, limb movements are generally accompanied by anticipatory postural responses in trunk muscles to maintain the body balance. The available information on the recruitment manner (feedback or feed-forward) of trunk muscles in the LBP patients presents contradictions as compare to the pain-free subjects.

Methods : This observational study included thirty individuals with non-specific chronic LBP and thirty normal volunteers (Control group). Surface electromyographic signals from the unilateral trunk muscles (Transverse abdominal, External abdominal oblique and Erector spinae-) as well as deltoid muscle of the dominant limb were recorded simultaneously during rapid arm abduction. This process was repeated in both side of body. The onset of trunk muscles activity was the main outcome measure. Data were analyzed by multifactorial repeated measures ANOVA using SPSS.

Results : Effect of the body side was significant ($p < 0.03$) in both groups. Contralateral trunk muscles were activated earlier than the ipsilateral trunk muscles within the anticipatory window. A significant “group X body side” interaction was found ($p = 0.02$) in such a way that the mean of contralateral trunk muscles onset time had approximately 17.5 ms delay in LBP group, with respect to the control group.

Conclusion : Although, the pattern of trunk muscles activation was the same in both groups yet, the patients with LBP showed a delayed onset of feed-forward activation of contralateral trunk muscles during rapid

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arm abduction. Altered motor control associated with onset time of trunk muscles activity in LBP patients is suggested according to the results of the current study.

Keywords : low back pain; Trunk muscles; rapid arm abduction



Count: 383

Abstract ID: 18

Presentation Type: Poster

Investigating the underlying psychiatric disorders leading to suicide among patients hospitalized in Poisoning Center in Emam Reza Educational, Research and Treatment Center in Mashhad 2015

Submission Author: Fares Najari

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Background and Aim : One of the most common causes of mortality in the country is drug induced suicide, the identification of underlying risk factors of which can play an important role in reducing its incidence as well as providing practical solutions

Methods : All poisoned patients referred to poisoning treatment center in Imam Reza hospital (MUMS) were studied in a descriptive cross-sectional study in 2015 and based on selection criteria and using a researcher- developed questionnaire. Moreover, results were analyzed using spss21 and Venice Fisher test.

Results : Among a total of 824 patients half of whom were men and the other half were women and with an average age of 27 years for men and 20 years for women, the most common underlying psychological factors in patients holding under diploma, diploma and above, were respectively, impaired communication skills, depression and Type B personality. Moreover, the most important types of impaired communication skills were poor stress and problem-solving management. Also, the drug - stimulant use was somehow associated with the same impaired inter-personal communications.

Conclusion : Before providing the necessary and sufficient training to children who inevitably need time, chronological age, bitter and sweet experiences in their lives, it is essential to avoid entrusting heavy responsibilities on them, because normally an ounce of prevention is worth a pound of cure

Keywords : depression, personality, suicide, poisoning,



Count: 384

Abstract ID: 360

Presentation Type: Oral

Auditory reaction time alternations in tinnitus subjects

Submission Author: Hossein Namvar Arefi

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Background and Aim : Tinnitus is perception of sound in absence of external source. Reaction time is the time between sensory stimuli to a behavior. Alternation of auditory reaction time has been shown in the literature in subjects with tinnitus. This study investigates auditory reaction time in quiet and noise to different frequencies.

Methods : 15 subjects with tinnitus participated in this study. Basic auditory test and tinnitus evaluations was carried out. In order to measure auditory reaction time, the participants instructed to press a button after they hear a sounds. A software measured the reaction times and data were collected. Statistical analysis was done before and after sound therapy for comparison.

Results : Auditory reaction time to the tinnitus frequency decreases significantly ($p < 0.05$) in tinnitus subjects in both quiet and noise conditions. This alternation is significantly different in noise compared to the quiet condition. ($p < 0.05$)

Conclusion : Based on the results, noise can reduce auditory reaction time significantly. Also, alternation of auditory reaction time to the tinnitus frequency -especially in noise- could be due to attention involvement in tinnitus subjects.

Keywords : Auditory Reaction Time, Noise, Tinnitus

Count: 385

Abstract ID: 440

Presentation Type: Oral

Persistent Autistic -like behavioral impairments after early postnatal administration of Thimerosal in rats : protective roll of Alpha-Lipoic Acid

Submission Author: Zahra Namvarpour

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Background and Aim : The neurotoxic organomercurial thimerosal (THIM), utilized for decades as vaccine preservative, is a doubtful factor in the pathogenesis of some neurodevelopmental disorders, like Autism Spectrum Disorder (ASD). Mercury destroys glutathione and other antioxidants and ruins antioxidant defenses, and oxidative stress. The volume of mercury in vaccines, despite being less per injection, after several injections can be integrated, and passed the safety borders defined by USEPA. Certain individuals may show severe adverse reactions to low doses of Hg which are otherwise mainly benign to the majority of those exposed. Some individuals with idiopathic ASD may characterize such a sensitive population. According to these, utilizing a substance that can affect the action mechanism of mercury in the brain may be effective in reducing symptoms of ASD. α -Lipoic acid (ALA; 8,6-dithio-octanoic acid) is a natural material that in small volumes synthesized by some plants and animals and even human. This strong antioxidant which generally utilized for treatment of numerous neurological disorders such as diabetic polyneuropathy and multiple sclerosis and stroke, affects several cellular processes and accelerates the synthesis of glutathione (GSH). These findings suggest that low doses of ALA can have considerable therapeutic potential in neurological diseases which is related to oxidative stress. In order to evaluate the possible role of THIM in neurodevelopmental disorders like autism, we have examined its neurotoxic effects in a series of behavioral studies and according to the therapeutic effect of ALA, which relates with neurotoxic reactions of THIM on brain, we used this substance to decrease autistic like behaviors in male wistar rats.

Methods : Here we investigated neonatal administration of THIM at doses almost similar to those used in infant vaccines or higher, THIM (at doses 30, 300, and 3000 μ g Hg/kg), Im injections, on postnatal days 7, 9, 11, 15) on behaviors, which are typically altered in autism, such as locomotor activity, social affiliation

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and sociability, social memory and novelty and stereotyped behaviors such as grooming and freezing in male wistar rats.

Results : Adult rats, which were exposed to the entire range of THIM doses during the early postnatal life, demonstrated impairments of locomotor activity and In animals treated with the highest dose of THIM(3000 μ gHg/kg), social affiliation ,social memory and novelty were reduced,($p < 0.001$) while the duration of freezing , grooming as stereotyped behaviors,in THIM(3000 μ gHg/kg) were increased significantly.($p < 0.05$). so we administered different doses of ALA(5,10and 20mg/kg) with THIM(3000 μ gHg/kg) . findings revealed ALA(20mg/kg)had protective roll on social behavior impairments caused by THIM,($p < 0.001$) and entire doses of ALA,specially ALA(10mg/kg),ALA(20mg/kg) reduced stereotyped behaviors and increased locomotor activity.

Conclusion : These data document that early postnatal THIM administration causes lasting neurobehavioral impairments and ALA in low doses may protect against mercurials-induced neurotoxicity. If similar changes occur in THIM/mercurial-exposed children, they could contribute do neurodevelopmental disorders and may be Coapplication of ALA with THIM be effective in reducing the harmful effects.

Keywords : Thimerosal-Autism Spectrum Disorder-Alpha-Lipoic Acid-Behavioral Impairments



Count: 386

Abstract ID: 196

Presentation Type: Poster

Effect of melatonin on irradiation-induced lipid peroxidation and Catalase level in rat Subventricular zone

Submission Author: Shafighe Naseri

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Background and Aim : During radiotherapy, ionizing irradiation interacts with biological systems to produce free radicals, which attacks various cellular components. Neural stem cells are self-renewing, multipotent cells which could be found in subventricular (SVZ) and subgranular (SGZ) zones of the brain of mature ones. These zones are vulnerable to radiation-induced apoptosis and stress oxidative. Melatonin is a protector of neural cells against toxic material.

Methods : In this study we used 30 rats in 5 groups. Control, Sham radiation, group received only 100 mg/kg melatonin, Group exposed to dose of 25 Gy irradiation, and Group received 100 mg/kg melatonin and 25 Gy irradiation. Following exposure to radiation, rats were sacrificed after 6 h.

Results : Exposure resulted decline in the antioxidant enzymes activity increase in the Malondialdehyde (MDA) levels of the SVZ. Pre-treatment with melatonin (100 mg/kg) ameliorates harmful effects of 25 Gy irradiation by increasing antioxidant enzymes activity and decreasing MDA levels.

Conclusion : In conclusion melatonin is likely to be a threshold concentration for significant protection against 25 Gy gamma irradiation.

Keywords : melatonin,MDA,radiation,Catalase



Count: 387

Abstract ID: 308

Presentation Type: Poster

Automatic multiple sclerosis lesions segmentation based on weighted multi-channel method and robust k-means clustering

Submission Author: Masume Naserian

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Background and Aim : Multiple sclerosis (MS) is one of the progressive central nervous system diseases, which characterized by loss of nerve covering called myelin. By the loss of myelin, MS lesions appear on white matter (WM). MS is a progressive disease for which there is no certain treatment. So by early detection, it can be controlled and its complications that are serious problems in carrying out daily activities are prevented. Another importance of the MS lesions detection is to follow lesions changes in treatment period in order to prescribe medicine. MS lesions segmentation by specialists is a difficult and time-consuming task and the results depend on specialists' knowledge and experience. Also, lesions changes may be little and therefore their diagnosis would be difficult. Using a computer aided diagnosis (CAD) system is needed to accelerate and facilitate MS lesions detection. Magnetic resonance imaging (MRI) is the most effective way for the multiple sclerosis lesions diagnosis, so medical image processing can be helpful in early detection and slowing the disease.

Methods : Offering an automatic system for MS lesions segmentation is one of the challenges in neuroscience. In this paper, we propose an automatic, unsupervised CAD system to segment the MS lesions. The proposed system is based on multichannel method and uses three input images to extract different features from usual MRI modalities for MS lesions segmentation. Input images are: T1-weighted (T1-W), T2-weighted (T2-W) and proton density (PD) with the same properties. In pre-processing stage, by using MRIcro software, skull is removed. In the next step, by considering the importance of different input images, different weights are applied on them. In order to cluster the input images, k-means clustering is used and for having robust classification, within clustering distance (WCD) is employed. Then, by using statistical parametric mapping (SPM), a binary mask is created which includes WM and MS lesions and it is applied on the clustering output. Finally by considering abundance of the WM and MS lesions, they are extracted and segmented.

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Results : The proposed method is applied on Brainweb dataset. For evaluating the proposed automatic CAD system, Dice Similarity Coefficient (DSC) is used. The numerical values of DSC are equal to 0.92, 0.83, 0.81 and 0.78 achieved with different noises, %1, %3, %5 and %7 respectively.

Conclusion : In the proposed automatic CAD system, three different modalities, T1-W, T2-W and PD were used to segment the MS lesions. By using the multichannel method, performance of the proposed system were increased. Also by considering the MS lesions location, a binary mask was created which included the WM and MS lesions. The proposed CAD system is an unsupervised system and does not need any data learning. Compared to the recent methods, the proposed system showed better performance.

Keywords : Segmentation; MS; CAD system; MRI



Count: 388

Abstract ID: 82

Presentation Type: Poster

Minocycline attenuates the development of pain related behaviors during the acute and chronic phase of arthritis inflammation

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Background and Aim : Pain is one of the main protests of inflammatory diseases, hence, understanding the mechanisms which involved in the induction and persistence of pain is essential. Microglia is a contributing factor in the onset and maintenance of inflammation. Increased microglial activation increases the level of central pro-inflammatory cytokines and the development of central sensitization following inflammation. The aim of this study was evaluate the relation of spinal microglia activity with pain related behaviors during Complete Freund's adjuvant (CFA)-induced inflammation.

Methods : Inflammation caused by subcutaneous injection of Complete Freund's adjuvant (CFA) in a single dose to the animals right hind paw. The edema and hyperalgesia caused by inflammation, are measured by Plethysmometer and Radiant Heat respectively, on days 0,7,14 and 21. Spinal Iba-1 protein expression was detected by Western blotting. Minocycline hydrochloride (Sigma, U.S.A) was administered i.p. at a dose of 40mg/kg daily.

Results : Our study findings indicated that CFA injection to right hindpaw of rats increased paw volume and hyperalgesia significantly during different stages of study, while Minocycline treatment significantly reduced paw volume and hyperalgesia. CFA injection into the right hindpaw of the rat increases the expression of molecules Ionized calcium binding adaptor molecule -1 (Iba-1) on different days of study, while Minocycline administration reduced spinal Iba-1 expression significantly compared to the CFA group.

Conclusion : The results of this study indicated the significant roles of microglia activation in deterioration of pain related behaviors during different stages of CFA-induced inflammation. The steady injection of Minocycline (as a microglia inhibitor) could reduce the inflammatory symptoms.

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Keywords : Inflammation, pain, microglia, minocycline

Count: 389

Abstract ID: 292

Presentation Type: Poster

Evaluation of Oxidative Stress Biomarkers in Rat Brain Exposed to Diazinon and Cerium Oxide Nanoparticles

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Background and Aim : Considering that the involvement of oxidative stress has been implicated in the toxicity of organophosphate insecticides, the objective of the present study was to investigate antioxidants and oxidative stress markers in the brain of Wistar rats treated with sub-acute dose of diazinon. In addition, the effect of cerium oxide nanoparticles (CeO₂ NPs), as a probable antioxidant agent, on attenuation of diazinon-induced oxidative stress was evaluated.

Methods : 24 rats were randomly assigned to 1 of 4 treatment groups: diazinon (75 mg/kg BW, once a day; n=6), CeO₂ NPs (45 mg/kg BW, once a day; n=6), diazinon + CeO₂ NPs (diazinon; 75 mg/kg BW, once a day + CeO₂ NPs; 45 mg/kg BW, once a day; n=6) and control (tween oil, as vehicle of diazinon, once a day + normal saline, as vehicle of CeO₂ NPs, once a day; n=6). Diazinon and tween oil were given to rats orally via gavage and CeO₂ NPs and normal saline were given to rats intraperitoneally by IP injection once a day for 2 weeks. Ultimately, antioxidants and oxidative stress biomarkers including catalase (CAT) activity, total antioxidant capacity (TAC), total thiol molecules (TTM), lipid peroxidation (LPO), and reactive oxygen species (ROS) were measured at the end of the treatment in brain tissue.

Results : Our results indicated that sub-acute exposure to diazinon significantly decreased the levels of TAC, TTM and CAT activity in the rat brain as compared with control group (P<0.001). Moreover, treatment with diazinon significantly increased LPO and ROS, as markers of oxidative stress, in comparison with control group (P<0.001). On the other hand, as expected treatment with CeO₂ NPs did not change oxidative stress biomarkers in comparison with control group. In addition, co-administration of CeO₂ NPs

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with diazinon considerably increased the levels of TAC, TTM and CAT activity and also decreased LPO and ROS in the rat brain as compared with diazinon group.

Conclusion : Generally, the results of the present in vivo study confirmed that CeO₂ NPs in specific dose can reduce oxidative stress induced by diazinon in brain tissue of rats. Therefore, CeO₂ NPs can be considered as a preventive agent versus adverse effects that caused by oxidative stress process in brain tissue.

Keywords : Cerium oxide nanoparticles; Diazinon; Neurotoxicity; Organophosphorus insecticide; Oxidative stress



Count: 390

Abstract ID: 262

Presentation Type: Poster

Investigation of RORA Gene Expression in Iranian Multiple Sclerosis (MS) patients

Submission Author: Sakineh Nayeri

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Background and Aim : Multiple sclerosis (MS) is one of the most important autoimmune diseases targeting central nervous system (OMIM: 126200). According to the evidence, near 300,000 individuals are suffering from MS in the United States. Given that this disorder is known to be the second factor of movement disability in the world which is has been increasing in recent years, it is essential to perform fundamental and functional studies on prevention and treatment of it. Although the major causes of MS incidence are still unclear, it is believed that CD4 (+) myelin-specific T cells play central role in generation and inflammation balance. Based on this theory, activated CD4 (+) T cells in peripheral, penetrate into the CNS and trigger the inflammation cascade by inducing secretion of cytokine and chemokine. Among Th17 cells, one of CD4 (+) T cell lines are recently shown to be mainly involved in MS incidence. Based on evidence in the role of RORA gene in the developmental pathways Th17 cells, and regarding evidence suggesting ROR receptors as potential treatment targets respecting inflammation disorders such as MS, study on this gene in patients would help us discover the molecular causes of MS.

Methods : We selected 30 individuals affected with MS and 30 healthy normal controls matched in gender and age. After filling a questionnaire, peripheral blood was obtained and total RNA was extracted by GeneAll kit. Then, cDNA was synthesized using GeneAll cDNA synthetize kit. Expression of RORA gene was investigated using TaqMan Real-Time PCR. Results were analyzed by Linreg and Rest 2009 software.

Results : in this study, expression of RORA gene was not significantly reduced compared to controls (P Value: 0.197). Also, expression of RORA gene was not significantly different between genders (P Value: 0.142•P Value: 0.156).

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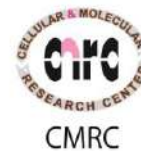
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Conclusion : findings of this study show that there is no significant difference in RORA gene expression between cases and control group. Also it can be concluded that expression level of RORA gene may have not important effect on the disease.

Keywords : Multiple Sclerosis - Gene Expression - RORA Gene



Count: 391

Abstract ID: 131

Presentation Type: Poster

The evaluation of Astaxanthin and GDNF co-effect on survival of dopaminergic neurons

Submission Author: Zahra Nayeri

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Background and Aim : Parkinson's disease occurs following the degeneration of midbrain dopaminergic (DAergic) neurons damaged by elevated oxidative-nitrative stresses and induced neuroinflammation. Therefore, protection of dopaminergic neurons against these injuries in the form of neuroprotection is considered a therapeutic measure for PD. Astaxanthin (ASTZ) is a strong antioxidant effects suspected to be a protecting agent for neuronal cells against oxidative stress and neuroinflammation. Glial cell line-derived neurotrophic factor (GDNF) is a well-known neuroprotective agent and we and others have already reported its protecting effects on DAergic neurons.

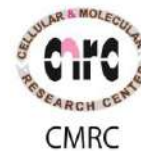
Methods : In this study, we investigated the protective effect of ASTZ and GDNF on DAergic cell line SY-SH5Y against 6-OHDA-mediated toxicity. In order to produce recombinant GDNF (rGDNF) protein, HEK-293T were transfected with an expression vector harboring mouse GDNF cassette and their growth medium was collected 24 hours later. We next applied serial dilutions of this conditioned medium to growing SY-SH5Y cells to determine the doubling concentration of GDNF (DCGDNF). We also treated SY-SH5Y cells with serial concentrations of ASTZ to determine the maximum dose of the compound that protects the cells against 6-OHDA toxicity. Finally, the DAergic cell line was co-treated with the reproduced doses of GDNF and ASTZ and the survival rate was determined by MTT assay.

Results : The results indicate that the co-treated cells under synergistic effects of the two compounds are significantly more resistant to toxicity compared to single treatments. We are currently analyzing changes

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in expression levels of genes involved in cell apoptosis, survival, growth and proliferation to examine the impact of each treatment and co-treatment on our cell line.

Conclusion : We have examined the additive/synergistic effects of Astaxanthin and GDNF on the survival of dopaminergic cell line SY-SH5Y. We found that both compounds can protect the cells against 6-OHDA-mediated toxicity, but their co-effect is significantly more profound than their individual effect.

Keywords : Parkinson's disease; Astaxanthin; Glial cell line-derived neurotrophic factor; neuroprotection



Count: 392

Abstract ID: 132

Presentation Type: Poster

Examination of Metformin effect on survival of dopaminergic neurons

Submission Author: Zahra Nayeri

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Background and Aim : Metformin, a biguanide family member commonly used for type 2 diabetes, reportedly due to its anti-oxidant properties. Metformin can down regulate free radical levels by inducing Thioredoxin expression by activating the AMPK pathway. Some newer studies have shown that Metformin is beneficial for Alzheimer and Huntington and can have neuroprotective effects.

Methods : In this study, we investigated the protective effect of Metformin on dopaminergic cell line SY-SH5Y against parkinsonian toxin 6-OHDA. Using MTT assay, we determined the lethal dose of Metformin and then applied RT-PCR to examine changes at expression levels of genes involved in cell survival and apoptosis.

Results : Our primary results show that the SY-SH5Y cell line treated by Metformin increasingly resists 6-OHDA toxicity. Metformin exerts its neuroprotective effects by suppressing anti-apoptotic genes and inducing pro-apoptotic ones.

Conclusion : Metformin has protective effects on the dopaminergic neurons via upregulating pro-survival and anti-apoptotic pathways and presumably by blocking increase in free radical levels.

Keywords : Dopaminergic neurons; Metformin; Neuroprotection; Apoptosis



Count: 393

Abstract ID: 237

Presentation Type: Oral

FTY720 ameliorates memory performance and synaptic plasticity deficits in a rat model of brain ischemia

Submission Author: Maryam Nazari

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Background and Aim : Ischemic stroke occurs when an artery in the brain is blocked. The middle cerebral artery is most often occluded by atherosclerotic or thrombotic processes. The brain ischemia elicits numerous pathogenic cascades that develop over time and space, causing injury to the neurons. In hippocampal CA1 pyramidal cells, hypoxia induces major change in the electrophysiological responses. It has been suggested that MCAO (Middle Cerebral Artery Occlusion) impairs the LTP (Long Term Potentiation) induction in Schaffer collateral-CA1 synapses. Fingolimod (FTY720) is a known sphingosine-1-phosphate (S1P) receptor agonist. Several studies have shown the therapeutic efficacy of FTY720 in neurodegenerative disorders. However, the neuroprotective mechanisms in brain ischemia have not been adequately studied. Therefore, the present study aimed to investigate the effects of FTY720 on the impairment of learning and memory and hippocampal synaptic plasticity induced by MCAO in ischemic brain injury.

Methods : Twenty eight male rats were randomly divided into four groups of control (n = 7), sham (n = 8), ischemic-reperfusion + vehicle (I/R + V; n = 7), and I/R + FTY720 (n = 6). After 1 h of the occlusion of artery, the filament was gently withdrawn to allow reperfusion for the next 7 days. The animals first received a dose of FTY720 (0.5 mg/Kg) or its vehicle (intra-peritoneal) twenty-four hours before surgery in I/R + FTY720 and I/R + V groups, respectively. The administration of FTY720 or its vehicle continued every other day. Neurologic assessment was performed 24 h, 3 and 7 days after the surgery. The passive avoidance test and field potential recording were used for evaluation of learning, memory and synaptic plasticity. The field potential recording was performed seven days (reperfusion period) after the initial procedure. The brain infarct volume was measured by triphenyltetrazololium hydrochloride (TTC) staining.

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Results : The neurological deficit scores of both I/R groups were statistically higher than the control and sham groups 24h after surgery. However, there was a tendency towards a better outcome in FTY720-treated animals on days 3 after MCAO, particularly showed a significant reduction on day 7. Moreover, the administration of FTY720 significantly reduced the size of the lesion, improved the memory impairment of MCAO rats, and increased the STL time. In addition, the field potential recording demonstrated a marked reduction in induction of long-term potentiation of MCAO animals. However, administration of FTY720 recovers the magnitude of the LTP without any effects on presynaptic plasticity and neurotransmitter release probability.

Conclusion : The results of this study demonstrated that MCAO in rats impairs the retention of passive avoidance tasks and multiple injection of FTY720 improved the memory performance after MCAO by LTP induction via post-synaptic mechanisms. In addition, single injection was not sufficient to rescue at least the neurological score 24 h after ischemia. Thus, administration of FTY720 may be a promising therapy for recovery of memory and synaptic plasticity impairment after MCAO.

Keywords : FTY720; Fingolimod; LTP; Sphingosine-1-phosphate; Stroke



Count: 394

Abstract ID: 279

Presentation Type: Oral

Emotional Stimuli Facilitate Time Discrimination in Children with ADHD

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Background and Aim : The aim of this study was to compare the effect of different emotional stimuli (neutral, positive and negative) on time perception in children with attention-deficit/hyperactivity disorder (ADHD) and normal children in dual-task form.

Methods : Five hundred and ninety-nine students from primary schools were randomly selected. The Conner's Teacher Rating Scale (CTRS) questionnaire was completed by teachers. 100 children with a score above the cut-off point for the CTRS were further assessed using the Children Symptom Inventory (CSI-4). 34 children with ADHD and 31 controls completed an emotional time discrimination task in two blocks of 1000 ms and 2000 ms duration. Children were asked to compare three image groups: neutral with neutral, neutral with positive, and neutral with negative images.

Results : Children with ADHD had significantly better performance in the emotional time discrimination task across all conditions when compared with controls: on average, discrimination thresholds were approximately 35 ms shorter for the children with ADHD.

Conclusion : Our results indicate that children with ADHD have higher sensitivity to time relative to controls in a situation in which they must distribute resources between temporal and emotional processing. On the basis of the interference effect and the working memory capacity hypothesis, this dividing of attention causes a decrease of time accuracy in normal children.

Keywords : ADHD, time perception, time discrimination, emotion; dual-task



Count: 395

Abstract ID: 562

Presentation Type: Poster

What Nanoparticle Can Cross Blood Brain Barrier?

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Background and Aim : The blood–brain barrier (BBB) prevents entry into the brain of most molecules such as many drugs from the blood. Exist the BBB makes difficult the development of new methods for treatment or imaging of brain. Drug delivery mediated by nano-carriers is represent a promising rout for crossing BBB. Over the past 40 years, substantial research efforts have demonstrated that nano-carriers can be engineered for effective systemic and local delivery of therapeutics to the CNS. A very critical and important requirement for nanoparticulate brain delivery is biocompatibility, nontoxicity and rapid biodegradability in order to inhibit long-term accumulation in CNS tissue. Physical and chemical properties such as shape, surface charge and etc. of the nano-carriers also are important effective factors on their ability overcoming this barrier. In this minireview, we tend to mention some these properties of nano-carriers for enhancing efficiency of drug delivery to brain by changing only physical and chemical properties of nano-carriers.

Methods : Over the past 40 years, substantial research efforts have demonstrated that nano-carriers can be engineered for effective systemic and local delivery of therapeutics to the CNS. A very critical and important requirement for nanoparticulate brain delivery is biocompatibility, nontoxicity and rapid biodegradability in order to inhibit long-term accumulation in CNS tissue.

Results : Physical and chemical properties such as shape, surface charge and etc. of the nano-carriers also are important effective factors on their ability overcoming this barrier.

Conclusion : In this minireview, we tend to mention some these properties of nano-carriers for enhancing efficiency of drug delivery to brain by changing only physical and chemical properties of nano-carriers.

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Keywords : Blood Brain Barrier; Nanoparticle; Drug Delivery



Count: 396
Abstract ID: 134
Presentation Type: Oral

Effect of administration of Mesenchymal stem cells conditioned medium on behavioral and cellular aspects of inflammation during adjuvant-induced arthritis

Submission Author: Vida Nazemian

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Background and Aim : Rheumatoid arthritis is a type of inflammatory pain and is an autoimmune and chronic inflammatory disease which can lead to hyperalgesia, edema, pain and decreased motor activity in area. Plantar injection of CFA in rats induced arthritis as an inflammatory chronic pain models and in many ways is similar to human rheumatoid arthritis. Increment of serum TNF- α levels play an extremely central role in driving inflammation, hyperplasia and aggregation of leukocytes in the synovial membrane. Mesenchymal stem cells conditioned medium has anti-inflammatory mediators which can regulate the immune responses, alleviate inflammatory symptoms and has a paracrine effects too. The aim of this study was to evaluate the effects of mesenchymal stem cells conditioned medium on behavioral aspects of inflammatory pain induced by CFA adjuvant.

Methods : Complete Freund's adjuvant (CFA)-induced arthritis (AA) was caused by single subcutaneous injection of CFA into the rats hind paw on day zero. MSC-CM was administered daily and intraperitoneal during the 21 days of the study after CFA injection. Hyperalgesia, edema and serum levels of TNF- α were assessed on days 0, 7, 14 and 21 of the study respectively with radian heat, plethysmometer and ELISA instrument.

Results : The results of this study indicated the role of MSC-CM in reducing edema, hyperalgesia and serum levels of TNF- α during different phases of inflammation caused by CFA adjuvant. The continuing injection of MSC-CM could reduce the inflammatory symptoms to a time before induction of inflammation.

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Conclusion : MSC-CM significantly reduce the serum levels of TNF- α which was aligned with a significant reduction in hyperalgesia and paw edema during different phases of CFA-induced inflammation in male wistar rats. Based on the results of this research, it is expected that MSC-CM can reduce pro-inflammatory cytokines which can alleviate inflammatory symptoms. However, further studies are needed to evaluate the effect of MSC-CM on anti-inflammatory cytokines and other pro-inflammatory cytokines and intracellular signaling pathways.

Keywords : Inflammation; pain; Hyperalgesia; Edema; TNF- α ; Mesenchymal stem cells conditioned medium



Count: 397
Abstract ID: 28
Presentation Type: Oral

Effect of Bilingualism on Volume of Corpus Callosum

Submission Author: Ehsan Negin

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Background and Aim : In spite of the effect of the left hemisphere domination on first language acquisition in human, studies suggest activities and the role of both hemispheres in learning second language. Therefore learning a second language requires more communication between the two hemispheres. Regarding the role of the corpus callosum as the only data-centric interface between the two hemispheres, the aim of this study was to evaluate and compare the volume of the corpus callosum in monolingual and bilingual individuals.

Methods : This cross-sectional study was conducted on 24 samples, 16 simultaneous bilinguals (eight Kurdish-Persian, eight Turkish-Persian) and eight monolinguals with age range of 18 to 30 years, all right handed, and in equal numbers in both sexes (female and male), volume of corpus callosum determined by MRI. Data was analyzed by parametric and non-parametric statistical tests.

Results : The volume of corpus callosum is smaller in monolinguals in comparison with bilinguals, in which a significant difference was observed ($p=0.04$).

Conclusion : According to the language data transmission and the rate of processing by the corpus callosum between two hemispheres, it seems for improving the quality of aural rehabilitation, the findings of present study will be useful before performing programs like auditory training, language learning, and by development of neuroplasticity which is often decoded by stimulus that occur in the hemisphere in contrast to the dominant hemisphere.

Keywords : Corpus Callosum; Bilingualism; Neuroplasticity; Neurolinguistics



Count: 398
Abstract ID: 65
Presentation Type: Poster

Review of information processing model in autistic children

Submission Author: Abbas Nesayan

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Background and Aim : The major parts of information processing model are input, processing, output, executive function and emotional context. These areas impressed through special condition such as autism. Autism spectrum disorder (ASD) is a neurological and developmental disorder that begins early in childhood and lasts throughout a person's life. It affects how a person acts and interacts with others, communicates, and learns.

Methods : This study is descriptive and type of library. The study is done by reviewing studies related to autism and information processing model

Results : According to findings, sensory or receptive ability to be affected by the inability to moderate incoming experience. One of the characteristics of autism is hypersensitivity or hypo sensitivity that showing difficult in input. Studies indicate that individual with autism trouble with thinking skills like decision making, problem solving, executive function, reasoning and evaluation (processing). also They have difficult with output such as motor skills and motor planning

Conclusion : : The study indicate that autistic children are deficient in components of information processing model; so they should be exposed to necessary education and intervention.

Keywords : information processing model, autistic children, input, processing, output, executive



Count: 399

Abstract ID: 497

Presentation Type: Poster

Comparison the Aggression in girls and boys high school students And Related Factors

Submission Author: Shahrzad Nezarat

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Background and Aim : Puberty is serious crisis in the teenagers. Aggression is one of the problems that appear during physical and psychological changing of mature period. In fact mentioned unpleasant effects on singular inside shapes of teens and also between the other teenagers, attracted the researchers attention. Probers believe that aggression manners matched by boyhood genus, but some believe that sexuality doesn't have any effect on aggression tools and the only way to show the aggression manners in two kind of sexualities are different. So in this research we decided to do compare the aggression measure between two different genders and also all of the affective factors.

Methods : This was a cross-sectional study that performed by multistage cluster sampling on 357 girl and boy high school students in first to fourth classes in Abadan city in 2016. Data was collected by demographic information form and Eysenck aggression questionnaire. Data was analyzed by descriptive statistic, Independent t-test , Pearson & ANOVA correlation coefficient in SPSS software , Vol 21.

Results : 357 high school students completed questionnaires .students includes 195 boys and 162 girls. The age range of participants 14 to 19 years old. aggression score was 28.9 in students. The average . aggression in girls was 30.1 with SD 8.3 (Standard Deviation) and in boys the average aggression was 27.9, according to SD 7.2. We've found a significant relationship between aggression measure and students sexually. ($p = 0.008$). At the result of that, the girls aggression measures were more than boys. Moreover, there was a significant relationship between girls measure aggression with the menstrual age ($P=0.04$), student's scores point average($P=0.04$) and the mother's education level($P=0.03$). On boys we've found significant relationship between aggression measures by scores average at school($P=0.01$). in both genders there was no relationship between aggression measure with educational level, Field of Study, Rating of children in the family, Number of children in family, Family income, Parents jobs and the education level of Father.

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Conclusion : These research results, is showed that the medium aggression on both genders but the level of aggression on girls is higher than boys.It is common belief that aggression manners are tied by the role of boyhood genus. So this image that the boys have more freedom to showing their hostile feelings, also overcoming physical aspects aggression is facilitating by their physical strength is backed aggression on boys. Our findings of this research is contrary to this belief.this discrepancy may be linked by the cultural and social differences and even the age of group ranges. Therefore it's necessary to do more accuracy study on pathology related to aggression in order to achieve the comprehensive understanding of this problem in the future. Also it needs to do the mental health planning dealing with this problem and have a special place.

Keywords : aggression;students;Puberty;teenagers



Count: 400

Abstract ID: 335

Presentation Type: Poster

Neurosteroid allopregnanolone attenuates cognitive dysfunctions in 6-OHDA-induced rat model of Parkinson's disease

Submission Author: Akram Nezhadi

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Background and Aim : Cognitive deficits have an extensive influence on the quality of life of the Parkinson's disease (PD) patients. Previous studies have shown that lack of steroid hormones have an important role in the development of PD. Therefore, in this study the effects of neurosteroid allopregnanolone (Allo) on the PD-induced cognitive disorders were assessed.

Methods : To simulate PD, 6-hydroxydopamine (6-OHDA) was injected into the rat's substantia nigra. Allo (5 and 20 mg/kg, orally) were administered on the day after the 6-OHDA injection and continued during the entire treatment period (two months). Cognitive behaviors were assessed by Morris water maze (MWM), novel object recognition (NOR) and object location tasks.

Results : The data indicated that Allo significantly improved the 6-OHDA-induced cognitive impairment which revealed by the reduction of time spent to find out platform (escape latency) and the increase of retention time in MWM test and also with increase in the exploration index in NOR and object location tasks.

Conclusion : Present study strongly supports the pro-cognitive property of allopregnanolone in PD.

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Keywords : Parkinson's disease, Allopregnanolone, 6-OHDA, Cognitive behaviors, Learning and memory



Count: 401

Abstract ID: 692

Presentation Type: Poster

Glutamatergic system controlled combine administration of 3,4-methylenedioxymethamphetamine and cannabinoid in amygdala via modulation of BDNF/TrkB pathway

Submission Author: Saba Nicknam

Saba Nicknam¹, Saba ², Mohammadreza³, Ghorbangol⁴

1. -
2. Nicknamfar
3. Zarrindast
4. Ashabi

Background and Aim : N-methyl-D-aspartate (NMDA) receptors activation regulate neuronal plasticity and firing in the brain. Consumption of cannabinoid receptors agonist such as cannabis is widely taken in 3,4- methylenedioxymethamphetamine (MDMA) users, especially among younger adults. Detecting the relation among NMDA and MDMA/Arachidonylcyclopropylamide (ACPA) co-consumption on neuronal spontaneous activity and Brain-derived neurotrophic factor (BDNF) and Tyrosine-kinase B (Trk-B) level are the main objective of this study. We tested the role of NMDA receptor on MDMA and ACPA combination on neuronal spontaneous activity in the central amygdala (CeA).

Methods : Male Rats were anesthetized with intra-peritoneal injections of urethane; MDMA, D-2-amino-5-phosphonopentanoate (D-AP5, NMDA receptor antagonist) were injected into CeA. ACPA was administrated by intracerebroventricular injection. Two hours after anesthesia, CeA collected from brain to measure BDNF and Trk-B level.

Results : Single administration of MDMA and/or ACPA reduced firing rates in the CeA dose-dependently. Injection of D-AP5, ACPA and MDMA reduced firing rate and increased coefficient of ISI variation compared with sham group ($P<0.001$). Interestingly, NMDA antagonist, ACPA and MDMA injection reduced BDNF and Trk-B level compared with ACPA+MDMA in the CeA ($P<0.01$).

Conclusion : We can conclude that glutamatergic receptors reversed the protective role of acute MDMA+ACPA injection via BDNF/Trk-B pathways.

Keywords : NMDA, cannabinoid receptor, MDMA, amygdala, BDNF, spontaneous activity

NMDA reseptor adjusted co-administration of ecstasy and cannabinoid receptor-1 agonist in the amygdala via stimulation of BDNF/Trk-B pathway in adult male rats

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Submission Author: Saba Nicknamfar

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2. Department of Physiology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
3. Genetics Laboratory, Iranian National Center for Addiction Studies (INCAS), Tehran University of Medical Sciences, Tehran, Iran

Introduction: N-methyl-D-aspartate (NMDA) receptors activation regulate neuronal plasticity and firing in the brain. Consumption of cannabinoid receptors agonist such as cannabis is widely taken in 3,4- methylenedioxyamphetamine (MDMA) users, especially among younger adults. Detecting the relation among NMDA and MDMA/Arachidonylcyclopropylamide (ACPA) co-consumption on neuronal spontaneous activity and Brain-derived neurotrophic factor (BDNF) and Tyrosine-kinase B (Trk-B) level are the main objective of this study. We tested the role of NMDA receptor on MDMA and ACPA combination on neuronal spontaneous activity in the central amygdala (CeA).

Materials & Methods: Male Rats were anesthetized with intra-peritoneal injections of urethane; MDMA, D-2-amino-5-phosphonopentanoate (D-AP5, NMDA receptor antagonist) were injected into CeA. ACPA was administrated by intracerebroventricular injection. Two hours after anesthesia, CeA collected from brain to measure BDNF and Trk-B level.

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Conclusion: We can conclude that glutamatergic receptors reversed the protective role of acute MDMA+ACPA injection via BDNF/Trk-B pathways.

Keywords: Amygdala; BDNF; Cannabinoid receptor-1; NMDA receptor.



Count: 402

Abstract ID: 587

Presentation Type: Oral

The role of Progranulin in 2-Deoxyglucose neuroprotection in an experimental temporal lobe epilepsy model in rats.

Submission Author: Farnaz Nikbakht

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Background and Aim : The essential role of Progranulin as a neurotrophic factor has been demonstrated in frontotemporal lobar dementia. Though it is postulated that progranulin level in status epilepticus is a marker of neuronal recovery, the exact role of progranulin in epilepsy has not been yet revealed. On the other hand, the glucose analog 2-deoxyglucose (2DG), which partially inhibits glycolysis, exerts anti-seizure and neuroprotective effects in animal models. The antiepileptogenic action of 2-Deoxyglucose involves brain-derived neurotrophic factor and its receptor. However, till now there is no study concerning any relation between progranulin and 2 DG. In this study we try to show any possible link between temporal lobe epilepsy , progranulin and 2-Deoxyglucose

Methods : 48 male Wistar rats were divided into 7 groups: 1- Temporal lobe epilepsy induction by microinjection of 0.5 µg/µl of KA i.cv 2- KA + 2-DG 125 mg/kg (2-DG was injected i.p, half an hour before epilepsy modeling and was repeated daily for the next 4 days following modeling) 3- 2-DG alone, with dosage 125 g/kg 4- Control/ vehicle 5-sham operated 96 hours after KA injection, animals were sacrificed and Progranulin level in hippocampus was assessed by Western blotting. CA3 and Hilar regions of hippocampus were stained by Cresyl violet and Fluoro-Jade B to count the number of necrotic and degenerative neurons.

Results : Histological analysis showed that 2-DG 125mg/kg, could reduce the number of necrotic and degenerative neurons in CA3 and Hilar areas. 2-DG also caused a significant increase in Progranulin level in hippocampus.

Conclusion : . It seems that one of the neuroprotective mechanisms of 2DG is through modulating brain inflammation by progranulin production.

Keywords : Temporal lobe epilepsy, progranulin , 2 deoxyglucose

Count: 403

Abstract ID: 505

Presentation Type: Oral

The Effect of Deprenyl on the Expression of Bcl-2 and PPARGC1A Genes in Hydrogen Peroxide-treated Neural Stem Cells

Submission Author: Ali Nikfar

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Background and Aim : Deprenyl as monoamine oxidase inhibitor, is one of the first adjunct therapies in clinical neurology. Growing evidence has highlighted that oxidative stress and ROS-generation have been implicated in the pathogenesis of several neurological disorders. This study was conducted to evaluate the potential neuroprotective effect of deprenyl against hydrogen peroxide-induced oxidative stress in hippocampus-derived neural stem cells (NSCs).

Methods : This study was an experimental study performed on four groups: N (untreated NSCs), ND (NSCs treated with 10-6 μ M deprenyl), NH (NSCs treated with 125 μ M H₂O₂), and NDH (NSCs treated with 10-6 μ M deprenyl and 125 μ M H₂O₂). Neural stem cells were isolated using enzymatic digestion from hippocampus region of 3 day old neonatal rat brain. The neurospheres were dissociated to single cells and cultured in adherent plates. For these cells, immunocytochemical evaluation was performed for nestin marker. Isolated neural stem cells were pretreated with different doses of deprenyl for 48 hours and then exposed to 125 μ M H₂O₂ for 30 min. Using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) assay, terminal deoxynucleotidyl transferase-mediated UTP nick end labeling (TUNEL) staining and real time RT-PCR; we evaluated the effects of deprenyl on cell survival, apoptosis, and Bcl-2 and PPARGC1A expression rates in pretreated hippocampus-derived neural stem cells compared to control groups.

Results : Results showed that, deprenyl significantly inhibits apoptosis and increased expression of Bcl-2 and PPARGC1A mRNA in pretreated neural stem cells compared to control groups ($p < 0.05$).

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Conclusion : These results suggest that deprenyl protects neural stem cells against oxidative stress-induced cell death, and therefore, it may be used to promote the survival rate of neural stem cells and can be a candidate for treatment of oxidative stress-mediated neurological diseases.

Keywords : Deprenyl, Neural Stem Cell, Oxidative Stress, ROS, Bcl-2, PPARGC1A, Apoptosis



Count: 404
Abstract ID: 136
Presentation Type: Poster

MOLECULAR NEUROBIOLOGY OF RECOVERY WITH THE TWELVE STEPS ADDICTION RECOVERY

Submission Author: Arash Nikkholgh

Arash Nikkholgh¹

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Background and Aim : Humans are biologically predisposed to drink, eat, reproduce, and desire pleasurable experiences. Impairment in the mechanisms involved in reward from these natural processes lead to multiple impulsive, compulsive, and addictive behaviors governed by genetic polymorphic antecedents.

Methods : Meta-Analysis

Results : by linking the twelve-step program and fellowship with insights from neuroscience review the molecular neurobiological aspects of the twelve-step program adopted by self-help groups such as Alcoholics Anonymous (AA) and Narcotics Anonymous (NA).

Conclusion : there are a plethora of genetic variations at the level of mesolimbic activity, polymorphisms of the following candidate genes are known to predispose individuals to excessive cravings (e.g., cocaine) and can result in aberrant behaviors The list of genes includes the serotonergic 2A receptor (5-HTT2a); serotonergic transporter (5-HTTLPR); DRD2 receptor; DRD4 receptor; DA transporter (DAT1); the catechol-O-methyltransferase (COMT); monoamine oxidase genes.

Keywords : molecular neurobiology-twelve.step program - mesolimbic-Narcotics Anonymous



Count: 405

Abstract ID: 595

Presentation Type: Poster

Expression level analysis of DRD4 in patients with Attention deficit hyperactivity disorder

Submission Author: Elmira Nobakht

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2. Pediatric neurorehabilitation research center, University of social welfare and rehabilitation sciences, Tehran, Iran
3. Department of biology, Tehran North branch, Islamic Azad university, Tehran, Iran

Background and Aim : Attention deficit hyperactivity disorder (ADHD) is a neurodevelopment behavioral disorder in children with no clarified etiology. ADHD is a disease with high heritability and major genetic bases. Gene expression studies could help to better understand the mechanisms and pathways involved in the disorder as well as development of molecular diagnosis markers. In present study expression level of DRD4 (D4 dopamine receptor) evaluated in blood samples of Iranian ADHD patients.

Methods : Patients in this study were selected from the three provinces of Iran, (Tehran, Alborz and Isfahan). Blood samples of 70 ADHD, and 70 non-psychiatric subjects collected. RNA extracted and cDNA synthesized. Expression level of DRD4 gene in total blood by using quantitative Real time PCR (comparative method with GAPDH as housekeeping gene) assessed. Also SWAN (Swanson tests for ADHD patients) and Wechsler intelligence tests (version III), examined for psychological assessments.

Results : The results showed significant down regulation of DRD4 expression level in patients with ADHD in compare with non-psychiatric children. Down regulation of DRD4 gene expression had significant correlation with both section of SWAN questioner, Hyperactivity and attention which confirms the importance of the dopamine pathway in ADHD disease.

Conclusion : Present study indicated DRD4 as gene involved in the etiology and potential diagnostic molecular markers for ADHD.

Keywords : DRD4 - ADHD - gene expression



Count: 406
Abstract ID: 591
Presentation Type: Poster

Expression level analysis of NRG1 in patients with Autism spectrum disorder

Submission Author: Elnaz Nobakht

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Background and Aim : Autism spectrum disorder (ASD) is known as a neurodevelopmental disorder with difficulty in social relationships, Verbal and non-verbal communication and Repetitive and ritualistic behaviors. Symptoms of this disorder occur before the age 3 and the main reason is unknown. Although genetics is known as the primary cause of autism spectrum disorders, but it is still not clear which genes and molecular mechanisms is effective in the pathogenesis of this disease spectrum. A better understanding of molecular mechanisms and effective signaling in pathophysiology of the diseases can be useful in creating effective treatment. In present study, mRNA expression level of NRG1 gene as gene involved in central nervous system development assessed in ASD patients vs. non-psychiatric subjects.

Methods : Patients in this study were selected from the three provinces of Iran, (Tehran, Alborz and Isfahan). Blood samples of 70 ASD, and 70 non psychiatric subjects collected. RNA extracted and cDNA synthesized. Expression level of NRG1 gene in total blood by using quantitative Real time PCR (comparative method with GAPDH as housekeeping gene) assessed.

Results : The results showed significant decrease in expression level of NRG1 in patients compared to non-psychiatric individuals. In addition results showed NRG1 gene expressions significantly decrease in patients residing in Isfahan compared to patients living in Tehran and Alborz.

Conclusion : The results are one of the first reports about NRG1 involvement in autism spectrum disorders. Also role of industrial pollution on gene expression alteration in ASD patients revealed. Results indicated NRG1 gene as potential peripheral marker in etiology of autism spectrum disorders.

Keywords : NRG1 – Autism spectrum disorder - gene expression

Count: 407

Abstract ID: 738

Presentation Type: Oral

Can DBS decrease dose of L-dopa needed in Parkinson's disease patients in long-term follow up?

Submission Author: Zeynab Noorimotlagh

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Background and Aim : A vast range of neurosurgical methods have been used to treat Parkinson's disease (PD). Levodopa has been used to reduce motor problems in these patients previously. Nowadays, the availability of deep brain stimulation (DBS) has helped to decrease drug usage and improve motor status. we aimed to measure and compare Levodopa dosage used by patients in three stages; before deep brain stimulation surgery (DBS), 6 months and 6 years after surgery.

Methods : This cross sectional study was carried out at Neurology center of Rasoule-Akram hospital in Tehran, Iran between 2010 and 2016. 37 patients (26 male and 10 female), mean age of 50 ± 3.04 , with advanced Parkinson disease were included using non-randomized sampling method. Subjects were excluded by having severe Cardiovascular disease, uncontrolled high blood pressure, active ischemic cardiac disease, CVA, cancer and taking anti-coagulant drugs. Patients underwent DBS surgery and Levodopa dosage was measured in three phases, before surgery, six months and six years after surgery. Statistical analysis was conducted by SPSS v22 using repeated measure ANOVA test.

Results : Mean age of patients was 50.08 ± 3.04 ranging from 32 to 72 years. The mean duration from beginning of symptoms at the time of surgery was 11.28 ± 1.88 years. The mean L-dopa equivalent doses were 1269 ± 114 , 783 ± 87 , 992 ± 170 during three phases; before surgery, six months and six years after

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surgery respectively. The Only significance decline was observed in comparison between first and second follow up phases ($p < 0.005$).

Conclusion : our results indicate that STN-DBS has a positive short-term effect on the dosage of L-dopa required in Parkinson disease patients, but its effect would not be available after a long-term period.

Keywords : Levodopa; Deep Brain Stimulation; Parkinson's disease



Count: 408

Abstract ID: 356

Presentation Type: Poster

Effects of neuroAid and physical exercise on working memory impairments associated with restraint stress

Submission Author: Setareh Noorizade tehrani

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Background and Aim : Pharmacological data obtained in rodents have established that neuroAid prevents death of threatened neuronal tissues, decreases cognitive deficits and improves functional outcome by restoring neuronal circuits. On the other hand, it had been reported that treadmill exercise alleviates chronic stress-induced hippocampal-dependent memory deficits. In the present study, the effect of exercise and neuroAid administration (associated or not) on working memory deficit induced by restraint stress in mice was investigated.

Methods : Working memory ability was determined by Y-maze task. Restraint stress induced by restrainer during 6 or 9 consecutive days, prior to test. The mice in the treadmill exercise groups were subjected to run on a treadmill for 30 min once a day during 4 weeks

Results : The results showed that intraperitoneal administration of neuroAid (0.2 mg/kg) during 30 days prior to training, with a 48h interval, did not alter the percent of time in the novel arm, suggesting working memory acquisition. Moreover, restraint stress during 9 days impaired working memory. NeuroAid alone improved working memory in mice were subjected to the restraint stress during 9 days, while treadmill exercise did not alter. Furthermore, the association of neuroAid administration and physical exercise provided restraint stressed mice with improvements in working memory

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Conclusion : Our results suggest that neuroAid administration alone or in combination with exercise exerts a protective effect against stress and improves working memory in Y-maze task.

Keywords : Neuroaid; Restraint stress; Treadmill exercise; working memory



Count: 409

Abstract ID: 547

Presentation Type: Poster

An in silico predictive pipeline of genetic variants in the seed region, of Autism related miRNAs and their perturbing effects on the miRNA-mediated gene expression.

Submission Author: Rezvan Noroozi

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Background and Aim : Autism spectrum disorder (ASD) refers to a range of neurodevelopmental disorders with a complex and heterogeneous etiology. There are hundreds of genes shown to be implicated in ASD and categorized in the Autism gene database SFARIgene. The expression of many of these genes is suggested to be regulated by a class of noncoding RNAs with ~22 nucleotides in length, that could suppress the translation of genes by pairing to the 3'untranslated region (3'UTR) of target mRNAs. Single nucleotide polymorphisms (SNPs) located in the 3'UTRs of mRNAs (mirSNPs) have been shown to perturb miRNA recognition elements and binding of specific miRNAs and consequently lead to aberrant expression of autism-related genes.

Methods : We designed a stepwise computational framework to predict the high-confidence mirSNPs for autism-related miRNAs regards to their target genes. For this purpose, autism-implicated genes were downloaded from SFARIgene database. Also, a systematic review was performed to collect a list of all miRNAs which were shown to be differentially expressed in autistic patients using the raw data of high-throughput studies such as microarray analysis. Then High-confidence mirSNPs were chosen according to the final output of cross-prediction by different predictive miRNA target prediction algorithms include miRanda, TargetScanHuman, RNAhybrid , Rna22, and PolymiRTS.

Results : By following this stepwise prediction our analysis revealed miRNA recognition elements-modulating SNPs that have the most possibility to effect the binding of the miRNAs verified by estimating the difference in hybridization energy ($\Delta\Delta G$).

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Conclusion : Overall, we developed an integrative prediction pipeline to a systematical analysis of well-established results and raw data from high-throughput analysis and integrate them to make a method for stringent selection of high-confidence risk variants that can influence the susceptibility of developing ASD through modulating the post-transcriptional regulation of autism-implicated genes. Also, this method could be continued by interpreting the results in joint pathways that can lead to infer the underlying pathogenesis of the autism.

Keywords : Autism spectrum disorder, miRNA, mirSNPs



Count: 410

Abstract ID: 670

Presentation Type: Poster

Application of Systems biology approaches to convergent candidate genes of Autism Spectrum Disorder in common pathways.

Submission Author: Rezvan Noroozi

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Background and Aim : In spite of huge efforts, Autism Spectrum Disorder (ASD) still remains an unresolved problem. Autism is considered as a complex neurodevelopmental disease with highly heterogeneous putative risk factors that leading to a diverse range of abnormalities affecting not only the brain but also other systems of the body. In order to investigate the predominant biological pathways, cellular components and molecular mechanisms underlying the pathogenesis of the disorder, and consequently, to in silico identification of new biomarkers or therapeutic strategies for ASD, a systems biology approach were used.

Methods : In this regard with an integrative concept of networks, the computational methods were used to infer underlying mechanisms of ASD from raw high-throughput data. To identify differentially expressed genes and critical signaling pathways, gene expression database for ASD patients were reanalyzed and were compared to healthy controls.

Results : The results revealed that some genes with different spatiotemporal expression patterns in autism patients interacted in some molecular pathways especially synaptic transmission.

Conclusion : Overall, this results proved that systems biology provides a framework, that could be used to discover the central pathological networks in ASD patients and even could be used to ascertain new biomarkers that lead to developing personalized medicine and therapeutic strategies. Also, it could be suggested that an integrative systems approaches could be designed to classify the broad range of abnormalities and multifactorial characteristics of autism integral to the disorder in order to ascertain the predominant contributions and shorten the time of diagnosis of ASD.

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Keywords : Autism Spectrum Disorder (ASD), Systems biology, pathological networks



Count: 411

Abstract ID: 319

Presentation Type: Poster

Autism, a Disorder Which Lives in Ectopic Additional Synapses !

Submission Author: Sattar Norouzi Ofogh

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Background and Aim : Autism is a neurodevelopmental disorder with strong underlying genetic causes. Together the studies suggest disruptions in several genes functions which have critical role in appropriate formation of nervous system as aetiological aspects in autistic patients. Today Autism diagnosed in the first years of life and characterized with some clinical phenotypes including impaired social interaction, repetitive behavior, restricted interests and defects of language acquisition. Evidence suggests that such autistic patient defects at least partly, can be caused by excess number of neurons and synapses in the central nervous system in embryonic period. Regarding to problems in early precise clinical diagnosis of autism by which clinical symptoms alone and determining the appropriate place of patients in the autism spectrum, it seems that investigation of endophenotypes can illuminated this sophisticated disorder and increases the reability and validity of research results.

Methods : In this review we search NCBI's PubMed database and Google secular by "Autism and Gene" or "Autism and Genetics" terms from 2005 to 2016 and the results of genome-wide association study (GWAS), meta-analysis, candidate gene studies and also convergent functional genomics was extracted. Online databases include UCSC, OMIM and SNPPER were used to investigate the role of target genes.

Results : We found a series of genes that were significantly associated with autism. After categorizing them according to their role(s), identified genes were placed in three main domains: (1) the genes implicated in synapse formation, (2) neuronal proliferation and apoptosis regulation and (3) ubiquitination. Polymorphism in some genes including FER (rs3797817), CDHs (s7704909, rs12518194 rs1896731) and NELL1 (rs1429793) reach the GWAS significant level ($P < 10^{-8}$). Products of these genes implicated in synapse organization, cell-cell adhesion and control of cell growth and differentiation, respectively.

Conclusion : Since the common variants with small effects contribute to Autism susceptibility, and association of several genes, almost on all chromosomes, identified in genetic studies, introducing of biomarker(s) which can be useful for definitive diagnosis and even prevention of disorder is impossible yet.

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However, by identifying of involved factors as well as better understanding of existing interactions, we can hope in achieving to new ways for prevention, better diagnosis and even effective treatments in future.

Keywords : Autism; Gene; Synaptogenesis; Apoptosis; GWAS



Count: 412

Abstract ID: 484

Presentation Type: Oral

The study of biological and cognitive effects related to short term exposure of moving individuals in static magnetic fields produced by 1.5 Tesla MRI Scanner

Submission Author: Mina Nouri

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Background and Aim : Due to the increasing use of magnetic resonance imaging (MRI), the necessity of investigating the biological effects of the static magnetic field, caused by the movement of people in the MRI machine is evident. The aim of this research was to identify the cognitive effects of MRI worker's movements during non-imaging periods (only exposure to static magnetic fields) on the auditory and visual working memory and reaction time.

Methods : In this study 50 volunteer university students aged 18-30 years, were randomly divided into two groups of 25 individuals each. The first group walked around the 1.5 Tesla MRI machine for 30 min in a circular route. After a 60 min rest, the students were asked to walk around a switched-off CT machine for 30 min in an identical route (sham exposure phase). The protocol of exposure for the second group was the same as the first group but the order of real and sham exposure phases was changed. Cognitive tests were performed before and after the real and sham exposure phases.

Results : The findings of this study showed that body movement in the static magnetic field significantly affected the visual reaction time ($P < 0.05$) and working memory ($P < 0.001$). It also caused to happen headache, dizziness, fatigue, agitation, muscle pain, heartbeat increase, and confusion ($P < 0.05$). In this study, the level of significance was supposed to be P-value less than 0.05.

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Conclusion : The observations in this study indicate that the movement in the static magnetic field of MRI machine with intensity of 1.5 Tesla affects visual reaction time and working memory. It is worth noting that walking speed is a key factor which determines the magnitude of induced current density associated with MRI worker's movements, MRI technologists should be advised to move slowly in MRI room.

Keywords : static magnetic field; working memory; visual reaction time



Count: 413

Abstract ID: 607

Presentation Type: Poster

The modeling of induced current density produce by moving individuals in static magnetic fields produce by MR scanner

Submission Author: Mina Nouri

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Background and Aim : Due to the increasing use of magnetic resonance imaging device, the need to investigate the biological effects of the static magnetic field and electric fields induced by the movement of people on the static magnetic field MR imaging device is evident. Many studies was conducted to evaluate the effects of the electric field induced in the body, because of movement in static magnetic field. Previous studies have demonstrated the destructive effects of the magnetic field, The aim of this study was to model the electric field induced in the head and neck because of the static magnetic field 1.5 Tesla MR imaging device

Methods : MATLAB software was used for modeling the induced electric field, import images isogauss surrounding magnetic resonance imaging device to MATLAB. Static magnetic field was obtained with interpolation for all points around the machine device. In order to obtain the electric field induction were used Maxwell's equations.

Results : The average electric field induced in tissues of the head and neck because of movement in static magnetic field of MRI scanner was obtained 62 (mV / m). Movement in static magnetic field MRI has been effective on working memory, visual reaction time, headache, dizziness, fatigue, nervousness, muscle pain, palpitations and confusion ($p < 0.05$). In this study ($p < 0.05$) was considered significant.

Conclusion : Movement in static magnetic field MRI scanner induces an electric field in the human body. The observations in this study has shown motion in the 1.5 tesla MRI static magnetic field effect on headache, visual reaction times, dizziness, heart palpitations, muscle aches, confusion and fatigue.

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Keywords : Static magnetic field; electric field induced;MRI



Count: 414

Abstract ID: 427

Presentation Type: Poster

The impact of early environmental interventions on structural plasticity of the axon initial segment in neocortex

Submission Author: Masoumeh Nozari

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2. Neuroscience Program, Monash Biomedicine Discovery Institute and Department of Physiology, Monash University, Melbourne, Victoria, Australia

Background and Aim : Plasticity of the axon initial segment (AIS) is a newly discovered type of structural plasticity that regulates cell excitability. AIS plasticity has been reported to happen during normal development of neocortex and also in a few pathological conditions involving disruption of the inhibition/excitation balance. Here we report on the impact of early environmental interventions on structural plasticity of AIS in the mouse neocortex

Methods : 57BL/6 mice were raised in standard or enriched environment (EE) from birth up to the time of experiments and were injected with saline or MK-801 [N-Methyl-D-Aspartate (NMDA) receptor antagonist, 1 mg/kg] on postnatal days (P) 6–10. We used Ankyrin G immunoreactivity to mark the AIS of cortical neurons in two sub-regions of frontal cortex (frontal association area, FrA and secondary motor cortex, M2) and in the secondary visual cortex (V2)

Results : In 1-month-old mice, the mean AIS length differed between three areas, with the shortest AISs being observed in V2. Postnatal MK-801 or EE led to shortening of AIS only in the frontal areas. However, exposure to EE restored AIS shortening induced by MK-801

Conclusion : Chronic postnatal MK-801 results in structural plasticity of AIS exclusive to the frontal cortex. EE may modify underlying neuronal mechanisms resulting in restoration of AIS length

Keywords : axon initial segment, enriched environment, NMDA receptor antagonist, plasticity, schizophrenia



Count: 415

Abstract ID: 245

Presentation Type: Poster

The Role of Performance Feedback in Biased Decisions

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Background and Aim : The mechanism of decision bias as most important of cognitive biases is a major challenge for the neuroscientists. Several hypotheses have been proposed to explain the cause of this bias, although to date none of these have been adequately supported. According to a recent research study, perceptual decisions can be biased by the previous choices in the absence of feedback. The decision-biasing effect is expected to be larger when negative feedback is given for previous erroneous choice.

Methods : We tried to demonstrate the effect of feedback using discrimination of motion direction tasks based on the two alternative forced-choice paradigms. Subjects decided whether the net direction of random-dot motion (RDM) is right or left by pressing one of the specified keys on the keyboard. Distinctive auditory feedback was delivered through stereo headphone for correct and incorrect responses.

Results : Results indicated the biased decision also occur after random stimulus with no net coherent motion (0% coherency) wherein the type of feedback is chosen randomly.

Conclusion : Our findings suggest that the feedback connections on error correction cannot lead accumulated information (the state of decision variable) into the baseline level.

Keywords : Decision Making; Bias; Feedback; Psychophysics; Random-Dot Motion.



Count: 416

Abstract ID: 622

Presentation Type: Poster

Chronic exposure to dibutyl phthalate causes anxiety in mice

Submission Author: Fatemeh Omidian

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Background and Aim : Dibutyl phthalate (DBP) is widely used as plasticizer in numerous kinds of products such as plastic packaging in food industries. There is a high risk of DBP exposure for human; it can easily migrate into the human bodies through food plastic packaging and be a potential hazard for human health. It has been shown that dibutyl phthalate in subchronic exposure may cause neurobehavioral toxicity.

Methods : In this study the anxiogenic effects of chronic exposure to DBP for 90 days (oral; 1%, 3%, 5% w/w in food) were investigated in mice. Elevated plus maze and Ethovision XT tracking system were used for measuring the anxiety like behavior in male NMRI mice.

Results : In the groups exposed to dibutyl phthalate the time in open arm of the elevated plus maze was significantly decreased compared to the control group. Since anxious mice naturally avoid open arms and prefer to spend more time in closed arms.

Conclusion : we can conclude that chronic exposure to DBP may induce anxiety behavior in mice. More investigation should be done to evaluate the neurobehavioral toxicity of chronic exposure to dibutyl phthalate.

Keywords : Dibutyl phthalate, anxiety, mice.

Count: 417

Abstract ID: 564

Presentation Type: Poster

Antidepressant effect of pramipexole in mice forced swimming test: A cross talk between dopamine receptor and NMDA/nitric oxide/cGMP pathway

Submission Author: Sattar Ostadhadi

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Background and Aim : Pramipexole is a dopamine D2 receptor agonist indicated for treating Parkinson disorder. This study was aimed to investigate the effect of pramipexole in forced swimming test (FST) in mice and the possible involvement of activation of D2 receptors and inhibition of N-Methyl-D-aspartate (NMDA) receptors and nitric oxide-cyclic guanosine monophosphate (NO-cGMP) on this effect.

Methods : All drugs were given intraperitoneally (i.p.). After assessment of locomotor behavior in the open-field test (OFT), FST was applied for evaluation of the antidepressant activity in mice.

Results : Intraperitoneal administration of pramipexole (1–3 mg/kg) reduced the immobility time in the FST similar to fluoxetine (20 mg/kg, i.p.). This effect of pramipexole (1 mg/kg, i.p.) was ceased when mice were pretreated with haloperidol (0.15 mg/kg, i.p.) and sulpiride (5 mg/kg, i.p.) as D2 receptor antagonists, NMDA (75 mg/kg, i.p.), L-arginine (750 mg/kg, i.p., a substrate for nitric oxide synthase) or sildenafil (5 mg/kg, i.p., a phosphodiesterase 5 inhibitor). The administration of MK-801 (0.05 mg/kg, i.p., a NMDA receptor antagonist) L-NG-Nitro arginine methyl ester (L-NAME, 10 mg/kg, i.p., a non-specific nitric oxide synthase (NOS) inhibitor), 7-nitroindazole (30 mg/kg, i.p., a neuronal NOS inhibitor) and methylene blue (10 mg/kg, i.p., an inhibitor of both NOS and soluble guanylyl cyclase (sGC) in combination with the sub-effective dose of pramipexole (0.3 mg/kg, i.p.) reduced the immobility. Altogether, our data suggest that

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the antidepressant-like effect of pramipexole is dependent on the activation of D2 receptor and inhibition of either NMDA receptors and/or NO-cGMP synthesis.

Conclusion : These results contribute to the understanding of the mechanisms underlying the antidepressant-like effect of pramipexole and reinforce the role of D2 receptors, NMDA receptors and l-arginine-NO-GMP pathway in the antidepressant mechanism of this agent.

Keywords : Depression; Pramipexole; Forced swimming test; Dopamine D2 receptor; NMDA; Nitric oxide, Mice



Count: 418

Abstract ID: 594

Presentation Type: Poster

Impression of family socioeconomic status on verbal memory in patients with schizophrenia

Submission Author: Hamidreza Ostadrahimi

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Background and Aim : Effect of socioeconomic status (SES) has been vastly investigated in schizophrenia (SCZ); a mental disorder manifests as chronic psychosis, functional disability and cognitive impairment. Several studies have demonstrated the association between SES and verbal memory in general population. Here, we aim to investigate the relation between SES and verbal memory in patients with SCZ.

Methods : We downloaded MIND Clinical Imaging Consortium (MCIC) collection for 104 schizophrenic patients. After screening for outliers and missing data, Pearson correlation between subject education and age of onset was generated using IBM SPSS statistics 20. Univariate analysis of covariance was then conducted on Verbal Memories using the above test as dependent variables. Independent variables in each analysis included SES. To reduce the possible, confound of demographic variables, we included in the covariate the estimated handedness, age and sex.

Results : Verbal Memory was significantly related to Status of Socioeconomics ($r = -0.4$). Univariate analysis of covariance revealed no main effect of sex ($F=0.195$, $P\text{-value}=0.66$), age ($F = 1.349$, $P = 0.248$). It also demonstrated some slight effect for handedness ($F=3.576$, $P=0.62$). Significance level was deemed 0.05.

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Conclusion : In this study, we demonstrated for the first time level of socioeconomic status can affect verbal memory in schizophrenia. According to this finding, we may be able to reduce schizophrenia financial burden. However, more studies should be performed to comprehend the underlying mechanism.

Keywords : Schizophrenia, socioeconomic status, Verbal memory



Count: 419

Abstract ID: 697

Presentation Type: Poster

Biological and Neural Bases of Language and Speech Evolution

Submission Author: Reza Panahi dashdebi

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Background and Aim : Language, as one of the greatest abilities of the human brain, has had a crucial position in the history of thought, and many scholars and philosophers of different ages have paid much attention to it; to emphasize the claim, even some linguists believe that language is the basis of thought, and Wittgenstein, the analytical philosopher of the 20th century, would say that human language means the limits of his world. The origin of language and speech is one of the most controversial issues over which there is not much agreement among scholars. The origin of the spoken language, considered as the most important communication tool, is said to be a new phenomenon in the history of evolution (approximately 50000 years before).

Methods : This article reviews articles that survey the evolutionary approach in order to use the recently presented theories for clarifying language evolution

Results : It is assumed that, at some point in human evolution, the mirror cells play a role in language; the neurons providing the ability to learn through imitation. Discovering the mirror neurons developed Gestural Theory which is about the language evolution, stating that language has evolved from gestures, but not the primitives' ability to produce sounds. The article also takes into consideration the origin of spoken language, that it requires fundamental changes within the anatomy of sound organs; the changes which is not found in others except for the human being. The origin of the contemporary speech requires an evolution in the biological and anatomical levels of the nervous system and sound organs, which we should find its basis in the changes within the genetic features of humankind. Mutations in the gene FOXP2 is the cause of the modern language advent.

Conclusion : It is assumed that, at some point in human evolution, the mirror cells play a role in language; the neurons providing the ability to learn through imitation. Discovering the mirror neurons developed Gestural Theory which is about the language evolution, stating that language has evolved from gestures, but not the primitives' ability to produce sounds. The article also takes into consideration the origin of spoken language, that it requires fundamental changes within the anatomy of sound organs; the changes

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which is not found in others except for the human being. The origin of the contemporary speech requires an evolution in the biological and anatomical levels of the nervous system and sound organs, which we should find its basis in the changes within the genetic features of humankind. Mutations in the gene FOXP2 is the cause of the modern language advent.

Keywords : Evolution; language; gene FOXP2; Speech; Gestural Theory; Mirror neurons



Count: 420

Abstract ID: 698

Presentation Type: Poster

Biological and Neural Bases of Language and Speech Evolution

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Background and Aim : Language, as one of the greatest abilities of the human brain, has had a crucial position in the history of thought, and many scholars and philosophers of different ages have paid much attention to it; to emphasize the claim, even some linguists believe that language is the basis of thought, and Wittgenstein, the analytical philosopher of the 20th century, would say that human language means the limits of his world. The origin of language and speech is one of the most controversial issues over which there is not much agreement among scholars. The origin of the spoken language, considered as the most important communication tool, is said to be a new phenomenon in the history of evolution (approximately 50000 years before).

Methods : This article reviews articles that survey the evolutionary approach in order to use the recently presented theories for clarifying language evolution

Results : It is assumed that, at some point in human evolution, the mirror cells play a role in language; the neurons providing the ability to learn through imitation. Discovering the mirror neurons developed Gestural Theory which is about the language evolution, stating that language has evolved from gestures, but not the primitives' ability to produce sounds. The article also takes into consideration the origin of spoken language, that it requires fundamental changes within the anatomy of sound organs; the changes which is not found in others except for the human being. The origin of the contemporary speech requires an evolution in the biological and anatomical levels of the nervous system and sound organs, which we should find its basis in the changes within the genetic features of humankind. Mutations in the gene FOXP2 is the cause of the modern language advent.

Conclusion : It is assumed that, at some point in human evolution, the mirror cells play a role in language; the neurons providing the ability to learn through imitation. Discovering the mirror neurons developed Gestural Theory which is about the language evolution, stating that language has evolved from gestures, but not the primitives' ability to produce sounds. The article also takes into consideration the origin of spoken language, that it requires fundamental changes within the anatomy of sound organs; the changes

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Keywords : Evolution; language; gene FOXP2; Speech; Gestural Theory; Mirror neurons



Count: 421

Abstract ID: 155

Presentation Type: Poster

Analysis of fMRI functional connectivity during visual attention

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Background and Aim : In recent years, there has been a vast number of studies regarding the analysis of functional connectivity and its functionality in diagnosing brain diseases and recognition of how different part of cortex interact while doing various tasks. Functional magnetic resonance imaging (fMRI) is one of the most appropriate methods with high spatial resolution to visualize the brain activities. Functional connectivity discusses the correlation of different active regions of the brain and to measure functional connectivity, many methods including coherence, correlation and clustering have been proposed.

Methods : The present paper has concentrated on the impact of visual on structure of the brain connectivity network in both spatial and feature-based attention. Our major purpose was to detect alterations in functional connectivity of brain regions while subjects were engaged in visual attention task. because a handful of studies employed correlation method and resting- state functional connectivity, task-based approach was selected for this experiment to soar our knowledge of spatial and feature- based attention. All data including functional and anatomical were recorded on a 3 Tesla scanner (Magnetom Trio, Siemens AG, Erlangen Germany). Five participants (2 women/3 Men) between 24 to 30 years old took part in this experiment and both spatial and feature-based attention was performed by participants. All data was preprocessing procedure using BrainVoyager which involves motion correction, slice timing correction, linear trend removal and spatial smoothing. Whole brain was divided into 82 Brodmann areas and coherence method was applied to exploit linear relation between signals, consequently, all normalized correlation (coherence) between each 82 areas was calculated to construct coherence matrix. All vertices in the main diameter is 1 and the other vertices are bounded between 0 to 1.

Results : During visual attention of both spatial and feature- based, Brodmann area 17 and 18 (Primary and secondary visual cortex) disclosed high and strong connectivity with other areas throughout the cortex. Hence, primary and secondary visual cortex play a significant role in visual attention. Plus, these two regions were considered as seed region and their connectivity with other regions was assessed. Results

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suggested that primary and secondary visual cortex are highly linked with occipitotemporal cortex, association visual cortex and secondary motor cortex. This Results revealed that visual attention was more informative during spatial-based task since it was also connected to temporal regions. Furthermore, Whole brain connectivity was also conducted in functional connectivity. Results prove that Brodmann areas 17, 18, 19, 46, 3 and 4 had a remarkable role in forming functional connectivity networks.

Conclusion : Results revealed that Visual, prefrontal and parietal regions are substantially connected to other parts of cortex during visual attention.

Keywords : fMRI; Visual Attention; Functional Connectivity; Coherence



Count: 422

Abstract ID: 405

Presentation Type: Oral

High frequency network determine the effective connectivity in neuronal networks

Submission Author: Aref Pariz

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Background and Aim : Noise can play an important role in the response of dynamical systems, in particular when subject to external signals. Although noise usually plays a disturbing role, it is well known that it might also act as an ordering agent in several nonlinear systems. In high dimensional extended dynamical systems composed of many coupled units, quenched noise in the form of diversity in the parameters of the units has been shown to enhance collective behavior and lead to resonant like responses when subject to external modulations. Here we show that a sub network with higher intrinsic frequency of a layer network, it is possible to overcome the disturbing role of noise and transmit the signal more reliably.

Methods : We construct a layer of neural network each consisted of 80 excitatory and 20 inhibitory LIF neurons with connection probability 0.1 and connection probability for excitatory units of two neighbor networks is 0.05. All neurons are connected with pulsed coupled synapses. Each neuron modeled as LIF neuron with $v_{rest}=0$ and $v_{threshold}=10$. Whenever the potential of neuron reaches to threshold it reset to rest value. Refractory period is 0.5ms. Inner axonal delay among each neuron is 0.6ms and for each neighboring network among excitatory units the axonal delay is 1ms. All neuron receives external constant and noisy current. We choose one of these population as our target network which excitatory units receives an extra periodic and constant current. Extra constant current results to specific range of frequency of network, and higher frequency makes the target network acts as leader network. Also we examine transmission of two different signal inside the network. For this, we put the first signal with frequency 4.5Hz on our leader network (5th) and the second signal with frequency 6.5 on another network (7th).

Results : By adding extra current which increases the frequency of target network, the response of network changes. For specific amount of frequency domain, the maximum of response of network will be reliable due to the level of signal to noise ratio (SNR). If we apply periodic signal where the response of network is maximum, the transmission of signal to other network will be enhanced. Maximum of response for different

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frequency decreases by increasing the frequency of signal. In presence of secondary signal, the signal which is applied to leader network with higher frequency transmitted to all network, but the secondary signal just detected in networks which are in down streaming path from leader network.

Conclusion : Our results show that effect of high frequency network is to overcome the effect of noise inside the whole network and transmit the signal more reliably. Also, the effective connectivity, which characterizes the direction of transmission of information in the neural network, is influenced by the presence of dynamical elements with high frequency. We propose a method for steering preferred routes for information transmission and the effective connectivity in a fast and easily controllable manner by changing the intrinsic frequency of certain constituent units.

Keywords : LIF; Signal to Noise Ratio (SNR); Effective connectivity; Signal transmission



Count: 423

Abstract ID: 512

Presentation Type: Poster

Effect of levothyroxine on visual evoked potential in lysolecithin-induced demyelination in optic chiasm of adult rat.

Submission Author: Cobra Payghani

Cobra Payghani¹, dr parham reisi², fatemeh khani³, dr bahman rashidi⁴, dr hojatolah alaei⁵

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2. dr parham reisi
3. fatemeh khani
4. dr bahman rashidi
5. dr hojatolah alaei

Background and Aim : Multiple sclerosis (MS) is a demyelinating disease of the central nervous system which has no any known definitive treatment. Studies have shown that thyroid hormones in addition to its role in the development of the nervous system and the production of myelin, have important roles in the function of adult's brain. Since the only way to treat MS is restoration of myelin, the aim of this study was to evaluate the effects of levothyroxine on lysolecithin-induced demyelination in rat optic chiasm.

Methods : To induce demyelination, lisolesytin was injected into the optic chiasm of male Wistar rats. Visual evoked potential (VEP) recording was used to evaluate demyelination and remyelination before and 7, 14 and 21 days after the injection. The rats received i.p. injection of levothyroxine with doses 20, 50 and 100µg/kg in different experimental groups.

Results : VEP latency and amplitude showed demyelination at 7 and 14 days after induced lesion which was reversed during 14-21 days after the induction. Levothyroxine prevented these impairments especially in high doses.

Conclusion : According to the results, it can be concluded that thyroid hormones probably are effective in improvement of MS, although further studies are needed.

Keywords : multiple sclerosis;Levothyroxine; demyelination;visual evoke potential

Count: 424

Abstract ID: 740

Presentation Type: Oral

Locus Coeruleus Bilateral Lesion Model for study Sleep-Wake Cycle in the rat

Submission Author: Vahid Pirhajati Mahabadi

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4. Physiology Department, Faculty of Medicine, TarbiatModares University, Tehran, Iran
5. Pharmacology and Toxicology Department, Faculty of Pharmacy, Shahid Beheshti University of medical sciences, Tehran, Iran

Background and Aim : Noradrenergic cells in LC participate in the process of cortical activation and behavioral arousal. The evidence suggests that locus coeruleus (LC) plays an important role in the sleep-wake cycle. The aim of this study was stereological estimation of cavity caused by lesion and assessment of sleep stages after bilateral lesion of the LC.

Methods : Male Wistar rats weighting 250-275 gr were divided into four groups (control: n=6, sham: n=6, lesion1: n=6 and lesion2: n=6). 6 hydroxydopamine (6 OHDA) (2µg/0.5µl and 4µg/1µl) was stereotaxically injected bilaterally into LC to produced lesion. For sleep recording 3 EEG and 2 EMG electrodes were implanted respectively in the skull and dorsal neck muscle. Recordings were taken before and 7, 21 and 42 days after lesion. After 7 weeks, Rats first were anesthetized and then their brains were removed and cut in 7 µm serial sections and stained with cresyl violet. The volume of LC and the lesion induced cavity were evaluated through the stereological technique.

Results : Lesion - induced cavity volume (0.5 µl) was restricted to LC, whereas Another group (1 µl), total LC and structures adjacent to the LC were also damaged. A significant decrease was seen in non-rapid eye movement (NREM) and paradoxical sleep (PS) stages and a significant increase was seen in duration of wake and paradoxical sleep without atonia (PS-A) in lesion group in comparison with control and sham groups.

Conclusion : The results of this study demonstrate 2µg/0.5µl 6-OHDA is suitable dose for LC lesion and bilateral lesion of LC causing disrupt wake, NREM ,PS and also produce the PS-A.

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Keywords : Locus Coeruleus, Bilateral Lesion, Sleep-Wake Cycle, 6_ hydroxydopamine



Count: 425

Abstract ID: 327

Presentation Type: Oral

Simvastatin combined with bone marrow stromal cells treatment reduces expression c-fos protein to ameliorate neurological function following ischemic stroke

Submission Author: Gila Pirzad jahromi

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Background and Aim : Stroke is characterized by the sudden loss of blood circulation in an area of the brain, resulting in a corresponding loss of neurological function. Cell-based therapies alone or as part of a combination therapy are a hopeful approach to recover functional recovery following ischemic insults. Several studies have shown the effect of statins on BMSCs preservation and migration to sites of inflammation. Cerebral ischemia is one of the strongest stimuli for gene induction in the brain. The results of many in vivo and in vitro studies have shown that prolonged c-fos induction precedes neuronal death after ischemia and that c-fos and its gene products are involved in the induction of apoptotic genes that lead to cell death.

Methods : Focal ischemic brain injury was induced by emblazing a preformed clot into the middle cerebral artery in rats. Animals were administered simvastatin (40 mg/kg) at 1 hr after stroke, or BMSCs (3×10^6) at 24 hr after stroke or a combination of these two treatments. Bederson scale and adhesive removal test were used to assess functional motor deficits and somatosensory function after cerebral ischemia. Histological examination using haematoxylin and eosin staining on sections revealed cerebral ischemia. Antibody for c-fos was used for Western blot and immunohistochemistry used for evaluating migration, endogenous neurogenesis, arteriogenesis, activation astrocytes and neuronal damage. Results for c-fos western blot analysis, immunohistochemistry positive reactions, and Neurological scores were presented as mean \pm SD and were analyzed using analysis of variance and the post hoc Newman–Keuls multiple comparison test were analyzed.

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Results : We established a embolic stroke model in rats and found that combination treatment of simvastatin and BMSCs could significantly increase migration, endogenous neurogenesis, arteriogenesis, activation astrocytes and reduce neuronal damage compared with BMSC alone ($P < 0.05$) by immunohistochemistry staining on the 7th day after ischemia. Furthermore, in examining the cellular mechanism cerebral expression of c-fos protein was studied by western blot.

Conclusion : Results showed that combination treatment could notably decrease expiration c-fos protein on the 48th after stroke. Increased c-fos expression may indicate the specific neuronal pathways activated by the immunopathology process of brain ischemia and could be associated with the behavioral changes and neurologic complications in this model. Therefore, we think that combination treatment should be a more effective therapy after stroke due to synergic functions of supplementary approaches.

Keywords : bone marrow stromal cell, simvastatin, focal ischemia, c-fos protein, immunohistochemistry, western blot



Count: 426

Abstract ID: 329

Presentation Type: Oral

Stress and its mechanisms

Submission Author: Gila Pirzad jahromi

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Background and Aim : stress is defined as a process in which environmental demands tax or exceed the adaptive capacity of an organism, resulting in psychological and biological changes that may place persons at risk for disease. Brain is involved in responding to stressors.

Methods : Two networks activate to response the stress, the sympathetic nervous system (SNS) and the hypothalamo-pituitary-adrenal axis (HPA) that initiate behavioral responses.

Results : The HPA axis is consisted of CRF-synthesizing and -secreting neurons in the paraventricular nuclei (PVN) of the hypothalamus, corticotropin (ACTH) synthesizing and secreting cells (corticotropes) in the anterior pituitary, and GC synthesizing and secreting cells in zona fasciculata of the adrenal gland. CRF- and ACTH-secreting cells have stored hormone that can be secreted rapidly upon stimulation. By contrast, in the adrenal, GC-secreting cells must both synthesize and secrete hormone on demand from ACTH, and thus there is a lag of minutes between increases in plasma ACTH and the responsive. GC in acute response stimulates gluconeogenesis, immune system, memory performance and etc. GC has a negative feedback on HPA axis and stops the release of ACTH. But when the stress becomes chronic most of effects of GC will be inverted. The transmitter of the SNS is norepinephrine. Norepinephrine is released from locus coeruleus when stimulated by the hypothalamus during a stress response. Norepinephrine serves as the primary chemical messenger of the central nervous system's sympathetic branch that prepares the body for fight-or-flight response.

Conclusion : In order to control the stress we have to modify two HPA and SNS networks.

Keywords : stress, hypothalamo-pituitary-adrenal axis, sympathetic nervous system



Count: 427

Abstract ID: 665

Presentation Type: Oral

ICV injection of gastrodin prevented 6-OHDA-induced motor disturbance in hemi-parkinsonian rats

Submission Author: Maryam Poursina

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Background and Aim : In the present study, we investigated the effect of intra cerebro ventricular (i.c.v) administration of gastrodin on 6-OHDA-induced motor-impairments (catalepsy and imbalance) in the rats

Methods : Unilateral intrastriatal 6-hydroxydopamine (8 µg/2 µl/rat)-lesioned rats were pretreated i.c.v with gastrodin (20 and 40 µg/rat) for 5 consecutive days before neurotoxin injection. Catalepsy was investigated by bar test and motor in-coordination was investigated by rotarod on the day 21 after neurotoxin injection

Results : The results showed a significant ($p < 0.001$) increase in catalepsy of 6-OHDA-lesioned rats whereas; in gastrodin (20 and 40 µg/rat for 5 days) treated hemi-parkinsonian rats catalepsy was decreased markedly ($p < 0.001$). Furthermore, there was a significant ($p < 0.001$) increase in motor-imbalance of 6-OHDA-lesioned rats. However, gastrodin is able to improve motor coordination significantly ($p < 0.001$) in a dose dependent manner and increase motor balance.

Conclusion : In conclusion, we found that pre-treatment with gastrodin could improve 6-OHDA-induced catalepsy and motor imbalance in rats. We suggest that gastrodin can be used as adjuvant therapy along with commonly used anti-parkinsonian drugs. However, further clinical trial studies should be carried out to prove this hypothesis.

Keywords : Gastrodin, 6-OHDA, Catalepsy, Motor Balance, Rotarod, Rat



Count: 428
Abstract ID: 256
Presentation Type: Poster

The alliance between the neurobiology of language and the psycholinguistic models of speech production

Submission Author: Mehdi Purmohammad

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Background and Aim : During the last decades, psycholinguistics models contributed a lot to our understanding of speech production and planning treatment for language disorders. With the growth of brain research tools and the birth of Cognitive Neuroscience, the neurobiology of language was developed into an independent discipline. We propose that by linking the two research areas, we may be able to recognize the biological basis for psycholinguistics models of language production. Moreover, a more comprehensive description of verbal behavior can be provided for the Neurobiology of language.

Methods : we used a comparative study between the two model. To aim at this, in this article we attempted to explain the neurobiological basis for Levelt's speech production model with respect to the Hickok's model.

Results : The results of our survey show a great deal of similarity between the two models starting from the conceptualization level and continuing to the lemma's level that Levelt views it as a modality-neutral level. The similarity can also be found at lexeme level in which the phonetic properties are formulated

Conclusion : Implications for the two models are discussed.

Keywords : the neurobiology of language, Levelt's model of language production, Hickok's model,



Count: 429

Abstract ID: 669

Presentation Type: Poster

Prediction of tendency to alcohol consumption based on the lifestyle of high school students in Shiraz Abstract

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Background and Aim : the present study was aimed at predicting the tendency to alcohol consumption based on lifestyle of Shiraz students.

Methods : This study was a descriptive research and in the correlation form. The statistical population is consisted of all the ninth grade and junior students of Shiraz in 1394-1395. Sample size is consisted of 400 students (200 female students and 200 male students in the age range 16-17), which were chosen among education regions 1 and 2 of Shiraz using the multi-stage cluster sampling method. The students then were answered the Health Promoting Lifestyle questionnaire of Walker et al (1990) and Youth Risk-Taking Scale of Irani Zadeh Mohammadi and Ahmmad Abadi (1388).

Results : results showed that there is a negative and significant correlation between spiritual growth and self-actualization aspects and also there is a positive and significant between physical activity and alcohol consumption. Results also showed that the prediction Regression of tendency to alcohol consumption, based on lifestyle components, is significant, and the spiritual growth, self-actualization, and inter-individual (interpersonal) relationships, and sport and physical activity aspects can significantly predict the tendency to alcohol consumption.

Conclusion : : these results give us important implications in the area of prediction based on lifestyle. Also, the background of tendency to alcohol and risky behavior in adolescent can be reduced by changing (modifying) the life style and training some components.

Keywords : lifestyle, alcohol consumption, adolescents



Count: 430

Abstract ID: 636

Presentation Type: Poster

Ellagic acid protective effect in a model of Parkinson's disease

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Background and Aim : Parkinson's disease is a prevalent movement disorder in the elderly with progressive loss of dopaminergic neurons of the midbrain and incapacitating motor and non-motor complications. Ellagic acid is a natural phenolic compound with potent antioxidant properties. We investigated its possible neuroprotective effect in 6-hydroxydopamine (6-OHDA)-rat model of PD.

Methods : striatal 6-OHDA -lesioned rats were pretreated with ellagic acid at a dose of 50mg/kg/day for 1 week.

Results : Ellagic acid reduced striatal malondialdehyde (MDA), reactive oxygen species (ROS), and DNA fragmentation as an index of apoptotic marker and improved monoamine oxidase B (MAO B) nuclear factor (erythroid-Derived 2)-like 2 (Nrf2), and heme oxygenase 1 (HO-1) with no significant change of S100B.

Conclusion : these findings indicate neuroprotective potential of ellagic acid in 6-OHDA rat model of PD via amelioration of apoptosis and oxidative stress and strengthening antioxidant defense elements, suppression of MAO-B, and its favorable influence is partly reliant on ER/Nrf2/HO-1 signaling cascade.

Keywords : Ellagic acid, 6-hydroxydopamine, Parkinson's disease, oxidative stress, Apoptosis



Count: 431

Abstract ID: 113

Presentation Type: Poster

Paired-pulse facilitation response at dentate gyrus of hippocampus by exercise in stressed rats

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Background and Aim : Psychological stress is one of the most significant causes of major health problems and it affects paired-pulse responses and short term synaptic plasticity as the physiological basis of learning and memory. On the other hand, the beneficial effects of exercise were indicated on brain functions. This study investigated the paired-pulse facilitation response at dentate gyrus of hippocampus by exercise in stressed rats.

Methods : Forty male Wistar rats were randomly allocated to four groups: stress, exercise before, after and along with stress groups. The experimental animals were forced to run on a treadmill one hour a day at a speed of 20–21 m/min for 1h/day/21days and restraint stress was applied 6h/day/21days. Paired pulse responses are recorded for short inter-pulse intervals 50, 70, 150 ms (PPF; Paired pulse facilitation phase). In all groups, paired-pulse responses in the dentate gyrus evaluated by PS amplitude and fEPSP slope.

Results : Our results indicated that the fEPSP slope (PPI-fEPSP) and PS amplitude (PPI-PSA) had not significantly different in PPF phases in exercise along with stress when compared to stress group. The PPI-fEPSP and PPI-PSA was partially compensated in stress group by exercise before stress group. Whereas, exercise after stress significantly augmented the PPI-fEPSP responses ($P < 0.05$ at 50-150 ms, and $P < 0.01$ at IPI 70 ms) and PPI-PSA responses ($P < 0.05$ at 70, 150 ms, and $P < 0.01$ at 50 ms).

Conclusion : The degree of facilitation was significantly weaker in stress group. This may be due to change levels of neurotransmitters in dentate gyrus of hippocampus. In addition, stress and exercise affected the synaptic responses in PPF phases. The exercise before and along with stress could not improve the deleterious effects of chronic stress on short-term plasticity as a result learning and memory. Therefore, they didn't have significant effects on the glutamatergic neurons. It is important to note that only the

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exercise after stress improved the harmful effects of chronic stress. It suggests that beneficial effects of exercise after stress results in changing the balance between excitatory and inhibitory activity within the dentate gyrus.

Keywords : Stress; Synaptic plasticity; Dentate gyrus; Hippocampus; Rat.



Count: 432

Abstract ID: 374

Presentation Type: Poster

Human Ability to Represent Information Related to Several Groups in Visual Working Memory

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Background and Aim : Human's ability to store and process the information he observes plays a crucial role in performing daily tasks correctly and adapting with the surroundings better. Visual working memory has provided human with the ability to temporarily store information related to the observed items and manipulate them if necessary.

Methods : In the present study, human's ability to temporarily store and manipulate information related to groups of items was analyzed. The results of the first part of Experiments showed that Humans are able to extract and store one aspect of information (average size) related to at most 3 groups of items, and also, as the number of groups whose information must be analyzed increases, participants' error rate in choosing the correct answer increases significantly. In the second part of experiments, the main purpose was to determine whether or not participants are able to simultaneously analyze more than one aspect of information (average size and count of items) related to several groups.

Results : the results revealed that allocating resources of visual working memory depends on the degree of complexity of the information which has to be extracted and stored in memory.

Conclusion : Overall, the results of current study indicate human's ability to extract and store information related to multiple groups of items in visual working memory. In addition, the results show that visual working memory is flexible in allocating resources to multiple items or groups and its capacity is not determined by a fixed number of items.

Keywords : visual working memory, ensemble representation, several group perception



Count: 433
Abstract ID: 264
Presentation Type: Oral

A Biophysically plausible model for meta-learning in reinforcement learning

Submission Author: Hossein Rafipoor

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4. University of Tehran

Background and Aim : The strength of the brain is the ability to speculate the world rather than respond reflexively. Indeed, the brain can adjust its functional characteristics based on environment attributes. In a learning process this adjustment is called “meta-learning”. In this research we studied a model which addresses a basic mechanism in cellular level that enhances a neural circuit with the ability to adjust its learning rate close to optimal value.

Methods : This research is done in two parts. In the first part, we described and analyzed the effect of environment attributes on a basic reinforcement learning model performance in a two alternative forced choice task with probabilistic reversals. This reversal adds volatility to task which affects the efficient learning rate of the model, in the sense that more volatility demands higher learning rates. Also, we analyzed an algorithmic meta-learning method to adjust learning rate. The second section is dedicated to spiking neural network models which are the most appropriate structure for modeling the brain. In the past studies [Soltani and Wang, 2006] this model has been used to simulate reward based decision making along with a stochastic plasticity rule for learning. In this study by adding BCM meta-plasticity rule to pervious model, we have been able to equip the model with ability of adjusting its learning rate to task demands.

Results : In the first part we could quantify relations between task attributes and the reinforcement learning model parameters as a result. In the second part we developed a rate based model of our network with the specified version of BCM rule combined with dopamine modulation (Three factor learning) [Frémaux and Gerstner, 2015]. By maximum likelihood fitting of the basic reinforcement learning model to the decision outcomes of our model on the same task set of first part, we measured the effective learning rate in different tasks. These learning rates are very close to the optimal values that we got in the first part.

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Conclusion : As a cognitive neuroscientist our goal is to make a bridge between behaviors and their neural substrates. In this study we built a model which makes a good connection between meta-learning as a higher level behavior and meta-plasticity rule which is a cellular-molecular mechanism. This improvement has two major advantage over the past models. First, it is more biologically plausible as BCM rule is the most incontrovertible model for plasticity and second, it is more powerful in performance and behavioral data fitting.

Keywords : Meta-Learning, BCM Theory, Decision Making, Spiking Neural Network Model



Count: 434

Abstract ID: 522

Presentation Type: Poster

Effect of *Nigella sativa* on expression of NF- κ B in rat stroke model

Submission Author: Behnaz Rahimi

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Background and Aim : Stroke as third cause of death throughout the world and is as a result of permanent or transient decrease of cerebral arterial perfusion. In recent years many attempts were accomplished to elucidate the molecular mechanisms that involve in ischemia induced by cerebral insults. In the present study, our aim is to assess the protective effect of *Nigella Sativa* (NS) in middle cerebral artery occlusion (MCAO) model by investigating the expression of cerebral NF- κ B as one of the main inflammatory factors.

Methods : Forty five adult male Wistar rats between 200 to 300 gr were divided into two main steps: 1) MCAO induction: in this group the subjects were categorized into 5 groups. In three of them 3 doses (0.25, 0.5 and 0.75 ml/kg) of NS were gavaged for 30 days (once per day), orally. Also, there are sham (to evaluate the stress of the surgery) and control groups. 2) Western blotting: consistent with stroke volume in previous groups the rats were arranged into 4 groups to assess by immunoblotting the expression of NF- κ B in three areas of the brain that affected by stroke (cortex, core, subcortex). Three of them were gavaged by NS (as mentioned above) and the latest was considered as our control and saline was administered in route. Our data (including ischemic volume and NF- κ B expression in the mentioned area of the rat brain and) was analyzed by one-way ANOVA in GraphPad prism 5® software.

Results : Stroke volume was calculated by Image J® in all experimental groups. There is no marked change in stroke volume in the first group (0.25ml/kg) compared to control and sham. However, there was a significant reduction in neurological deficit and stroke volume in other dose groups including 0.5 and 0.75 ml/kg. In molecular assay, except to core area, 75 ml/kg gavage of NS reduced NF- κ B expression in cortex and subcortex, significantly ($P=0.0034$ and $P=0.0011$, respectively). There weren't any significant change in NF- κ B expression in dose groups 0.25 and 0.5 ml/kg in all of the studied areas.

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Conclusion : Although the present study showed that pretreatment with 75 ml/kg NS oil lead to decrease in stroke induced neurological deficits by alteration in expression of NF- κ B but it is necessary to make more investigation about the precise neuroprotective mechanisms of NS in ischemic stroke.

Keywords : middle cerebral artery , Nigella. Sativa, MCAO, Stroke volume, NF- κ B



Count: 435

Abstract ID: 161

Presentation Type: Poster

Inhibition of N-Methyle-D-Aspartate glutamate receptors reduces stress-induced anxiety in mice

Submission Author: Masoomeh Rahimi

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Background and Aim : Stress can induce anxiety in the animal models and human. Glutamate receptors also involved in this regard.

Methods : In the present study, attempts were made to exploring the effects of memantine (a glutamate receptor antagonist) on stress induced-anxiety in male mice (20-25 g). Elevated plus maze (EPM) was used and animals were received electro foot shock in the communication box. Electro foot shock (40 mV, 10 sec, 10 Hz) was applied to the animals for 4 consecutive days in a random manner. Memantine (1, 5 and 10 mg/kg, i.p.) was administered 30 min before each stress sessions. The EPM test was conducted on the 5th day in drug free state. The time and frequency of open arm entry were recorded by video camera and considered as the signs of anxiety.

Results : Our data showed that stress can increase the time and frequency of open arm entering of the mice, indicating the severe anxiety. Memantine (1, 5 m and 10 mg/kg, i.p.) reduces both signs of anxiety.

Conclusion : In conclusion, it is clear that stress -induced anxiety is modulated by memantine pretreatment. The exact role of glutamate receptors in this regard must be evaluated in the future studies.

Keywords : Anxiety, Memantine, Stress.



Count: 436

Abstract ID: 282

Presentation Type: Poster

Up-regulation of MMP9 to TIMP1 gene expression ratio in Schizophrenia patients

Submission Author: Shahrzad Rahimi

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Background and Aim : Schizophrenia is a uniquely psychotic disorder that impairs mental and social function. It is a multifactorial disorder that associated with extracellular matrix (ECM) disturbances. In recent studies, different genes are introduced as the candidate in causing schizophrenia such as Matrix Metallo Proteinase (MMP-9) and Tissue Inhibitors of Matrix Metallo Proteinases (TIMP-1) and the balance between MMPs and TIMPs is considered to be crucial. Given the fact that previous studies have elucidated the association of the MMP/TIMP expression ratio in neuropsychiatric disorders, the lack of balance between MMP-9 and TIMP-1 may lead to ECM abnormalities in such diseases. As a result, we conducted association research on the expression levels of MMP-9/TIMP-1 and pathogenesis of schizophrenia.

Methods : The study compared the expression level of MMP-9/TIMP-1 genes in 50 schizophrenic patients with 50 healthy individuals. Total RNA were extracted. The expression level of MMP-9/TIMP-1 genes expression ratio was determined by qRT-PCR.

Results : MMP-9/TIMP-1 gene expression ratio level in men and women groups were up regulated (1.87 and 1.68 folds respectively) but there was no significant correlation between MMP-9/TIMP-1 expression level and gender category ($P=0.08$, $P=0.1$). Overall, the MMP-9/TIMP-1 gene expression ratio was increased to 3.28 significantly ($P=0.01$).

Conclusion : Our results indicated that up regulation of MMP-9/TIMP-1 gene expression ratio at the mRNA level would happen in patients with schizophrenia. Although in our previous study no significant differences was observed between MMP-9 and TIMP-1 gene expression in schizophrenic patients than normal counterparts.

Keywords : Schizophrenia; expression; MMP-9/TIMP-1



Count: 437

Abstract ID: 271

Presentation Type: Poster

The influence of MMP9 and TIMP1 gene expression in Schizophrenia patients

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Background and Aim : Schizophrenia has long been regarded as a devastating brain disorder that influences approximately 1% of the population. Due to the fact that schizophrenia is a neurodegenerative disorder in which genetic factors are assumed to play an important role in pathogenesis of the schizophrenia, many studies have focused on the function of some special genes in this illness. Matrix Metallo Proteinase (MMP-9) affects prefrontal cortical and hippocampal function and is one of the most interesting candidate molecules that are involved in schizophrenia. Tissue Inhibitors of Metalloproteinases (TIMP-1) is a specific endogenous tissue inhibitor of MMP-9, suggesting that it directly affects the level of MMP-9 expression. Based on this hypothesis, this study aimed to evaluate the expression of MMP-9 and TIMP-1 genes in the blood samples of schizophrenia patients in comparison with healthy subjects.

Methods : The examined group consisted of whole blood samples from 50 schizophrenic patients and 50 controls. The level of MMP-9 and TIMP-1 genes expression were measured by qRT-PCR.

Results : The results of this study show that MMP-9 and TIMP-1 genes expression at the mRNA level were not significant in patients with schizophrenia ($P=0.08$ and $P=0.09$ folds respectively). In terms of sex, MMP-9 and TIMP-1 gene expression were not significantly different.

Conclusion : Changes in MMPs and TIMPs expression may be a common element in, or perhaps even a marker for schizophrenia.

Keywords : Schizophrenia; gene expression; qRT-PCR; MMP-9; TIMP-1



Count: 438

Abstract ID: 508

Presentation Type: Poster

The effect of bumetanide, a selective NKCC1 inhibitor, on schizophrenia symptoms; a double-blind randomized clinical trial

Submission Author: Reza Rahmanzadeh

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Background and Aim : Alteration of gamma amino butyric acid (GABA) neurotransmission in brain cortical and subcortical areas has widely been revealed in schizophrenia. The imbalance of two major regulators of GABA reversal potentials, Na-K-2Cl cotransporter 1 (NKCC1) and K-2Cl cotransporter 2 (KCC2), is emerging as a potential pathophysiological mechanism at least in some neurodevelopmental disorders. Down-regulation of KCC2, as an exporter of chloride ion from the cells, or increased ratio of NKCC1/KCC2 may suggest an excitatory role of GABA in schizophrenia. Bumetanide, a selective NKCC1 inhibitor, has been shown to restore the GABA inhibitory function, and reported to improve symptoms of autism and temporal lobe epileptic patients.

Methods : In the present double-blind randomized clinical trial, we studied the potential efficacy of bumetanide on cognitive, positive and negative symptoms of schizophrenic patients. Twenty six schizophrenic patients, who admitted to Razi Psychiatric Hospital, Tehran, were enrolled in this study, and divided into two groups. Bumetanid group received 1mg of bumetanide tablet twice daily for two months, while control group received placebo, in addition to their routine medications. BPRS and PANSS scales were applied before treatment, one and two months after treatment, and after one-month washout period.

Results : Using repeated measure ANOVA, the results revealed that the BPRS and PANSS scores are not different in the bumetanide and Placebo treated patients. No significant side effects were observed in schizophrenic patients treated with bumetanide.

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Conclusion : In conclusion, the findings of this study demonstrated that bumetanide 2mg/daily might not be effective to improve the symptoms of schizophrenic patients. However, we strongly suggest an additional clinical trial to investigate the effect of higher dose of bumetanide on schizophrenia.

Keywords : Schizophrenia, Bumetanide, Depolarizing GABA, NKCC1 transporter



Count: 439

Abstract ID: 509

Presentation Type: Poster

The expression of KCC2 and NKCC1 in hippocampal and prefrontal regions in a developmental animal model of schizophrenia

Submission Author: Reza Rahmanzadeh

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Background and Aim : The importance of GABA neurotransmission in developmental processes has recently been highlighted in neurodevelopmental disorders. During development, GABAergic function has been suggested to change from excitatory to inhibitory due to increased KCC2 and decreased NKCC1 expression levels. Schizophrenia has been associated with impairments in GABA neurotransmission which may contribute to enhanced hippocampal activity as well as disrupted neuronal synchronization in prefrontal cortex. Some recent post-mortem studies reported change in NKCC1, KCC2 and their regulatory kinases expression levels that may alter GABA inhibitory function in hippocampal formation and prefrontal cortex.

Methods : Four, eight and twelve weeks following housing eight rats were randomly selected from social and isolation groups and sacrificed to measure mRNA expression levels of NKCC1 and KCC2 of hippocampal formation and prefrontal cortex.

Results : Post-weaning isolation rearing gradually decreases the KCC2 mRNA expression level during 12 weeks of isolation ($p < 0.001$), but does not change NKCC1 mRNA expression level, in hippocampal formation. However, we found no differences in NKCC1 and KCC2 mRNA expression levels in prefrontal cortex of isolation reared rats compared to socially reared rats during the course of modeling.

Conclusion : Our findings show that isolation rearing reduces hippocampal KCC2 expression level and may make hippocampal GABA excitatory. Therefore, the possible excitatory GABA may partly underlies the hippocampal overactivity reported in schizophrenia. Furthermore, this finding provides new targets for production of novel drugs in schizophrenia.

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Keywords : schizophrenia, social isolation rearing, excitatory GABA, NKCC1, KCC2



Count: 440

Abstract ID: 198

Presentation Type: Poster

Impact of loganin on pro-inflammatory cytokines, depression-and anxiety-like behaviors in male diabetic rats

Submission Author: Mojgan Rajabi

Mojgan Rajabi¹, Shirin Babri², Gisuo Mohaddes³

1. PhD student
2. PhD
3. PhD

Background and Aim : Most of diabetics experience behavioral disturbances. According to evidence inflammatory cytokines have key role in diabetes and behavioral disorders such as anxiety and depression. In the present study effects of chronic administration of loganin on pro-inflammatory cytokines, depression-and anxiety-like behaviors in Streptozocin-induced diabetes in male rats were investigated.

Methods : We used adult male Wistar rats , weighing 200-250 g in 5 groups (n = 8). Experimental diabetes was induced by a single dose of Streptozocin (60 mg/kg,i.p). Animals were considered diabetic if blood glucose levels exceeded 300 mg/dl. Animals in dia+saline, dia+imipr and dia+diaz groups received saline (1 ml), imipramine (15mg/kg/ip) and diazepam (1mg/kg/ip) respectively, 30 minutes before behavioral tests. Animals in dia+log group received loganin (40mg/kg/po) which was prescribed at 9:00 AM for ten days in a row. At the end of the tenth day the behavioral tests were taken an hour after the administration of loganin. Behavioral tests including Forced-swim test(FST) and Elevated plus-maze(EPM) and Open field test(OFT) were performed.in FST, rats were placed individually in Plexiglas cylinder that was filled with water (23±1°C) to a depth of 30 cm and immobility of animals in 5 minutes was recorded. In EPM the animals were individually placed in the center of the maze and allowed 5 min of free exploration. The number of entries and the time spent in the open and enclosed arms was measured. OFT was an arena with black plywood walls and a brown floor divided into nine squares by black lines. Each rat was allowed to freely explore the novel environment for 5 min. The distance moved, time of center crossing and grooming, number of fecal boli was recorded. blood samples were collected from the heart apex and centrifuged at 4 °C at 4000 rpm. Levels of IL-6 and TNF-alpha in serum were measured using enzyme-linked immunosorbent assay (ELISA) kits according to the manufacturer's protocols.

Results : Our findings showed that administration of loganin caused significant body weight increase and attenuate blood glucose in the diabetic rats (dia+log group) in compare to diabetic group that treated with

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saline (dia+saline). Depression and anxiety-like behaviors improved in dia+log group and also these animals had lower serum concentrations of IL-6 and TNF- α compared to dia+saline group

Conclusion : In conclusion according to our results loganin as a bioflavonoid could be useful in lowering of blood glucose and inflammatory factors in diabetes which leads to attenuating of depression and anxiety-like

Keywords : : Loganin, diabetes, Anxiety and Depression-like behavior, Forced swim test, Elevated plus maze, Inflammatory cytokines



Count: 441

Abstract ID: 149

Presentation Type: Poster

The effects of crocin on 6-OHDA-induced oxidative/nitrosative damage and motor behaviour in hemiparkinsonian rats

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Background and Aim : Degeneration of the dopaminergic nigrostriatal system is the pathologic hallmark of Parkinson's disease, which leads to movement disorders. Compelling evidence implicates that oxidative stress plays an important role in degeneration of dopaminergic neurons in Parkinson's disease. The aim of the present investigation was to evaluate the effects of crocin, a potent antioxidant in saffron, on motor behaviour and 6-OHDA-induced oxidative/nitrosative damage to the striatum in an experimental model of Parkinson's disease.

Methods : Left medial forebrain bundle was lesioned by microinjection of 6-OHDA (16µg in 0.2% ascorbate-saline). Crocin (30 and 60 mg/kg) was injected intraperitoneally 3 days before surgery until 6 weeks. Rats were tested for rotational behavior by injection of apomorphine hydrochloride (2 mg/kg, intraperitoneally) at the end of the 2nd, 4th and 6th week after surgery. Malondialdehyde and nitrite levels were measured in the striatum at the end of the week 6.

Results : The contralateral rotations induced by apomorphine in 6-OHDA lesioned group were highly significant ($P<0.001$) as compared to the sham group. Chronic administration of crocin at doses of 30 and 60 mg/kg over 6 weeks did not change the rotations. The malondialdehyde and nitrite levels in the striatum were also significantly ($P<0.05$) increased in lesioned group. Treatment with crocin at a dose of 60 mg/kg significantly decreased the nitrite levels ($P<0.05$) in the striatum.

Conclusion : Crocin at a dose of 60 mg/kg could be effective in preventing the nitrosative damage in the striatum. Further investigations using higher doses of crocin is suggested to get the full neuroprotective effects of crocin in Parkinson's disease.

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Keywords : Crocin, 6-Hydroxydopamine, Oxidative stress, Nitrosative stress, Motor behaviour, Parkinson's disease.



Count: 442

Abstract ID: 44

Presentation Type: Poster

Atorvastatin attenuates the antinociceptive tolerance of morphine via nitric oxide dependent pathway in male mice

Submission Author: Nazanin Rajai

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Background and Aim : The development of morphine-induced antinociceptive tolerance limits its therapeutic efficacy in pain management. Atorvastatin, or competitive inhibitor of 3-hydroxy-methylglutaryl coenzyme A (HMG-CoA) reductase, is mainstay agent in hypercholesterolemia treatment. Beyond

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the cholesterol-lowering activity, exploration of neuroprotective properties of this statin indicates its potential benefit in central nervous disorders.

Methods : The aim of the present study was to assess the effects of atorvastatin in development and expression of morphine-induced analgesic tolerance in male mice and probable involvement of nitric oxide.

Results : the Result of our study demonstrate that Chronic and acute treatment with atorvastatin 10 and 20mg/kg, respectively, could alleviate morphine tolerance in development and expression phases. Chronic co-administration of nitric oxide synthase (NOS) inhibitors including L-NAME (non selective NOS inhibitor; 2mg/kg), aminoguanidine (selective inducible NOS inhibitor; 50mg/kg) and 7-NI (selective neuronal NOS inhibitor; 15mg/kg) with atorvastatin blocked the protective effect of atorvastatin in tolerance reversal. Moreover, reversing the atorvastatin effect was also observed in acute simultaneous treatment of L-NAME (5mg/kg) and aminoguanidine (100mg/kg) with atorvastatin. Co-treatment of guanylyl cyclase inhibitor, ODQ (chronic dose: 10mg/kg and acute dose: 20mg/kg) was associated with prevention of atorvastatin anti-tolerance properties.

Conclusion : Our results revealed that the atorvastatin modulating role in morphine antinociceptive tolerance is mediated at least in part via nitric oxide in animal pain models of hot plate and tail flick.

Keywords : Antinociception; Atorvastatin; Mice; Morphine; Nitric oxide; Tolerance



Count: 443

Abstract ID: 189

Presentation Type: Poster

Does inhibition of angiotensin function cause neuroprotection in traumatic brain injury?

Submission Author: Mohammad amin Rajizadeh

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Background and Aim : One of common pathophysiological states associated with traumatic brain injury (TBI) is brain edema. And, long term blockage of angiotensin II type 1(AT1) receptor provides the reduction of brain inflammation. Therefore, examining effect of AT1 receptor blockage (ARB) by candesartan in diffuse TBI was of purpose in the present study.

Methods : The male wistar rats were divided to four groups of sham, TBI, vehicle, and candesartan (n= 12 in each group). The diffuse and moderate TBI was induced by Marmarou method. Candesartan (0.3 mg/kg) or vehicle was administered i.p, 30 min after TBI. Brain edema was assessed by determining brain water content, 24 h post- TBI. Intracranial pressure (ICP), cerebral perfusion pressure (CPP) and veterinary coma scale (VCS) were evaluated -1, 1, 4 and 24 h after TBI. The disruption of Blood brain- barrier (BBB) was evaluated by determining brain content of Evans blue, 5 h post- TBI.

Results : The brain water content was higher in TBI and vehicle groups vs. sham group. Candesartan reduced brain water content post- TBI. The increase of Evans blue content in brain was observed in TBI and vehicle groups vs. sham group. The level of ICP was higher in TBI, vehicle and candesartan groups vs. sham group 1, 4 and 24 h after TBI. The reduction of ICP was recorded following candesartan administration 4 and 24 h after TBI. The level of CPP obtained higher in TBI group in comparison with vehicle and candesartan groups 1 h after TBI. The VCS score was lower in TBI, vehicle and candesartan groups vs. sham group 1 and 4 h after TBI, but it was no different between sham and candesartan groups 24 h after TBI.

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Conclusion : The results of this study indicated that blockage of AT1 receptor may be neuroprotective by decreasing ICP associated to the reduction of brain edema and BBB permeability lead to the improvement of neurologic outcome.

Keywords : Brain Injury; Blood- Brain Barrier; Angiotensin II receptor blocker; Intracranial Pressure; Cerebral Perfusion Pressure



Count: 444
Abstract ID: 693
Presentation Type: Oral

Evaluation of the anti-tumor effects of bevacizumab and rolipram on glioblastoma multiforme: single agent versus combination therapy

Submission Author: Sara Ramezani

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Background and Aim : The aim of the present study was to evaluate the anti-tumor activity of bevacizumab, an anti-angiogenesis agent, and rolipram, a phosphodiesterase IV inhibitor, either alone or combined in a rat C6 glioma heterotopic xenograft model.

Methods : In order to generate glioma heterotopic model, rat C6 glioma cells (3×10^6) suspended in 100 μ l serum-free cell culture media were injected subcutaneously into the right flank of the animal. On day 19th after cell implantation (on day zero), tumor-bearing mice were randomly assigned to distinct experimental groups receiving bevacizumab (IP, 5 mg / kg) every second days and rolipram (P.O, 5 mg / kg) daily, either alone or combined for 12 days. BSA (0.05% in saline) was used as the control vehicle (n=11 per group). Tumor growth was measured twice weekly and calculated as $\text{length} \times \text{width}^2 \times \pi/6$. The Percentage of increase in life span was calculated as $[(\text{median survival time in treated animals} / \text{median survival time in controls}) - 1] \times 100\%$. Apoptotic and proliferative cells were detected by TUNEL and Ki67 staining, respectively. Protein expression was measured by western blots. Kaplan-Meier method was applied to assess the probability of survival in tumor-bearing mice; comparisons were performed using the log-rank test. The tumor growth rate data was analyzed by two-way mixed model ANOVA followed by a one-way ANOVA and post hoc test of Tukey to compare the tumor sizes between groups at each time point, separately. The differences among groups when analyzing data of protein expression, Ki67 and TUNEL positive values were examined using one-way ANOVA and Tukey as post hoc test.

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Results : At the end of treatment course, the mean of tumor volume in vehicle treated mice was increased about 68.18% compared to volume at the first day of treatment. Tumors grew slowly in rolipram-treated animals and demonstrated 8.12% increases in tumor volume relative to the volume at day zero and 60.53% decrease in tumor growth relative to vehicle control at final day of treatment. On day 12th post treatment, bevacizumab alone gradually increased the mean tumor volume about 32.72% relative to the volume at day zero and inhibited tumor growth approximately 36.31% relative to vehicle control. At the final day of treatment, combination therapy resulted in 26.79% decline in tumor size compared to the volume at the beginning of the treatment. The combination of bevacizumab and rolipram significantly inhibited tumor growth about 95.84% and 124.03% relative to vehicle treated mice ($P < 0.001$), respectively at 12th and 27th day after starting treatment. The mean survival time of vehicle control was 27 days. The combination therapy enhanced the survival rate of tumor-bearing mice by 151% relative to control ($P < 0.001$) and each drug alone ($P < 0.01$). The combined rolipram and bevacizumab administration significantly inhibited AKT phosphorylation, decreased tumor cell proliferation, stimulated apoptosis, and reduced the expression of CD31, an endothelial marker of vascular density ($P < 0.001$).

Conclusion : The combination therapy of BVZ plus rolipram might be a new treatment approach to GBM in clinical settings.

Keywords : Glioblastoma multiforme, Combination therapy, Bevacizumab, Rolipram, Rat C6, Heterotopic xenograft



Count: 445

Abstract ID: 639

Presentation Type: Poster

Brain Extraction from Whole-Head CT Images using Region Based Active Contour Model

Submission Author: Maryam Ranjbar

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Background and Aim : Accurately brain and cerebrospinal fluid (CSF) extraction is fundamental step in brain imaging research. Since manual brain extraction from neuroimaging data is time consuming and user dependent, automated and accurate brain extraction methods should be developed. Computed tomography (CT) imaging of the brain is primarily used in clinical practice and increasingly is used in research. While extensive researches have been done on the brain tissue extracting from magnetic resonance images, the brain tissue extracting from CT images is less developed. Thus, in this paper, we propose an automated method for brain extraction from CT images using region based active contours originally proposed by Chan and Vese (CV model).

Methods : The proposed brain extraction from CT images is based on initial brain mask extraction and modifying the extracted mask using region based active contour. In the proposed method, first, an initial brain mask is extracted using thresholding followed by applying morphological filters. The morphological filters extract the greatest connected component which is the course brain mask. Then, in the second step, the extracted mask is used as initial mask in active contour. The final brain mask is obtained by applying region based active contour originally proposed by Chan and Vese.

Results : The proposed automated brain extraction method was tested on 20 CT images. The results show that the proposed method can appropriately extract the brain mask from CT images. The proposed method could extract the brain mask from real CT images with mean similarity coefficient (Dice) of 94%, Sensitivity of 99.4% and specificity of 96%.

Conclusion : In this paper a new method based on region based active contour was proposed. The proposed method can be used in clinical and research tasks.

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Keywords : CT Images; Brain Extraction; Active Contours Model; Morphology.



Count: 446

Abstract ID: 301

Presentation Type: Poster

The Effect of Reduced Graphene Oxide (rGO) and Silver-Reduced Graphene Oxide (Ag-rGO) nanocomposite on glioblastoma cancer cells

Submission Author: Laleh Ranjbaran

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Background and Aim : The characteristics of reduced graphene oxide (rGO) and graphene-based nanocomposites have been recently investigated in several biological researches. These nanomaterials have shown interesting biological properties such as antibacterial, biosensing, cellular imaging, and drug delivery capabilities as well as anticancer activity. The aim of this study was to investigate the biological properties of rGO nanosheets and Ag-rGO nanocomposite prepared by Hummers' and hydrothermal methods, respectively.

Methods : Cytotoxicity effects of synthesized rGO and Ag-rGO nanomaterials were investigated on glioblastoma cancer cell lines (U87mg). The cells were treated with different concentrations of rGO (10-300 µg/ml) and Ag-rGO (5-300 µg/ml) for 24 hours. The viability of the cells was determined using MTT assay.

Results : Our results indicated that the synthesized rGO and rGO-Ag have significant difference in regards to the concentrations affecting glioblastoma cancer cells: rGO showed a dose-dependent inhibition of the cell viability with IC₅₀=240 µg/ml while, Ag-rGO nanocomposite caused a significant decrease in cell viability with IC₅₀=119 µg/ml. This result indicates that Ag-rGO is more toxic compared to rGO.

Conclusion : We concluded that our synthesized nanomaterials especially Ag-rGO nanocomposite might have great potential in cancer therapy for glioblastoma.

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Keywords : Reduced graphene oxide; Ag-rGO nanocomposite; Glioblastoma; Cell viability; Cancer



Count: 447

Abstract ID: 224

Presentation Type: Poster

Memory improvement by Nitric Oxide in stress-induced in mice

Submission Author: Aida Rasoulnejad

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Background and Aim : Memory destruction is shown in the animals receiving chronic stress. Spatial memory is among the most kind of memories affected by stress.

Methods : In the present study, attempts were made to exploring the effects of L-arginine (NO Precursor), and L-NAME (NO synthase inhibitor) on stress induced-spatial memory destruction in male mice (20-25 g). Barnes Maze (BZ) was used and animals were received electro foot shock in the communication box. Electro foot shock (40 mV, 10 sec, 10 Hz) was applied to the animals for 4 consecutive days in a random manner. L-arginine (1, 5 and 10 mg/kg, i.p.) and L-NAME (1, 5 and 10 mg/kg, i.p.) were administered 30 min before each stress sessions. The BZ test was conducted on the 5th day in drug free state. The time and distance traveling for target hole finding was recorded by video camera and considered as the signs of spatial memory.

Results : Our data showed that stress can increase the time and distance for target hole finding in the mice, indicating spatial memory destruction. L-arginine (1, 5 m and 10 mg/kg, i.p.) reduces both the time and distance traveling. The response was similar for L-NAME. L-arginine induced memory by itself in non-stressed animals.

Conclusion : In conclusion, it is clear that stress -induced memory destruction can be modulated by L-arginine and L-NAME pretreatment. The exact role of NO in this regard must evaluated in the future studies.

Keywords : Anxiety; L-Arginine; L-NAME; Nitric Oxide; Stress



Count: 448

Abstract ID: 353

Presentation Type: Poster

Effectiveness of Computerised Therapy in the Improvement of Behavioral inhibition and Attention-deficit in Children with Attention-Deficit/Hyperactivity Disorder

Submission Author: Farzaneh Razmandi

Farzaneh Razmandi¹

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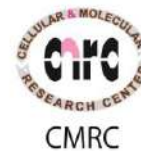
Background and Aim : Children with Attention-Deficit/Hyperactivity Disorder have problems in behavioral inhibition and executive functions. The present study aimed examine the effectiveness of computerized therapy in behavioral inhibition and attention-deficit in individuals with attention-deficit/hyperactivity disorder.

Methods : This study was a single case experimental design, which was conducted with multiple baselines. Therefore, using screening method and Child Symptom Inventory-4 (CSI-4) as well as diagnostic interview, one subject with ADHD was selected. He was treated by computerised continuous performance test task. Before treatment (baseline) and during the sessions, the modifications was recorded by the task. Data were analyzed through visual analysis, the improvement rate, and the effect size.

Results : Findings showed a high improvement rate and effect size.in behavioral inhibition as well as attention after the treatment. Results exhibited clinical significance.

Conclusion : This study suggests that a treatment based computerised therapy could be effective in the improvement of difficulty in behavioral inhibition and symptoms of attention deficits

Keywords : Attention-deficit/hyperactivity disorder; Behavioral inhibition; Executive functions; Computerised therapy



Count: 449

Abstract ID: 181

Presentation Type: Poster

A theoretical approach for studying of the oxygen concentration in photodynamic therapy of brain tumor

Submission Author: Fatemeh Rezaei

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Background and Aim : Photodynamic therapy is a method based on light-activatable drugs called photosensitizers followed by exposing to the light at a certain laser wavelength. In this paper, aminolevulinic acid (ALA)-induced protoporphyrin IX (PpIX) sensitizer is utilized for treatment of a brain tumor by irradiation of a laser diode at 664 nm. In this treatment, oxygen is supplied by diffusion from the capillaries and is consumed by PDT and cell metabolism. The results are presented for ground state oxygen after diffusion from capillaries.

Methods : In this model, it is assumed that the other species such as singlet sensitizer, cellular substrate, singlet oxygen, triplet sensitizer preserve a pseudo-steady-state equilibrium with the local triplet oxygen. Therefore, only the (ground/triplet-state) oxygen can be diffused. Therefore, the rate equation for ground-state oxygen expresses the local concentration of oxygen as a function of time as follows: . (1) In above equation, S_{Δ} is fraction of triplet quenching collisions with $3O_2$ that yield $1O_2$, Φ_t is the triplet yield, k_d is the direct decay rate of singlet oxygen goes to ground state (s^{-1}), k_m is the decay rate of singlet sensitizer backs to ground state (s^{-1}), k_{ot} is the second-order rate at which triplet sensitizer cooperates its energy to ground-state oxygen, thus produce the singlet oxygen state ($M^{-1}.s^{-1}$), k_{oa} is the reaction rate of singlet oxygen with the cellular substrate ($M^{-1}.s^{-1}$), $[A]$ is substrate concentration, and k_p is the decay rate of triplet sensitizer backs to the ground state (s^{-1}). Moreover, $D_{(O_2)}$ is the tissue oxygen diffusion coefficient, α is the absorption coefficient and Γ_{met} is the metabolic rate of oxygen consumption which is expressed by: , (2) Here, k_{50} is the oxygen concentration at which $\Gamma_{(met)}$ reaches to its half-maximum value. Γ_{met}^{max} is the initial maximum metabolic consumption rate in steady state.

Results : In this article, ground state oxygen concentration is calculated after 5 second from laser irradiation in Fig. 1. As it is seen by diffusion of oxygen from capillaries, $[3O_2]$ increases which illustrates that the role of diffusion is stronger than PDT and metabolic mechanisms. Fig. 1 Depth-resolved distributions of ground-state oxygen at 5 s after laser irradiation.

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Conclusion : By utilizing a numerical code, the concentration of oxygen can be obtained to evaluate the effectiveness of photodynamic therapy in treatment of brain tumors.

Keywords : Photosensitizer, photodynamic therapy, brain tumor.



Count: 450

Abstract ID: 673

Presentation Type: Poster

Oxidative biomarkers in children with neurodevelopmental disorder

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Background and Aim : A neurodevelopmental disorder (NDD) is defined as a precise genetic or acquired biological brain disorder or condition that is responsible for childhood-onset brain dysfunction. If a neurodevelopmental disorder is severe enough, it may cause a “developmental disability” e.g. mental retardation, cerebral palsy, epilepsy, or autism. NDDs are associated with widely varying degrees of difficulty which may have significant mental, emotional, physical, and economic consequences for individuals, and in turn their families and society in general. Intellectual disability is evident in approximately 70% of individuals with NDD and most psychiatric disorders, including autism, are associated with increased oxidative stress. The present study aimed to evaluate oxidative stress biomarkers such as urinary total antioxidant concentration (TAC), catalase activity (CAT) and total thiol molecules (TTM).

Methods : Fifteen subjects diagnosed with NDD, in the age group of 5 to 10 years, were a part of the study. Furthermore, 20 normal healthy siblings of same age group were taken as the control group

Results : The results showed the NDD group has significantly higher CAT activity and concomitant lower TAC and TTM concentration in comparison with control group ($p < 0.001$).

Conclusion : The results are discussed in relation to an increased vulnerability to oxidative damage, which may contribute to the development and clinical manifestation of symptoms of NDD.

Keywords : Neurodevelopmental disorder, Autism, Oxidative stress

Count: 451

Abstract ID: 399

Presentation Type: Poster

• Relationship Between Chondroitin Sulfate of Glial Scar and Functional Recovery in Spinal cord Contused Rats

Submission Author: Sara Rezaei

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Background and Aim : Objective: Spinal cord injury (SCI) is one of the most serious clinical diseases that not only affects the patient physically and psychologically, also affects family and society. In SCI, astrocyte glial cells, convert into the reactive astrocytes which are the main components of glial scar. After SCI, among the components of glial scar, Chondroitin Sulfate proteoglycans (CSPGs) which play important role in inhibiting of axonal regeneration, increase . Therefore, the aim of this study was to determine Chondroitin Sulfate amount of glial scar in contusion model of SCI and it's relationship with functional recovery.

Methods : Methods: In this study, 72 adult male wistar rats randomly divided into 12groups: normal control, sham, lesion groups of 1,2,4,8-days and 2,4,8,12,16,20 weeks. Then in all animals of the lesion groups, contusion model was created at T10 segment of spinal cord using the dropping a10-gram weight from a height of 25mm, sham group only received laminectomy. For all groups, BBB test was performed until the end of the study. Animals with BBB score greater than 3 were omitted from study. After the end of study in each group, the tissue of lesion site of animals was removed and stored at -80° C. At the end of study (20w),the lesion site of all • groups were assessed to determine the amount of existing chondroitin sulfate at injury in due times by using ELISA.

Results : Results: The comparison of results of the movement assessment in lesion groups (12, 16 and 20 weeks) showed higher functional recovery by passing the time. Also, in the sixteenth to the twentieth weeks, the amount of chondroitin sulfate in the injury site came to the same extent in the control group, which the reason of the spontaneous improvement of resulting movement in animals of these groups may be caused by this issue.

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Conclusion : Conclusion: The resulting functional improvement by passing the time and without therapeutic intervention, likely due to the reduction of chondroitin sulfate component of the glial scar which caused higher scar permeability to axonal re- growth .

Keywords : Key words: spinal cord injury, contusion, glial scar, chondroitin sulfate, functional recovery



Count: 452

Abstract ID: 736

Presentation Type: Poster

The effect of Umbilical cord matrix stem cells transplantation on ischemic tolerance in animal stroke model

Submission Author: Mahmoud Rmdan

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Background and Aim : Ischemic stroke represents the third-frequent cause of mortality and leading cause of long-term disability in industrialized countries. The number of people affected annually by stroke, actually over 2 million worldwide, is estimated to increase dramatically in the next years and to increase by almost one-half by 2020. This is because of the increase in the mean population age, the persistence of unhealthy habits, and the emerging risk factors that will affect young patients particularly. The previous studies have shown that cell transplantation can improve neurological function after cerebral ischemia and therefore extend the therapeutic time window for intervention. The development of stem cell-based therapies for cerebral ischemia aims to replace lost neurons and/or to prevent cell death. Placental derived mesenchymal stem cells are a good source for cell therapy and regenerative medicine. Human umbilical mesenchymal stem cells (HUMSCs) of the umbilical cord possess stem cell properties and can be cultured in abundance in vitro. and contains an inexhaustible, noncontroversial source of stem cells for therapy.

Methods : In the present study, we have isolated human umbilical cord matrix stem cells (HUCMSCs) from human placenta. Flowcytometry and mesenchymal lineages differentiation were done. In the next step, HUCMSCs were transplanted into right rat's striatum by using stereotaxic surgery. After pretreatment, the rats were subjected to 60 min of right middle cerebral artery occlusion (MCAO). After 24 h ischemia induction, neurological deficit scores (NDS) and infarct volume (IV) in total, cortex, piriform cortex-amygdala, and striatum areas of hemisphere were assessed.

Results : We showed that HUCMSCs were positive for CD73 and CD90 and negative for CD34. HUCMSCs are able to differentiate into osteogenic and adipogenic lineages as shown by alizarin red staining and oil red staining. For the first time, the present results indicate that transplantation of

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(HUCMSCs) before ischemia induction resulted in a significant reduction in NDS and IV, in comparison with the control group.

Conclusion : Our study showed that HUCMSCs can protect neural cells against undesirable impacts of cerebral ischemia. It seems that HUCMSCs due to exerts decremental effect on ischemic damages.

Keywords : Cerebral Ischemia; Human umbilical cord matrix stem cells (HUCMSCs); Infarct volume (IV); Neurological Deficits.



Count: 453

Abstract ID: 521

Presentation Type: Poster

The Effect of tDCS Stimulation on Memory Improvement in Diabetic Rat

Submission Author: Afshin Roostaei

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Background and Aim : Diabetes is the most common endocrine disease in the world, annually responsible for 4 million deaths which is predicted to amount to 439 million in 2030. Diabetes is accompanied by hyperglycemia induction due to deficit in function or secretion of insulin and leads to microcellular as well as macro-cellular complications. In addition, diabetes leads to disorder in cognitive and perceptual performance such as impaired learning and memory. The transcranial direct current stimulation (tDCS) is a non-invasive method that has improved learning and memory in human and animal models. In this study, the effect of anodal and cathodal tDCS on diabetes induced amnesia has been investigated.

Methods : In the present study male Wistar rats in the weight range of 230-250 grams were used. Streptozotocin (STZ) at dose 60 mg/kg was used to induce diabetes and amnesia in male Wistar rats. Then anodal and cathodal tDCS were exerted on the left frontal cortex for 20 minutes twice a day in two successive days with an intensity of 0.2 milliamps.

Results : Our study showed that STZ at dose 60 mg/ml/kg caused induced diabetes and significant amnesia 14 days after the injection. Moreover, left frontal anodal and cathodal tDCS restored memory impairment induced by diabetes.

Conclusion : The study showed that left frontal cathodal and anodal tDCS in the left frontal cortex could restored memory impairment induced by diabetes.

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Keywords : diabetes; Amnesia; tDCS;



Count: 454
Abstract ID: 609
Presentation Type: Oral

Use of Transcranial Magnetic Stimulation in the treatment of psychiatric disorders

Submission Author: Reza Rostami

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Background and Aim : Nearly a decade has passed that FDA approved rTMS for the treatment of major depression, since the use of rTMS in the treatment of other psychiatric disorders has studied in several researches. Evidences suggest that rTMS in the treatment of negative symptoms of schizophrenia is effectiveness. In this review we considered the clinical evidence in relation to the effectiveness of rTMS in depression, schizophrenia and other psychiatric disorders. The role of different parameters of rTMS (frequency, duration, number of pulses and location of stimulation) in the treatment of depression, auditory hallucinations and negative symptoms of schizophrenia has discussed. With advances of brain imaging techniques, the protocols of rTMS have been optimized and new regions have been developed for treatment of psychiatric disorders. Combination of both methods can increase the effectiveness of treatment.

Methods : none

Results : none

Conclusion : none

Keywords : Transcranial magnetic stimulation, Psychiatric disorders, Neuroimaging techniques



Count: 455
Abstract ID: 325
Presentation Type: Poster

The expression of Bax protein in the early stages of spinal cord injury in the sperm cells in seminiferous tubules of mature rats

Submission Author: Ayoob Rostamzadeh

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Background and Aim : Apoptosis is one the most important biological processes of eukaryotic cells, which occurs through the activation of intracellular cell death pathway. The aim of this study was to determine the pattern of cell death within the early stage of spinal cord injury (SCI) and the evaluation of the changes in Bax protein expression of progressive apoptosis.

Methods : In this study, adult Sprague-Dawley rats were randomly divided into two control and experimental groups. Animals were anesthetized and then the laminectomy procedure was performed in the area of T6-8. All stages except SCI were also performed on the control group. On 1, 7, 14 and 28 days after the surgery, 6 rats were killed from each group, and fixative was injected into their left ventricle. One-third of the middle part of their testis tissue were taken for histological and immunohistochemical analysis. After SCI, TUNEL+ cells and Bax protein expression in the experimental group were compared with the control group.

Results : In the control group, there was limited evidence indicating the presence of TUNEL+ cells and Bax protein expression in testis tissues. While, in the experimental group, after SCI, the expression of this protein was detected in the testicular sperms. The immunohistochemical analysis also indicated the presence of TUNEL+ cells and cells containing apoptotic protein Bax in testicular sperms in the first day after SCI. The presence of TUNEL+ cells reached the maximum amount by 28 days after SCI.

Conclusion : Our findings suggested that during acute phase of SCI seminiferous tubule germ cells showed degenerative changes. Some of the degenerative cells show evidence of apoptosis that according to the results, the apoptosis may be related to Bax protein expression

Keywords : Cell death, Bax protein, Spinal cord injury, Germ cells



Count: 456

Abstract ID: 278

Presentation Type: Poster

Effects of External Perturbations on Anticipatory and Compensatory Postural Adjustments in Multiple Sclerosis Patients with and without a previous fall history

Submission Author: Mina Rouhani

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Background and Aim : Impaired balance is one of the most common and disabling multiple sclerosis (MS) symptoms. Anticipatory and compensatory postural adjustments (APAs and CPAs) are two main postural mechanisms used by central nervous system to maintain and restore balance during expected and unexpected perturbations. The main purpose of this study was an update to previous literatures and to investigate the relationship between APAs, CPAs and falls in patients with MS.

Methods : Seventeen MS fallers, 17 MS non-fallers and 15 age-and-gender matched healthy controls were exposed to backward external pull perturbations. Subjects received pull perturbations through a cable attached to an axillary belt. The perturbations were either predictable or unpredictable as subjects were informed through verbal auditory feedback. Electrical activity of 12 leg and trunk muscles as well as center of pressure (COP) displacements were recorded and quantified within the time intervals typical of APAs and CPAs.



Results : The results revealed that most studied muscles initiated significantly later in MS patients with a previous fall history in comparison to MS non-fallers and healthy controls. Regarding the magnitudes of muscle activations, lower magnitudes of muscle activity during the APAs were seen in the both groups of MS patients in comparison to healthy controls. In addition, patients were not able to scale up their compensatory muscle activity in the unexpected condition when compared with expected condition. However, healthy controls increased their compensatory activity during the unexpected condition.

Conclusion : Both groups of MS patients required more times to stabilize their COP following both types of external perturbations in comparison to healthy controls. The inability to produce efficient APAs and CPAs during expected and unexpected perturbations as the first line of defense against perturbations may explain the high rates of postural instability and falls commonly seen in these patients. Future rehabilitation programs should focus on perturbation training protocols in order to improve both anticipatory and compensatory responses to daily perturbations.

Keywords : Multiple sclerosis; postural control; postural adjustments



Count: 457

Abstract ID: 570

Presentation Type: Oral

A Brain-Controlled Game for Improving Attention

Submission Author: Ali Roustazade

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Background and Aim : Brain-Computer Interfaces (BCI) collect electric signals of human brain (EEG) and translate them into understandable commands for computers. They introduce a unique method of communication between human and machine which have various applications, from rehabilitation of paralyzed individuals to developing alternative communication systems. One of the new applications of BCI that has received special interest in the last decades is the use of BCI in controlling computer games. The main reason is that BCI provides a combination of information and features that no other input modality can offer. These games can be developed for both entertainment and neuro-enhancement for healthy individuals and the diseased. The aim of this study was to develop a BCI System in form of a computer game, that can be controlled by user's level of attention. The system, in fact, provides a neuro-feedback loop for the user to improve his/her attention. In contrast with common neuro-feedback environments, it is much more attractive and guarantees user's engagement and follow-up.

Methods : In this study a car racing game was developed by Unity game engine. The user can turn the car to left and right by computer keyboard, while the speed of the car is controlled by user's level of attention. Attention level was extracted from EEG signal using a single electrode at CZ (reference: left earlobe; ground: right earlobe). Theta (4-7 Hz) to beta (13-20 Hz) band power ratio was calculated in an online manner and was used as an index reciprocal to the level of attention. Before attaching the electrodes, subject's skin was prepared with alcohol. The signal was recorded by R.BioAmp2 (Rayan Mindware). To evaluate system's performance, 8 healthy individuals tested the system by playing the game for 12 sessions (except 2 of them that attended only 6 sessions). Each session included 15 minutes of playing with the game. Before and after playing, average of theta/beta ratio was calculated in 90-second EEG recording intervals. The former was used as a threshold for theta/beta ratio, to set the speed in that session. Each subject took a TOVA (Test Of Variables of Attention), before the first and after the final session, to understand long-term effects of the game on variables of continuous attention.

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Results : Wilcoxon signed-ranks statistical test demonstrated that the TOVA scores significantly improved after testing sessions in all subjects; both in the number of errors, and variance of reaction time (asymptotic significance of 0.012 for both). On the other hand, theta/beta ratios obtained before and after each session demonstrated a significant decrease during the sessions (asymptotic significance of 0.017 and 0.012 respectively).

Conclusion : The results of this pilot study suggest that a neuro-feedback loop through an exciting racing game can significantly improve the attention level in healthy individuals. Therefore, such a serious game may be used as a promising neuro-enhancement tool for healthy individuals. However, more studies must be conducted for complete evaluation of such system's performance and their possible side effects. Further studies can also be performed to evaluate the system's functionality in helping individuals suffering ADHD.

Keywords : Brain Computer Interface; Attention; Serious Game; Neuro-Enhancement; ADHD



Count: 458

Abstract ID: 128

Presentation Type: Poster

Therapeutic effects of aqueous saffron (*Crocus sativus* L.) extract on memory deficit induced by subchronic stress in rats

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Background and Aim : Stress is an unavoidable condition in human experience with negative impacts on brain functions, which impairs learning and memory. *Crocus sativus* L, commonly known as saffron, is grown in Iran and Spain. In both traditional medicine and in modern pharmacology, saffron and its constituents have been used in the treatment of a wide variety of diseases. Studies have shown that saffron has anxiolytic and neuroprotective effects and enhances learning and memory. The present study investigated the therapeutic potential of saffron extract for the treatment of stress-induced memory impairment.

Methods : Twenty-one male Wistar rats were randomly allocated to three different groups (n=7 per treatment): An only-stress group subjected to restraint stress 6-h/day for 7 days before they received daily intraperitoneal injections of vehicle (saline) for the subsequent 7 days. A stress-treatment group that experienced 7 days of 6-h/day restraint stress and treated with daily i.p injections of saffron aqueous extract (30 mg/kg) for the subsequent 7 days. Finally, the control group that experienced no stress and received only the vehicle (saline) over a 7-day period. Memory functioning was evaluated using the passive avoidance test at intervals of 1, 3, and 7 days after a foot shock. Latencies were measured to determine changes in the memory trend in response to stress and treatment with saffron extract.

Results : Data revealed that memory was significantly ($P<0.01$) impaired in the stress group compared to the control group on day 7. The treatment with 30 mg/kg of saffron extract significantly ($P<0.05$ and $P<0.01$, respectively) enhanced memory in rats 3 and 7 days after learning compared to the stress group. Furthermore, results showed that memory in the stress-saffron group was significantly ($P<0.01$) greater than that in the control from day 1 onward. Besides, stress and control groups had a declining memory trend while saffron in stress-saffron group not only prevented the decline but even led to an ascending trend in memory improvement.

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Conclusion : It may be concluded that administration of saffron extract over a period of 3 days is capable of treating memory impairments caused by subchronic stress and preventing the expected memory deterioration over a period of 7 days. This considerable therapeutic potential of saffron extract can be explained by its capability to counteract the oxidative damage induced by stress, to intensify the N-methyl-D-aspartate (NMDA) receptor-mediated responses in certain brain regions involved in memory including the hippocampal neurons, and to increase such neurotransmitters as glutamate and dopamine.

Keywords : Memory; Restraint stress; Passive Avoidance; Saffron.



Count: 459

Abstract ID: 11

Presentation Type: Poster

Effects of exercise and/or sleep deprivation on anxiety – like behavior and body weight of female rats

Submission Author: Hakimeh Saadati

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Background and Aim : Several studies investigated the effect of sleep deprivation and physical exercise on emotional behaviors in rodents; resulting findings however remain questionable. Additionally, sleep deprivation is indicated to cause oxidative impairment in the brain and is also shown to be anxiogenic. Previous study revealed that sleep deprivation (SD) increased oxidative stress in the brain of male rats while regular treadmill exercise averted this increase.

Methods : Intact and ovariectomized (OVX) female Wistar rats were used in the present study. The exercise protocol was four weeks treadmill running and the multiple platform method was applied to induce 72h sleep deprivation (SD). Anxiety-like behaviors were determined using open field test.

Results : The results showed that sleep deprivation increased anxiety-like behavior while prior treadmill exercise prevented this increase ($P<0.05$). As well as, exercised groups spent, more time in the center of open field compared to the other groups ($P<0.05$). In addition, SD had a reducing effect on the mean body weight of female rats ($P<0.05$).

Conclusion : Thus sleep deprivation increased anxiety-like behavior of rats. Moreover, treadmill exercise training reduced and prevented anxiety-like behavior of animals. On the other hand, exercising animals display anxiolytic effects. Sleep deprivation also had negative impacts on body weight.

Keywords : Sleep deprivation, Physical exercise, anxiety-like behavior, Female rat



Count: 460

Abstract ID: 50

Presentation Type: Poster

The effects of pre and post learning sleep deprivation on cognitive function.

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Background and Aim : It has been shown that sleep contributes to the acquisition and consolidation of memory. Insufficient sleep is a familiar problem in modern societies. It has been previously shown that female rats are more susceptible to the harmful effects of sleep deprivation on cognitive functions. The purpose of this study was to determine the effect of pre and post learning sleep deprivation (SD) on hippocampus-dependent learning and memory in female rats.

Methods : Intact and ovariectomized (OVX) female Wistar rats were used in the current study. The multiple platform method was applied to induce 24h and 72h sleep deprivation (SD) after and before training respectively. We tested the effects of sleep deprivation on spatial learning and memory using the Morris water maze (MWM) task .

Results : Our results indicated that pre- learning sleep deprivation impaired spatial learning in the OVX and short-term memory in both intact and OVX animals ($p < 0.05$). In addition post training sleep deprivation induced long term memory impairment in the intact and ovariectomized female rats, regardless of reproductive status ($p < 0.05$).

Conclusion : In conclusion the results of the current study confirmed the negative effect of SD on cognitive functions of female rats; however more investigations need to be done.

Keywords : Sleep deprivation, Learning and memory, Morris Water Maze, Female rats



Count: 461

Abstract ID: 302

Presentation Type: Poster

Investigating Gray-Matter Volume Abnormalities in Autism Spectrum Disorder

Submission Author: Mahdi Saadatmand Tarzjan

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Background and Aim : Autism is a psychic disorder which occurs in early years of life and causes various individual and social problems. The main cause of the disease is not determined yet. There is no absolute diagnosis and treatment/cure. Autism can be diagnosed based on the clinical and behavioral evaluation which is a time-consuming method. Besides, this method is not accurate for younger children because of various social skills and language developments. Experiments show that diagnosis for these children is difficult since they do not cooperate with experts in behavioral tests. Recently, some efforts have been performed to diagnose autism based on processing of magnetic resonance images of the brain. Obviously, in order to study the anatomical variations, the first step is the volumetric analysis of different regions of the brain. In this research, we measure the volume of different anatomical regions of the brain in T1-weighted magnetic resonance (MR) images.

Methods : First, we propose two new algorithms for registration of brain MR-images with the digital atlas ICBM152 by subsequently using both the rigid (affine) and non-rigid transformations. Then, the labeled digital atlas MNI-AAL (made in the same coordinates system of ICBM152) is employed to measure the volumes of 116 different regions of the brain gray-matter in every MR image. Finally, the volume variations of different gray-matter regions are studied within the autism category compared to the normal cases. In this research, we take advantage of 11 normal and 17 autism MR-images provided by the database ABIDE of the LONI image data archive (LONI IDA). All patients were between the ages of 7 and 8 years.

Results : The proposed rigid and non-rigid registration algorithms (abbreviated to RRA and NRRA, respectively) provided significantly superior performance compared to a number of well-known counterpart algorithms in terms of both the average cross-correlation coefficient (CCC) and CPU time. In more detail,



RRA provided the average CCC of 0.83 in the autism category which is considerably better than that of the Powell method (with the average CCC of 0.68) implemented in the well-known frequently-used SPM toolbox. Additionally, the former (with the average CPU time of 93 seconds) converged 2.8 times faster than the later. Furthermore, NRRA also provided enhanced solution quality (with the average CCC of 0.88) compared to the corresponding algorithm of SPM developed based on the DCT coefficients model (with the average CCC of 0.83). Finally, experimental results demonstrated that with the significance level of 5%, the gray matter volumes of the regions left posterior cingulate gyrus, right calacarine, left lingual gyrus, right lingual gyrus, and left precuneus in the autism category, were larger than the corresponding areas in the normal category.

Conclusion : In this research two new registration algorithms based on rigid and non-rigid transformations were proposed. They were utilized for alignment and registration of the brain MR images for computing the volume of different gray-matter regions. Experimental results demonstrated statistically meaningful growth of gray-matter volume within some regions of autism brains compared to normal cases.

Keywords : Autism Spectrum Disorder (ASD); Magnetic Resonance Imaging (MRI); Brain Volume Measurement; Image Registration; ICBM152; MNI AAL



Count: 462

Abstract ID: 598

Presentation Type: Oral

A Novel Automated Method for Early Diagnosis of Alzheimer Disease by Using T1-Weighted Magnetic Resonance Images

Submission Author: Mahdi Saadatmand Tarzjan

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Background and Aim : Alzheimer disease (AD) is a devastating cognitive disorder caused by progressive degeneration of synapses and neurons of the brain regions related to learning and memory. In many patients, AD starts with the mild cognitive impairment (MCI). MCI causes cognitive serious-enough changes such as problems with memory, language, thinking, and judgment, but they are not severe-enough to interfere with daily life. Generally, 60% of MCI patients will not progress to AD or any other dementia. Therefore, for early diagnosis of AD, evaluation of the brain atrophy is necessary. In this research, we propose a novel method for distinguishing AD from MCI and control by registration of T1-weighted MR brain images with a digital medical atlas.

Methods : First, the patient's MR image is aligned with the digital atlas ICBM152 by using the (rigid) affine transformation. The rigid transformation is not flexible-enough to accurately fit local structures of the patient's brain to the corresponding features of the atlas. Thus, in the second step, by using a non-rigid transformation which provides a displacement vector for each voxel, the patient's MR image is accurately registered to ICBM152. For both the rigid and non-rigid registrations, we take advantage of the well-known frequently-used SPM toolbox on the MATLAB programming environment. Third, by mapping the digital atlas MNI AAL to the domain of the patient's MR image (using both the rigid and non-rigid transformations), different regions of the brain gray-matter are separated. Clearly, the displacement vector field (i.e. the non-rigid transformation) involves important data of the brain atrophy. Therefore, in the fourth step, we compute the average and covariance matrix of displacement vectors of all voxels within every region of the gray-matter. Then, all the resultant coefficients are sequentially arranged in a feature vector. Finally, AD, MCI, and control are distinguished by using the maximum a-posteriori probability (MAP) classifier. In this research, we take advantage of 30 AD, 30 MCI, and 20 control MR images chosen from

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the database ADNI of the LONI image data archive (LONI IDA). In all categories, 50% of feature vectors are used for training of MAP.

Results : The proposed algorithm could successfully register patients' images to the digital atlas with the cross-correlation coefficient of 0.87, on average. Furthermore, by visual comparing the feature vectors of AD and MCI patients, considerable volume changes were observed in the hippocampus, mid temporal lobe, and precuneus. Finally, the proposed MAP classifier could successfully distinguish AD from MCI and Control with the accuracy of 97%.

Conclusion : In this paper, a new method was proposed for early diagnosis of AD based on registration of T1-weighted MR image of patient's brain with the digital atlas ICBM152. We trained a MAP classifier by using feature vectors computed by using the displacement vector field of the non-rigid registration. Experimental results demonstrated that the proposed algorithm could successfully distinguish AD from MCI and control with significantly large accuracy.

Keywords : Alzheimer Disease (AD); Mild Cognitive Impairment (MCI); Magnetic Resonance Imaging (MRI); Image Registration; Maximum A-posteriori Probability



Count: 463

Abstract ID: 645

Presentation Type: Poster

Effects of buprenorphine on the memory and learning deficit induced by methamphetamine administration in male rats

Submission Author: Mohammadmahdi Sabahi

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Background and Aim : There is little information about the interaction between effects of methamphetamine (Meth) and buprenorphine (Bup) on the phenomenon of memory and learning in the male rats. The purpose of this study was to investigate the effect of Meth on memory and learning and the role of Bup in Meth induced changes in these phenomena in rats.

Methods : The data were obtained from male Wistar rat, weighing 250 to 300 g. In this experiment, 40 male rats were categorized into four groups: Sham, Meth, Bup, Meth+Bup. In all groups, related substances were administrated for one week. Spatial learning and memory, avoidance learning and locomotion were assessed using the Morris water maze, passive avoidance and open field tests respectively.

Results : Meth and Bup had no effects on the locomotor activity. Co-administration of Bup+Meth increase the time spent in the target quadrant in comparison to Meth. Our analysis revealed significant increase in the escape time latency after administration of Meth, Bup and co-administration of Bup+Meth in comparison with sham group. There is a significant increase in the traveled distance after administration of Meth, Bup and co-administration of Bup+Meth in comparison with sham group

Conclusion : Meth administration impairs spatial memory and learning in rats, and its co-administration with Bup prevents this effect. Interaction between these two drugs can affect the learning and memory via changes in activity in one of dopamine, catecholamine and also glutamate systems. Therefore, since Bup

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cause less side effects compared to other drugs, it can be used for the treatment of memory deficits in patients with Meth addiction

Keywords : Memory and Learning; Methamphetamine; Buprenorphine



Count: 464

Abstract ID: 729

Presentation Type: Oral

Preventive effect of 8-OHDPAT and fluoxetine on haloperidol-induced behavioral impairments

Submission Author: Mohammadmahdi Sabahi

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Background and Aim : Parkinson's disease (PD) is a neurodegenerative disorder characterized by a progressive loss of dopaminergic neurons in the substantia nigra pars compacta (SNpc). Neuroleptic drugs such as haloperidol induce Parkinson-like syndrome through blocking brain D2 receptors. Activation of 5HT1A in the SNpc decreased catalepsy in parkinsonian rats. This study aimed to investigate the effect of 8-OHDPAT, as an agonist of 5HT1A receptors and fluoxetine as a serotonin reuptake inhibitor on haloperidol-induced catalepsy in male Wistar rats.

Methods : The experiments were performed on 24 male Wistar rats (200-240 g). The rats were divided into 4 groups (n = 6). Rats pretreated with saline or 8-OHDPAT (10 mg/kg, i.p.) or fluoxetine (0.5mg/kg, i.p.) or fluoxetine (1mg/kg, i.p.) for 5 consecutive days. Catalepsy and motor-imbalance were induced by an intraperitoneally injection of haloperidol (1 mg/kg) at the end of drugs treatment. The effects of 8-OHDPAT and fluoxetine on haloperidol-induced catalepsy and motor impairment were assessed by the bar test and rotarod, respectively.

Results : The results demonstrated that 8-OHDPAT decreased catalepsy and increased motor balance compared with the control group. Pre-treatment of rats with fluoxetine (1mg/kg, i.p.) did not improve the haloperidol-induced catalepsy and motor impairment; however, fluoxetine (0.5 mg/kg, i.p.) markedly decreased haloperidol-induced catalepsy and increased motor balance compared with the control group.

Conclusion : It may be concluded that pre treatment with 8-OHDPAT and low dose of fluoxetine improves catalepsy and motor balance in a haloperidol-induced animal model of Parkinson's disease through activation of nigral 5HT1A receptors. However, further investigations should be undertaken to clarify the exact mechanism of interaction between 5HT1A and DA receptors.

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Keywords : haloperidol; fluoxetine; 8-OHDPAT; catalepsy, motor balance



Count: 465

Abstract ID: 61

Presentation Type: Poster

Stem cell development may leads to Glioblastoma

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Background and Aim : Primary benign and malignant brain tumors are frequent. Glioblastoma (GBM) is the most common and fatal primary brain tumor in adults. In addition, it is known as a highly malignant brain tumor of astrocytic origin. Primary glioblastomas are more common, generally in patients older than 50 while secondary glioblastomas are more frequent in younger patients. They come out as low grade tumors and they will proceed to glioblastomas.

Methods : Cancer stem cells (CNS) origins and their contributions to the growth of brain tumor and therapeutic resistance are under active analysis, proposing future hopes for this fatal disease. Neural stem cells (NSCs) characteristics including self-renewing capacity and plasticity lead to differentiate into multiple cell types. Considering the cellular heterogeneity and renewability of glioma cells, contributes to the hypothesis that NSCs might be the origin for gliomas. In human central nervous system (CNS) the neurogenic areas with their resident NSCs are taught to be candidates for transformation leading to brain tumors. Specifically mitotically active cells such as NSCs are the most likely the brain tumor cells of origin. During normal brain development, NSCs provoke to all the mature neurons, astrocytes, and oligodendrocytes.

Results : Although Observations of the cellular heterogeneity and renewability of glioma cells promotes to the hypothesis that NSCs may be the origin for gliomas, but other evidences distinctly show that oligodendrocytic progenitor cells (OPC) can serve as the developmental origin for gliomas either. Moreover, in some animal studies, the initial mutations which elevated transformation generally showed those most recurrently found in human GBMs, such as p53, PTEN, v-erbB, Nf1 and Ras, demonstrating that OPCs might turn malignant with a wide range of mutations. About gliomas, probably multiple cell types such as NSCs, glial progenitors, and even mature astrocytes, could be known as the developmental origins for non-proneural subtypes.

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Conclusion : Although information about tumor biology is accessible, it is clearly inadequate. GBM resistance against chemotherapy and radiotherapy demand some novel therapies. Incomprehension of the cellular origin of this disease is one of the most important reasons for insufficiency of clinical advances. Further analysis of human NSCs and their potential for malignancy will be essential to the continued encounter with brain cancer, forasmuch as finding the true source of human gliomas may lead to better therapeutic targeting, the identification of new markers for the progression of gliomas, earlier cancer detection, and the development of new therapeutic factors.

Keywords : Brain tumor, Glioblastoma, Stem Cells, oligodendrocytic progenitor cells



Count: 466

Abstract ID: 36

Presentation Type: Poster

Genetic status in Parkinson Disease

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Background and Aim : Parkinson's disease (PD), whose pathological hallmark is prominent loss of dopaminergic neurons in the substantia nigra, is one of the most common chronic neurodegenerative diseases in elderly people. The causes of PD are largely unknown. Both genetic and environmental factors have been implicated.

Methods : In the current PD genetics studies, 18 specific chromosomal regions, are termed PARK (to denote their putative link to PD), and numbered in chronological order of their identification (PARK1-18) which their inheritance pattern is variable (AD, AR, X-linked). [The most important ones are: SNCA (PARK1/4) - Parkin (PARK2) - PINK1 (PARK6) - DJ-1 (PARK7) - LRRK2 (PARK8) - ATP13A2 (PARK9)...]. Moreover, there are some other regions on genome that are known to play important role in PD development like DNAJC6, SYNJ1, and ATP6AP2. Although most important genes in this field are discovered in primary studies, but in recent studies some other controversial genes are discussed such as DNAJC6 and SYNJ1.

Results : In addition, some studies have focused on genes that involve gene-environment interaction in PD patients. There is evidence of abnormalities in the vitamin D-endocrine system in PD patients. Some genetic studies have revealed an association between the risks of PD with polymorphism in the VDR gene. Moreover, several polymorphic genes, including those encoding drug-metabolizing enzymes, have been proposed as possible PD susceptibility genes. Among them, the polymorphic gene encoding the cytochrome P450 CYP2D6 has been extensively investigated in relation to the risk of developing PD. Besides the classic mutations in coding regions of genes, the critical role of gene expression regulators in disease states is increasingly recognized. The network of small non-coding microRNAs is crucial for the normal

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development and survival of distinct neuronal populations that are vulnerable in various neurodegenerative disorders (e.g. miR-7, miR-153 that regulates α -synuclein expression).

Conclusion : To studying PD's etiology, the genetic part is so important, but considering genetic interaction and gene regulation beside other studies seems to be beneficial for understanding and controlling PD.

Keywords : Parkinson Disease, Genes, etiology



Count: 467

Abstract ID: 546

Presentation Type: Oral

Licofelone attenuates depressive-like behavior induced by mice model of LPS: involvement of Nitric oxide pathway

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Background and Aim : Licofelone is a dual cyclooxygenase/5-lipoxygenase (cox/5-lox) inhibitor which recently approved as an effective treatment for osteoarthritis. Beside its analgesic and anti-inflammatory effects, some reports show neuro-protective properties for this agent in central nervous system. Although different neurotransmitters and neuro-modulators like nitric oxide were introduced as suggested targets of licofelone, the underlying mechanisms of central effects of this drug are not still fully understood.

Methods : The aim of present study is to investigate the effect of Licofelone in LPS (lipopolysaccharide)-induced depression model. It has been shown that the bacterial endotoxin LPS results in activation of pro inflammatory factors including nitric oxide (No). Measuring the duration of immobility in the forced swim (FST) and tail suspension test (TST) also indicated the effect of LPS in inducing depressive-like behaviors in mice.

Results : The present study indicated that the Injection of a single effective dose of Licofelone (20 mg/kg i.p) significantly decreased immobility time in TST and FST tests (decreased depression , $p < 0.05$). Injection of lps (0.85 mg/kg i.p) significantly induced depressive like behavior in animals. While, pretreatment with an inducible iNOS inhibitor, Aminoguanidine (50,100mg/kg i.p), increased the antidepressant effect of a subeffective dose of licofelone (5 mg/kg i.p).

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Conclusion : In conclusion results demonstrated that the Nitric oxide signaling pathway is involved in the antidepressant properties of Licofelone. These data support the involvement of NO as an important role player in the central neuroprotective properties of Licofelone.

Keywords : depression , licofelone , Nitric oxide , aminoguanidine , lps-induced depression

Count: 468

Abstract ID: 274

Presentation Type: Poster

Feeding by Nigella Sativa during neonatal and juvenile growth improves learning and memory of rats

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Background and Aim : The positive roles of antioxidants on brain development and learning and memory have been suggested. Nigella Sativa(NS) has been suggested to have antioxidant and neuroprotective effects. This study was done to investigate the effects feeding by the hydro-alcoholic extract of NS during neonatal and juvenile growth on learning and memory of rats.

Methods : Fourteen pregnant rats were kept in separate cages. After delivery, they were randomly divided into four groups including: 1)Control 2) NS100 mg/kg(NS 100) 3) NS 200mg/kg(NS 200) and 4) NS400mg/kg(NS 400). Rats in the control group received normal drinking water, whereas the group 2, 3 and 4 received the same drinking water supplemented with the hydro-alcoholic extract of Nigella sativa(100, 200 and 400 mg/ kg respectively) from the first day after birth through the first 8 weeks of life of offspring. After 8 weeks, 10 male offspring of each group were randomly selected and tested in the Morris water maze (MWM) and passive avoidance. Finally, the brains were removed and total thiol groups and malondialdehyde (MDA) concentrations were determined.

Results : In MWM, treatment by 400 mg/ kg extract reduced both the time latency and traveled distance to reach the platform compared to control group($p<0.05$ - $p<0.01$). Both 200 and 400 mg/ kg of the extract increased the time spent in target quadrant $p<0.05$ - $p<0.01$). In passive avoidance test, the treatment of the animals by 200 and 400 mg/kg of NS extract significantly increased the time latency for entering the dark compartment ($P < 0.05$ - $P < 0.001$). Pretreatment of the animals by 400 mg/ kg of NS extract decreased the MDA concentration in hippocampal tissues while, increased thiol contents compared to control group ($p<0.001$).

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Conclusion : These results allow us to propose that feeding of the rats by the hydro-alcoholic extract of NS during neonatal and juvenile growth have positive effects on learning and memory. The effect might be due to the antioxidative effects.

Keywords : Nigella Sativa, Neonatal, Juvenile, Learning , Memory, Oxidative stress



Count: 469

Abstract ID: 734

Presentation Type: Poster

compare anxiety sensitivity in two groups, one suffering from cancer and the other cancer free

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Mahdi Sabzaligol¹

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Background and Aim : Purpose: the present research was conducted with the aim to compare anxiety sensitivity in two groups, one suffering from cancer and the other cancer free

Methods : Findings: Three factors of fear of respiratory symptoms, fear of cardiovascular symptoms, and fear of lack of cognitive control related to the anxiety sensitivity variable were also significantly different between the two groups (sig<0.05).

Results : Method: the population included 100 men and women suffering from cancer and hospitalized in the hospital and 100 individuals without cancer which were selected through targeted sampling. The samples filled out the reconsidered anxiety sensitivity index questionnaires. A t- test was used to analyze the research data.

Conclusion : Findings: Three factors of fear of respiratory symptoms, fear of cardiovascular symptoms, and fear of lack of cognitive control related to the anxiety sensitivity variable were also significantly different between the two groups (sig<0.05).

Keywords : : mind- behavioral systems, cognitive emotion regulation, anxiety sensitivity, cancer patients, cognitive psychology, behavioral inhibition and behavioral activation systems



Count: 470

Abstract ID: 694

Presentation Type: Poster

More Insights into the Working Memory Tests

Submission Author: Atefe Sadeghi

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Background and Aim : One of the most essential and useful systems that we deal with daily is working memory (WM). It is a system for actively maintaining information while prioritizing, manipulating and protecting them from unwanted interferences. So far there have been various tests and tasks proposed for identifying and evaluating WM. The basis of these tests is according to valid qualitative or quantitative models developed for working memory. N-back and Span tasks are well-known tasks which are being used for clinical goals. The focus of existing tests usually is on the working memory capacity. Baddely and Hitch (1974) proposed a qualitative model for WM which by this time is one of the most famous and valid models being used. The model considers two main parts: 1- short term memory containing visuospatial scratch pad and short term storage for verbal information; 2- central executive component.

Methods : In this study we have reviewed the existing WM tests and tasks to quantitatively determine the contribution of each WM part (e.g., short term memory and the executive control) separately. It has been reported that the role and involvement of the central executive component can vary across different tasks. Refreshing (updating) information, manipulating information stored in short term memory, allocating attention to the target and protecting information from interferences are some of these duties. One of the approaches we have used in determining the contribution of each part, is assessing the activity of parts of the brain that are approximately attributed to each of these parts.

Results : According to the results, each WM test has been received two degrees: one for the contribution of STM and one for the executive control. For example, the reported outcomes included the information about how much capacity of the subject's short term memory has been occupied during the test and how much load has been on the subject's central executive controller. The correlation between the performance of the subject in the test (i.e., the accuracy and the reaction time) and the weights of short term memory and central executive controller can also be investigated.

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Conclusion : According to the results obtained in this study, we can use the existing WM tests or tasks more precisely. It can show the effect of the short term memory capacity limitation and also the capability of the central executive function on the subject's performance in WM tests. It can also be estimated whether the subject has deficits in short term memory capacity or in the executive control.

Keywords : working memory tests; executive control; short term memory



Count: 471

Abstract ID: 77

Presentation Type: Oral

Memory enhancement through an upswing in synaptic plasticity in hippocampal CA3: How certain brain peptides administration influences Alzheimer's disease?

Submission Author: Bahman Sadeghi

Bahman Sadeghi¹

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Background and Aim : Alzheimer's disease (AD) is a multifactorial progressive neurodegenerative disorder characterized by loss of memory and cognitive deficits, influenced by the metabolic status, in which the impairment of neuropeptides/neurotransmitters systems, cerebrovascular deposits of amyloid have been previously observed. Ghrelin is a multifunctional peptide hormone produced in a wide variety of tissues, which has been associated with the progression of obesity and metabolic syndrome, but has been also linked to neuromodulation, neuroprotection, memory and learning processes. This study investigated the effects of ghrelin-induced memory retention on amelioration of cognitive deficits via restoration of long-term potentiation (LTP) and induction of synaptic plasticity in hippocampal CA3, using a rat model of AD induced by amyloid- β (1-42) injection.

Methods : Five groups of male rats (n=40, 230–270 g) including control (intact), sham-operated, ghrelin-treated (200 ng /rat, intracerebroventricular (ICV), daily for two weeks), A β 1-42 injected (5 μ l/rat) and A β 1-42 plus ghrelin-treated animals were designed. Ghrelin was administered after an ICV injection of A β 1-42. To assess cognitive performance and the motor dysfunction, passive avoidance tests and open-field were performed, respectively. Step-through latency (STL) was evaluated as learning and memory index. Intrahippocampal field potential recordings were done and LTP were used to detect the electrophysiology changes.

Results : Results showed that following A β 1-42 injection, STL and induction of LTP were significantly decreased whereas ICV injection of ghrelin significantly enhanced memory retention by improvement of STL and restitution of LTP in the CA3 with increased EPSP slope and PS amplitude, suggesting the involvement of ghrelin in postsynaptic mechanisms of hippocampal LTP.

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Conclusion : It was revealed that neuroprotective effects of chronic ghrelin not only can enhance but also can restore LTP in the CA3 area in $A\beta$ -induced AD. These results suggest that ghrelin may be considered as a promising therapeutic agent to alleviate cognitive deficits of AD.

Keywords : Alzheimer's disease; Ghrelin; CA3; Passive avoidance learning; Long-term potentiation; Synaptic plasticity



Count: 472

Abstract ID: 373

Presentation Type: Oral

WDR neuronal hyper-responsiveness to mechanical and thermal stimuli is reduced by GABAA receptor stimulation in neuropathic rats

Submission Author: Mehdi Sadeghi

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Background and Aim : The mechanisms underlying neuropathic pain are complex and controversial. One of the most important mechanisms is the loss of GABAergic inhibitory tone in the spinal cord. As for the discrepancies in the neuropathic pain mechanisms and also Regarding the significance of sensory information processing of spinal cord by GABAergic inhibitory system, this study aimed to investigate the effect of GABAA receptor agonist muscimol on mechanical allodynia and on hyper-responsiveness of spinal dorsal horn wide dynamic range (WDR) neurons to mechanical and thermal stimuli in neuropathic rats.

Methods : Chronic Constriction Injury (CCI) of the sciatic nerve was used to induce neuropathic pain as described by Bennett and Xie (1988). Adult male Wistar rats (200-250g) were randomly assigned to five groups (n=8) including: (i) a sham group; (ii) a group subjected to CCI and injected with normal saline and (iii) three groups subjected to CCI and injected with muscimol (0.5, 1, and 2 mg/kg, i.p.). In all groups mechanical allodynia was evaluated by Von Frey filaments on day 14 after surgery. In electrophysiological experiments, neuronal activities of spinal WDR neurons to mechanical and thermal stimuli were considered by single unit recording technique on post operative day 14.

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Results : All of the animals that had experienced CCI, exhibited significant mechanical allodynia at the ipsilateral hindpaw on day 14 after neuropathy. The electrophysiological results showed that the responsiveness of WDR neurons to mechanical and thermal stimulation significantly increased after CCI in comparison to sham group. Administration of muscimol on post operative day 14, could reduce mechanical allodynia and also hyper-responsiveness of WDR neurons in neuropathic rats through GABAA receptor stimulation.

Conclusion : This results show that the loss of GABAergic inhibitory system is involved in neuropathic pain induction and muscimol administration via enhancement of GABA inhibitory tone can reduce behavioral and electrophysiological symptoms of neuropathic pain.

Keywords : Chronic Constriction Injury (CCI) , WDR neurons , Muscimol , Neuropathic pain



Count: 473

Abstract ID: 255

Presentation Type: Oral

Inhibition of EZH2 leads to reduced cell viability and cell cycle arrest in human glioblastoma multiforme cell lines

Submission Author: Saeideh Sadeghi

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Background and Aim : Glioblastoma multiforme (GBM), also known as grade 4 astrocytoma, is the most aggressive form of malignant glioma. Despite the aggressive treatment in combination with surgery, radiotherapy and chemotherapy the overall prognosis remains poor with a median survival of 10–14 months. Therefore, identification of new therapeutic targets and strategies to improve the efficacy of existing therapies are therefore urgently needed. In addition to genetic alterations, epigenetic dysregulation also contributes to cancer. Enhancer of Zeste homolog 2 (EZH2) is a histone N-methyltransferase component of the Polycomb Repressive Complex (PRC2) that mediates repression of tumor-suppressor gene activity via trimethylation of lysine 27 of histone H3. EZH2, which is frequently over-expressed in various cancers, including glioblastoma, promotes cell proliferation and cell cycle progression. EZH2 has been shown to be a functional oncogene therefore multiple pharmacological inhibitors of EZH2 are developed.

Methods : In the present work, we have treated three glioblastoma cell lines (including the U87, U251 and A172) with the specific chemical inhibitor of EZH2. Then, Cell survival was determined using the methyl-thiazolyl-tetrazolium (MTT) assay also flow cytometric propidium iodide assay was performed to define cell cycle alterations after EZH2 inhibition.

Results : Our results showed that EZH2 inhibition reduces cell viability, blocks cell cycle progression and induces cell cycle arrest at G1 phase in human glioblastoma cell lines.

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Conclusion : These findings suggest that inhibition of EZH2 might be a promising therapeutic option for treating glioblastoma.

Keywords : Glioblastoma multiforme; Epigenetics; EZH2; PRC2; MTT



Count: 474

Abstract ID: 394

Presentation Type: Poster

The effect of postnatal foot-shock stress on insulin secretion from isolated islets of Langerhans in young adult male rats

Submission Author: Forouzan Sadeghimahalli

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Background and Aim : Background and aim: Pancreatic β -cells are responsible for producing all of the insulin required by an organism to maintain glucose homeostasis. Defects in development of endocrine cells of pancreas following postnatal stress can result in certain disorders, including metabolic abnormalities later in life. So, this study aimed to investigate the postnatal foot-shock stress on insulin secretion from pancreatic isolated islets in young adult male rats.

Methods : Material and methods: The studied animals(Wistar rats) were divided into two groups: stress rats(Early STR group) which received foot shocks stress by communication box for 5 consecutive days (2 times/day) at 2 weeks of age and non-stress rats (Control group)which placed in the communication box without receiving foot shocks at the same time. Then, at 8-10 weeks of age, following anesthesia pentobarbital young adult rats were decapitated and dissected to remove pancreas for determining Insulin secretion from isolated islets in static condition. Insulin secretion measured in response to 5.6 or 16.7 mM glucose concentration. Also, the number or area of pancreatic islets was studied in young adult rats of both groups.

Results : Results: The results of this study showed that early foot shock stress in Early STR group reduced non-significantly insulin output from pancreatic isolated islets in the presence of low glucose concentration (5.6 Mm) as compared to Control group and enhanced significantly insulin secretion in response to high glucose concentration (16.7 Mm) ($P < 0.01$) in comparison with Control group. While early foot shock stress was not able to change number or area of pancreatic islets in young adult rats as compared to Control group.

Conclusion : Discussion and Conclusion: our results suggest that postnatal stress impaired the pancreatic insulin secretion capacity and glucose homeostasis in adulthood rats without affecting the number or area of Langerhans islets in pancreas. Thus, early life stress maybe predispose organism to metabolic disorders such as impaired pancreatic insulin secretion later in life.

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Keywords : Keywords: postnatal stress, insulin secretion, pancreatic islets, area or number of islets.



Count: 475

Abstract ID: 81

Presentation Type: Poster

Comparison of between student achievement and demographic characteristics of student with OCD and normal schools of Ardabil universities

Submission Author: Fariba SadeghiMOVAHED

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Background and Aim : OCD is a chronic anxiety disorder is an excessive preoccupation with the trivial matters of discipline and perfection seeking is well. Research shows that between one and three percent of the population may be suffering from OCD. In this study we investigated the relationship between academic achievement and OCD among students.

Methods : This study was done on 300 university students. Students form a cluster and each cluster is considered as a sequence of different disciplines and universities were selected. To each of the students a questionnaire to identify patients with OCD as well as a list of Czech assess achievement and demographic characteristics of the patients were delivered. After filling out the questionnaire, patients who had diagnostic criteria for DSM 4 was selected. Academic achievement and demographic data extracted separately and these patients were compared with healthy subjects

Results : In this study, data on 300 students with an average age of 26.60 year was a 64.7% of the population is comprised of women and other men. 72% of subjects were single and half the 0.28 percent Wiki resident studying in the fields of science (non-medical) and 63% were undergraduates. 37.7 of the first child and 37.3 of a 4-person family lived. 48% had a moderate income households. Average grade students 15.48 were calculated. The answer to those questions was a 58.7% of people with OCD have obsessive thoughts. The data analysis showed that persons with OCD thoughts mean more than others, and this has had a

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statistically significant ($P = 0.000$) the age of significant association ($P = 0.899$) and gender ($P = 0.899$) was observed with OCD thoughts.

Conclusion : In this study it was observed that the prevalence of OCD thoughts are much higher than in other studies and these ideas are more successful in their studies with these agents is probably due to reading lessons.

Keywords : Academic achievement, Student, OCD



Count: 476

Abstract ID: 231

Presentation Type: Oral

Investigating the role of personality as a risk factor for the development of multiple sclerosis

Submission Author: Fariba SadeghiMOVAHED

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Background and Aim : Multiple sclerosis is the most common inflammatory disease of the central nervous system. Genetic and environmental factors possibly will be involved in etiology of disease. One of the factors considered in developing the disease is type of personality. This study aimed was used to determine the role of personality type in the development of multiple sclerosis.

Methods : The present study was descriptive- correlational. In this study, 100 patients with multiple sclerosis and the member of Multiple Sclerosis Society of Rasht (32 men and 68 women) and 100 persons without patients (40 males and 60 females) who were selected randomly were studied. Research instruments are two questioners Eysenck personality type C questionnaire and Friedman and Rosenman personality type A and B questionnaire. Data were analyzed by SPSS software using descriptive and inferential statistics.

Results : In this study, the age of study population were 25 to 55 years. From 100 patients, 48% had a personality type A, 22% B and 30% C. While from 100 people of the control group, 27% had personality type A, 65% B and only 8% C. This difference was statistically significant ($P < 0.01$). Age and gender of the samples had no effect on the prevalence of personality types.

Conclusion : The present study shows that personality type A can consider as a risk factor for onset of multiple sclerosis. Since stress and angry is the most important characters of these peoples. It is

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recommended that peoples with this personality type, especially in adolescence identified and training to improve the quality of life and control of stress and angry. It needs to more research to demonstrate.

Keywords : Risk factor; Personality type; Multiple sclerosis



Count: 477

Abstract ID: 142

Presentation Type: Poster

Aqueous and ethanolic extracts of *Boswellia serrata* protect against focal cerebral ischemia and reperfusion injury in rats

Submission Author: Hamid Reza Sadeghnia

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Background and Aim : Oxidative stress and cell apoptosis play major roles in neuronal injury after ischemia-reperfusion (I-R) injury. *Boswellia serrata* is a medicinal plant with antioxidant properties. Acetyl-11-keto- β -boswellic acid (AKBA) is an active triterpenoid compound from *B. serrata*. In the current study, the neuroprotective effects of aqueous and ethanolic extracts of *B. serrata* (named ABS and EBS, respectively) and AKBA were investigated against middle cerebral artery occlusion (MCAO)-induced cerebral I-R injury in rats.

Methods : ABS and EBS with doses of 125, 250, 500 and AKBA with dose of 50 mg/kg were administrated (i.p.) just after MCAO induction for 30 min and reperfusion for 24 h.

Results : ABS and EBS with doses of 125, 250, 500 and AKBA with dose of 50 mg/kg were administrated (i.p.) just after MCAO induction for 30 min and reperfusion for 24 h.

Conclusion : In conclusion, our results demonstrated that *B. serrata* and AKBA attenuates oxidative damage and inhibits cell apoptosis, subsequently protecting cerebral I-R injury in rats.

Keywords : *Boswellia serrata*, acetyl-11-keto- β -boswellic acid (AKBA), middle cerebral artery occlusion (MCAO), oxidative stress, apoptosis, neuroprotection



Count: 478
Abstract ID: 163
Presentation Type: Oral

Positively-skewed pattern of CSF phosphorylated tau (Thr-181) level correlates with age in Alzheimer's disease: a meta-analysis on clinical studies

Submission Author: Saeed Sadigh Eteghad

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Background and Aim : Cerebrospinal fluid (CSF) concentration of phosphorylated Tau (Thr-181) (p-Tau181) is a novel biomarker for diagnosis of Alzheimer's disease (AD). However, constant level of a molecule over time is an essential factor for introducing it as a biomarker. The main objective of this study was to assess whether this CSF biomarker level changes during AD.

Methods : We conducted a comprehensive search to identify studies on p-Tau181 in AD patients. Original English language peer-reviewed studies without time restriction were included. Mean (standard deviation) p-Tau181 concentrations, demographic data, diagnostic criteria and MMSE score for AD and control subjects were extracted. Standard mean differences (SMD) of CSF p-Tau181 level were compared between AD and controls, by a meta-analysis. Unrestricted maximum likelihood random effects meta-regressions of SMD were performed with mean age.

Results : The p-Tau181 level was increased in AD in comparison to controls (SMD =1.034, $p < 0.0001$). Meta-regression analyses on p-Tau181 level during age factor showed decrease in SMD ($p < 0.0001$). In addition, changing slope of p-Tau181 level in minimum and first quartile (Q1) range of age was increased (65-68, $p = 0.047$), while in Q1 to median range was plateau and non-significant (68-71, $p = 0.743$) and in median to Q3 and Q3 to maximum ranges significantly decreased (71-74, $p = 0.03$ and 74-77, $p = 0.007$, respectively).

Conclusion : Based on our results, p-Tau181 levels pattern changes in positively-skewed shape over time in AD and controls and 68-71 years old is the best course time of detection of AD by this protein.

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Keywords : p-Tau181, age, Alzheimer's disease, meta-analysis



Count: 479

Abstract ID: 468

Presentation Type: Poster

Transplantation of Human Embryonic Stem Cell-Derived Neural stem cells with an Injectable Hyaluronic Acid-Gelatin Hydrogel into Contusion Model of Rat Spinal Cord Injury

Submission Author: Hoda Sadrosadat

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Background and Aim : Transplantation of Neural stem/progenitor cells (NSPCs) and their differentiation potency are promising to preserve or regenerate functional pathways after central nervous system injury. However, reconstruct material that can bridge the injury gap and regenerating axons remain a challenge in spinal cord injury (SCI). Simple and effective biocompatible materials that mimic the natural extracellular matrix (ECM) have been applied in regenerative medicine and there are loads of previously published data that have been established benefit of these materials for cell growth and differentiation. Injectable biocompatible hydrogels would be desirable in regenerative medicine in order to promote not only cell survival and differentiation, but also the regeneration of descending or ascending nerve fibers. The purpose of this study initially is to increase Viability of transplanted cells in injured site in order to efficiently support and guide axonal regeneration, secondly to reduced glial scar formation and cavity size as well.

Methods : Moderate to severe Contusive spinal cord injury performed at T10-T11 level of spinal cord using NYU-impactor (10g, 25mm) and rats (wistar, male, 250-280gr) were received daily extensive post surgery care and kept for seven weeks. Three transplantation groups contain GFP labeled human embryonic stem cell-derived neural stem cells (hESC-NSC), hESC-NSC cell encapsulated in hyaluronic acid gelatin hydrogel and hydrogel which inject directly to the cavity sub acute to the injury and control group just receiving needle stress at one week post SCI. For motor function assessment BBB scores were given to each rat hindlimb function from 0 to 21 once a week during the experiment. One week prior to spinal cord injury surgery, rats underwent stereotaxic screws implantation in somatosensory-motor cortex area that allow stimulation and recording of motor and somatosensory evoked potentials (MEPs, SEPs) and control recording is performed then it is repeated at days 7 after spinal cord injury and also at the end of the experiment.

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Results : after 7 weeks GFP labeled hESC-NSC were detectable around injured site of spinal cord and express neural stem cell markers such as TUJ and NESTIN. BBB scores in hydrogel + hESC-NSC group shows better improvement in motor functions, as it confirm with electrophysiological assessment results. measured amplitude of motor and somatosensory evoked wave indicating functional improvement in comparison to Spinal cord injured animal.

Conclusion : we use human embryonic stem cell-derived neural stem cells with a hyaluronic acid-gelatin hydrogel in rat model of spinal cord injury and our results demonstrate increasing cell survival and also regeneration in corticospinal tract as electrophysiology data confirms. and BBB scores shows functional recovery compare to control group.

Keywords : spinal cord injury, hydrogel; cell transplantation; motor evoked potential; somatosensory evoked potentials; human embryonic stem cell-derived neural stem cells; hESC-NSC



Count: 480

Abstract ID: 73

Presentation Type: Poster

Vitamin K improves memory deficit in passive avoidance learning

Submission Author: Laya Safarkhani

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Background and Aim : Introduction: Various forms of fear conditioning are popular training procedures used in the past few years to evaluate learning and memory in rats. Contextual fear is thought to depend on the hippocampus and to a lesser extent, the amygdala. Injection of a neurotoxic dose of N-methyl-D-aspartate (NMDA) into the CA1 area of hippocampus led to excitotoxic damage in CA1. We aimed to evaluate the effect of NMDA-induced memory impairment on PAL (passive avoidance learning) with or without vitamin K in male rats.

Methods : Materials and methods: In this study, 40 male Wistar rats divided into 5 groups, 8 in each: Sham, NS: received normal saline, N: received NMDA, NK: received NMDA + Vitamin K, NC: received NMDA + vitamin K solvent. Using stereotaxic surgery, NMDA (20µg/µL, 0.2µl) or an equal volume of normal saline was injected bilaterally into the CA1 region. Vitamin K and vitamin K solvent (10mg/kg s.c. and 1ml/kg s.c, respectively) were injected for thirty days. The retention test was carried 24 hour after training and the latency of entering to the dark compartment (STL) and time in dark compartment (TDC) were recorded.

Results : Results: The results of the retention test showed that STL in the N group was significantly less than the Sham and NS groups ($P<0.001$ and $P<0.05$, respectively). TDC in the N group was significantly higher than Sham and NS groups ($P<0.01$ and $P<0.05$, respectively). Administration of vitamin K increased STL in the NK group in comparison to the NC group ($P<0.01$). The NK group showed an increase in STL compared to N group ($P<0.05$). In addition, the NK group had a lower TDC than the NC group and N group ($P<0.01$).

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Conclusion : Conclusion: Our results showed that NMDA administration into CA1 region impaired PAL. Vitamin K improved PAL deficits and we concluded that vitamin K has a protective effect on NMDA-induced memory impairment in rats.

Keywords : Memory; Passive avoidance learning; NMDA; Vitamin K; Rat



Count: 481

Abstract ID: 330

Presentation Type: Oral

Neurobiology of soft-war: Requirements and Goals

Submission Author: Hedayat Sahraei

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Background and Aim : The aim of this paper is to clarifying the importance of the soft-war or soft power on the decision making by the politicians. The brain is a main aim of the soft-war as its meaning shows. Studies showed that environmental changes can activate stress system and modifies the brain function to maintain human survival.

Methods : However, severe and/or long term stress reduces the brain performance especially high order cognitive processes. In these situations, it is not surprising that the stressed one is unable to make correct or perfect decision which may be face to mistaking in confused and risky condition.

Results : Person under stress also is faced to mental disorders such as depression and anxiety. Considering the IR.IRAN condition which is faced to the powerful soft war initiated by its enemies, focus on stress and its effects in several levels including: genetics, molecular and cellular, brain network activity and behavior are necessary.

Conclusion : . It is necessary to plan the strategies that can control these effects on brain performance in high level activities such learning, emotion, cognition, metacognition and..., etc. The government and neuroscientists should be notice and make interests in this field to solve the problems.

Keywords : Soft War; Cognition; Neuroscience

Count: 482

Abstract ID: 745

Presentation Type: Poster

Study of the effect of Epigallocatechin 3-gallate on pentylentetrazol-induced epileptiform activity in F1 neurons of *Helix aspersa*

Submission Author: Ghazaleh Salehabadi

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Background and Aim : Epilepsy is one of the most important chronic disorders of the neural system that comes after recurrent and spontaneity convulsions. According to the significant role of increasing excitability of neurons in epilepsy, to understand more about cellular mechanism, it seems necessary to study about electrical activities of cells while convulsive chemicals are in them. On the other hand, studying the effects of anti oxidants, such as EGCG on the neural electrical activities in the presence of convulsive chemicals can help us to discover new preventative drugs for epilepsy.

Methods : In this experimental study we created chemical epilepsy model in F1 neuron of *Helix aspersa* using pentilen tetrazol. After that, we studied the effects of EGCG on cell's electrical activities' changes which were made by pentilen tetrazol. In this research, we used intracellular recording method to record the spontaneity activities of F1 cell in the standard ringer while we added 25mmol pentilen tetrazol to the tissue protecting capsule. After that, we studied changes which occurred in the auto discharge process of F1 cell.

Results : The results of this research showed that PTZ causes the frequency of the auto discharge to increase ($p < 0.01$). moreover, PTZ make the resting potential more positive and near to the threshold so it leads to decrease of the action potential amplitude and AHP ($p < 0.01$) and active potential duration ($p < 0.001$) ECG caused the discharge frequency of F1 neuron to decrease ($p < 0.01$ _ $p < 0.001$) and duration of action potential to increase ($p < 0.01$) in the dose dependent process.

Conclusion : In conclusion, it seems that EGCH equivalence the effects of PTZ as a convulsive factor by affecting on dynamical features of membrane and ionic channels. If we want to know about all types of ionic channels, we will need to record the electrical currency through these channels.

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Keywords : Epilepsy; PTZ; EGCG; Ionic channel



Count: 483

Abstract ID: 704

Presentation Type: Poster

Anxiolytic effect of the extract of *Borago Officinalis* on male rats

Submission Author: Arash Salehipour

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Background and Aim : Medicinal plants with natural antioxidants have been shown to be beneficial in a variety of complications such as anxiety. The elevated plus-maze (EPM) is one of the most widely used models to assess anxiety in small rodents. This study was designed to characterize the anxiolytic-like activity of the extract prepared from *Borago officinalis* (Borage) flowers, using the EPM test.

Methods : Male Wistar rats weighing between 220-250 grams were used in the present study. Thirty minutes after an intraperitoneal (IP) injection of the Borage extract (50, 100, 200 mg/kg), or saline, each animal was placed in the EPM. Animal behaviors in the experiment sessions were recorded by a video camera located above the maze, interfaced with a monitor and a computer in an adjacent room. The time spent in the open arms, the percentage of entries into the open arms of the EPM, and the number of entries into the closed arms were recorded for a five-minute duration.

Results : Statistical analysis indicated that acute IP injection of Borage extract before an EPM trial significantly increased the time spent in the open arms and the percentage of open arms entries. Whereas, the extract of this plant had no effect on the number of closed arms entries.

Conclusion : Our results demonstrate that injection of Borage extract may have an anxiolytic profile in rats. However, the exact mechanism(s) that are related to the active compound(s) in Borage extract will have to be elucidated in future studies.

Keywords : *Borago officinalis*, Anxiety, Elevated plus-maze, Rat



Count: 484

Abstract ID: 720

Presentation Type: Poster

Graph-theoretical study of functional connectivity during FB-weather prediction task

Submission Author: Fereshteh Saliminia

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Background and Aim : Memory and learning has been proposed to be supported by different memory systems. For example, clinical neurophysiological studies have distinguished between the types of memory dependent on medial temporal lobe(MTL) which has important role in conscious formation, consolidation and retrieval of previously stored memories (declarative memory) and basal ganglia including striatum that are believed to be in charge of non-conscious knowledge(non-declarative memory). Several studies of probabilistic learning tasks exhibited that in contrast to MTL, the Striatum slowly obtain association between stimulus and response. Weather prediction task is one of the most popular category learning tasks which is rely on the MTL and striatum. However, graph-theoretical study of functional network organization has been primarily applied to resting-state fMRI, but recently has been extended to task-associated changes in network organization. The aim of this study is to examine functional network changes organization during FB-weather prediction task to answer the question that whether across time there was a negative relation between activity in the MTL and caudate nucleus.

Methods : The dataset, which we use in this study, consists of 14 right-handed subjects (2 males, in age from 19 to 33 years old). Preprocessing and statistical analysis of data were performed using SPM12 software. For processing for network statistics and functional connectivity analysis, the entire matrix of ROI-to-ROI functional connectivity values was computed for each subject, and thresholded at a fixed network-level cost value to define an undirected graph characterizing the entire network of functional connections between these ROIs

Results : The caudate nucleus and MTL showed a negative correlation and a reciprocal relationship in activity across trials.

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Conclusion : MTL and striatum were dissimilarly recruited during probabilistic learning tasks. In early training, the MTL activated and Striatum deactivated across trials, but the MTL becoming deactivated and the Striatum becoming activated as learning progressed.

Keywords : Graph theory; striatum; medial temporal lobe; FB-weather prediction task; Memory; learning



Count: 485

Abstract ID: 234

Presentation Type: Poster

Morphine exposure in adolescent rats facilitates the development of morphine tolerance during adulthood

Submission Author: Hamed Salmanzadeh

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Background and Aim : Adolescence is considered as a gradual period of transition from childhood to adulthood, and thus it contains process of events. Adolescence is a significant developmental time point associated with drug abuse and its long-lasting changes in adulthood. Since there is not enough experiments on the long-lasting effects of adolescent exposure to opioid, the present study examined adolescent morphine exposure on morphine tolerance in adulthood.

Methods : Adolescent male Wistar rats(30 days old) were administered increasing doses of morphine (from 2.5 to 25 mg/kg, s.c.) every 12 h, for 10days. Control rats received saline with the same protocol. Thereafter, during adulthood(65 days old), tolerance to antinociceptive effect of morphine was induced by subcutaneous injection of 3 mg/kg morphine, once a day for 7 days. Nociceptive response of the animals to pernicious heat stimulus was measured by tail flick analgesia meter every day, 10 min before and 30 min after morphine administration.

Results : The results showed that adolescent morphine treatment significantly facilitate the development of tolerance to the analgesic effect of morphine in adulthood compared with saline group.

Conclusion : This facilitation in the morphine tolerance suggests that exposure to morphine during adolescence causes long-lasting effects on the development of morphine tolerance in adulthood.

Keywords : Morphine tolerance, Tail-flick, Adolescent, Rat



Count: 486

Abstract ID: 471

Presentation Type: Poster

ATP-sensitive potassium channels involve in neuroprotective activity of Hydrogen sulfide in 6-hydroxydopamine- induced animal model of Parkinson's disease

Submission Author: Ali Sarbazi

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Background and Aim : Hydrogen sulfide (H₂S) is the third most common endogenously produced gaseous signaling molecule alongside nitric oxide and carbon monoxide. H₂S plays important roles in regulating brain function and disturbed H₂S synthesis is involved in Down's syndrome, stroke and possibly Alzheimer's disease. Several studies have shown that H₂S produces neuroprotective effect and may have therapeutic value in treating neurodegenerative diseases including Parkinson's disease. However, little is known about the mechanisms underlying the neuroprotective activity of H₂S in vivo. The purpose of the current study was to evaluate the role of ATP-sensitive potassium (K-ATP) channels as the mechanism mediating the neuroprotective effect of H₂S in 6-hydroxydopamine (6-OHDA) animal model of PD.

Methods : 6-OHDA was administrated by stereotaxic surgery into medial forebrain bundle. NaHS, as donor of H₂S, alone or in combination with glibenclamide (Glib, 5 mg/kg) as blocker of K-ATP channels, were daily injected at doses of 3 and 5.6 mg/kg for 7 days. Apomorphine (APO) -induced rotational test was carried out at the third and fifth week's post- surgery to evaluate effect of NaHS and Glib on the behavioral symptoms of 6-OHDA- induced lesion. Then, six rats in each group were perfused and immunohistfluorescence staining was carried out on the midbrain sections and remaining tyrosine hydroxylase (TH)- positive neurons in substantia nigra pars compacta (SNc) was determined. The brain of eight rats was freshly removed and homogenates were prepared from striatum of both hemispheres. After that, dopamine concentration in the homogenates was measured using immunosorbent assay kit.

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Results : NaHS at both doses attenuated apomorphine- induced rotational activity ($P < 0.05$) in the first but not in the second postsurgery test. Our histological data demonstrates that NaHS at high dose decreased ($P < 0.05$) toxin related loss of TH-positive neurons in SNc. NaHS at dose of 5.6 mg/kg also reduced the decreasing effect of 6- OHDA on striatal dopamine level ($P < 0.05$). However, administration of Glib reversed the surviving effect of NaHS on the TH-positive neurons and also removed its effect on the striatal dopamine level.

Conclusion : Our data show that both K-ATP channels involve in the neuroprotective activity of H₂S in 6-OHDA animal model of PD.

Keywords : Hydrogen sulfide; ATP-sensitive potassium channels; 6-hydroxydopamine; Apomorphine - induced rotational test; immunohistfluorescence staining; striatal dopamine level.



Count: 487

Abstract ID: 489

Presentation Type: Oral

Levothyroxine increased the expression of the alpha7 nicotinic acetylcholine ($\alpha 7nAChR$) and N-methyl-D-aspartate (NMDAR1) receptors and improved long-term potentiation in an animal model of Alzheimer's

Submission Author: Alireza Sarkaki

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Background and Aim : The amyloid beta ($A\beta$) induced Alzheimer's disease (AD) is associated with formation the amyloid plaques, impairment in hippocampal long term potentiation (LTP) and decline in the number of alpha7 nicotinic acetylcholine receptor ($\alpha 7nAChR$) and N-methyl-D-aspartate receptor (NMDAR1) in hippocampus. In the present study, we have evaluated the effect of subcutaneously (S.C.) administration of levothyroxine (L-T4) on expression of $\alpha 7nAChR$ and NMDAR1, histological changes as well as the dentate gyrus (DG) electrophysiological activity in AD rats.

Methods : Ninety-six male Wistar rats were randomly divided into six groups (ShO, AD+Veh, AD+L-T4-25, AD+L-T4-50, AD+L-T4-100 and ShO+L-T4, n=16). In order to induce an animal model of AD, $A\beta$ (10 ng/ μ l, bilaterally) was infused intrahippocampally into DG region. Rats treated with L-T4 and/or normal saline for 10 days. LTP recording was used for electrophysiological activity assessment. Immunohistochemical procedure was used to evaluate the NMDAR1 and $\alpha 7nAChR$ expression.

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Results : Results showed that NMDAR1 and $\alpha 7$ nAChR expressions were significantly decreased ($p < 0.001$) in AD animals compared to ShO and ShO+L-T4 groups. In AD rats treated with L-T4, expression increased significantly dose dependently compared to AD rats ($p < 0.05$, $p < 0.01$, $p < 0.001$). Data showed that LTP amplitude and slope of the hippocampal DG neurons significantly impaired in the AD animals ($p < 0.001$, $p < 0.001$) while improved in AD rats treated with L-T4 ($p < 0.05$, $p < 0.01$, $p < 0.001$). Also, formation of amyloid plaques induced by $A\beta$ 1-42 injection decreased in AD rats treated with L-T4.

Conclusion : It appears that S.C. injection of L-T4 improved LTP in hippocampal DG in AD rats by reduction of neural damage and increasing expression of NMDAR1 and $\alpha 7$ nAChR.

Keywords : Alzheimer's disease, Levothyroxine, Long-term potentiation, alpha7 nicotinic acetylcholine receptor, N-methyl-D-aspartate receptor, Rat.



Count: 488
Abstract ID: 610
Presentation Type: Oral

The N170 and Emotional Faces Recognition in Children with ADHD

Submission Author: Mahdiyeh Sarraf razavi

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Background and Aim : Children with attention-deficit/hyperactivity disorder (ADHD) have some impairment in emotional relationship which can be caused by deficits in emotional processing, the present study investigated neural correlates of emotional face processing in this group compared with typically developing children using the event-related potentials (ERP).

Methods : A total number of 25 children diagnosed with ADHD (Combined type) based on DSM-IV classification were compared with 25 typically developing children matched on their ages, gender and IQs. The participants performed an emotional face recognition while their brain activities were recorded using an event-related potentials procedure.

Results : The results indicated that the N170 amplitudes was larger for sad, angry and happy emotions in ADHD compared to normal group. The N170 latencies were longer in ADHD group for happy and angry faces in right hemisphere and for happy, sad and neutral ones in left hemisphere ($P < 0.05$).

Conclusion : The present study supports the notion that individuals with ADHD have some impairments in emotion processing which can lead to their misinterpretation of emotion faces and inappropriate reaction to them.

Keywords : emotional face recognition; ERP; N170; ADHD



Count: 489
Abstract ID: 479
Presentation Type: Oral

Synaptosome associated protein 25 (SNAP25) gene association analysis, revealed risk variants for ASD, in Iranian population.

Submission Author: Shaghayegh Sarrafzadeh

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Background and Aim : Autism spectrum disorder (ASD) is a common, complex neurological condition, affecting approximately 1% of people worldwide. Monogenic neurodevelopmental disorders which shown autistic behavior patterns have suggested synaptic dysfunction, as a key mechanism in the pathophysiology of ASD. Subsequently genes involved in synaptic signaling have been investigated with a priority for candidate gene studies. Synaptosomal-associated protein 25 (SNAP25) gene plays a crucial role in the central nervous system, contributing to exocytosis by targeting and fusion of vesicles to the cell membrane. Studies have shown a correlation between aberrant expression of SNAP25 and a variety of brain diseases. Single nucleotide polymorphisms (SNPs) in this gene are associated with several psychiatric diseases, such as bipolar, schizophrenia and attention-deficit/hyperactivity disorder.

Methods : The aim of the present study was to investigate whether polymorphisms (rs3746544 and rs1051312) in the regulatory 3'-Untranslated region (3'UTR) of the SNAP25 gene have an association with ASD in unrelated Iranian case (N=524)-control (N=472) samples.

Results : We observed robust association of the rs3746544 SNP and ASD patients, in both allele and haplotype-based analyzes. Our study is the first genetic study in Iranian ASD population, and this is the second worldwide study to analyze the association of these polymorphisms on ASD patients. Our results support previous observation and support a role for SNAP25 polymorphisms as susceptibility genetic factors involved in the ASD development.

Conclusion : Given that SNAP25 is involved in regulation of voltage-gated CA₂-channels in neuronal axon terminals and its key functions in synaptic vesicles's docking and fusion in presynaptic neurons, our findings support the possible involvement of SNAP25 gene in the underlying pathogenesis of ASD, and reported an association between polymorphisms of this gene and Iranian ASD patients.

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Keywords : Autism spectrum disorders, SNAP25, polymorphisms, neurodevelopmental disorders.



Count: 490
Abstract ID: 480
Presentation Type: Poster

Increased expression ratio of matrix metalloproteinase-9 (MMP9) and tissue inhibitor of matrix metalloproteinase (TIMP-1) RNA levels in Iranian multiple sclerosis patients

Submission Author: Shaghayegh Sarrafzadeh

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Background and Aim : Multiple sclerosis (MS) is an autoimmune disease involving the central nervous system (CNS) with unknown immunopathogenic mechanisms. Matrix metalloproteinase-9 (MMP-9) facilitates T-cell migration into the CNS while the tissue inhibitor matrix metalloproteinase-1 (TIMP-1) inhibits MMP-9 actions. The aim of this study was to evaluate the expression of TIMP-1 RNA and MMP-9/TIMP-1 RNA ratio in blood cells of Iranian patients with relapsing–remitting multiple sclerosis (RRMS) treated with IFN β .

Methods : The study compared the expression level of TIMP-1 gene in RRMS samples with normal individuals in Iran and the results were compared using a ratio of MMP-9 to TIMP-1. All patients were HLA-DRB1*15 negative and were responders to interferon-beta with a normal vitamin D level.

Results : The RRMS patients manifested a lower expression level of TIMP-1 RNA than their normal counterparts although the result was not significant ($P=0.06$). Also, the ratio of MMP-9 to TIMP-1 RNA increased significantly ($P=0.009$). There was no linear correlation between TIMP-1 expression level and risk of Expanded Disability Status Scale of Kurtzke (EDSS); nor was there any significant correlation between expression status of TIMP-1 and duration of the disease. Although there was no significant decrease in TIMP-1 expression level, the MMP-9/TIMP-1 RNA ratio in RRMS was significantly higher than normal subjects.

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Conclusion : Further studies are recommended to compare MMP-9/TIMP-1 RNA ratio in patients before and after taking IFN-beta in order to find out if MMP-9/TIMP-1 RNA ratio can function as a proper marker of the bio efficacy of IFN-beta treatment of MS.

Keywords : MMP-9, TIMP-1, expression, multiple sclerosis, Real Time PCR



Count: 491

Abstract ID: 481

Presentation Type: Poster

Interleukin 7 receptor alpha gene variants are correlated with gene expression in patients with relapsing-remitting multiple sclerosis

Submission Author: Shaghayegh Sarrafzadeh

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Background and Aim : The association of single nucleotide polymorphisms (SNPs) of the IL-7RA gene with multiple sclerosis (MS) have been documented in various populations. This study aimed to evaluate the genotype distributions of two SNPs, rs6897932 and rs201084372, and the functional association of rs6897932 in relation to IL-7RA gene expression in a group of Iranian relapsing-remitting MS (RRMS) patients

Methods : Genotyping for both SNPs in the IL7RA gene and relative quantification of mRNA expression for both isoforms of IL-7R α were performed in 100 RRMS patients and 100 ethnic-matched healthy controls

Results : Higher significant frequencies of the T allele and TT genotype for rs6897932 (C/T) were observed in patients than controls (P=0.006). Higher frequencies of the T allele and the TT and TG genotypes and lower frequencies of the G allele and GG genotypes for rs201084372 (G/A) were found in patients than controls (P<0.0001). A decreased level of mRNA expression for the membrane-bound IL-7R α (mbIL-7R α) and an increased level of mRNA for the soluble IL-7R α (sIL-7R α) were observed in patients versus controls (P=0.005 and P=0.002 respectively). A significant decreased level of mRNA expression for mbIL-7R α (P=0.01) and an increased level of mRNA for sIL-7R α (P=0.008) were observed in RRMS patients compared to healthy controls carrying the TT+CT genotypes

Conclusion : The higher levels of mRNA expression for the sIL-7R α isoform in MS patients carrying the IL7R*TT genotype is a new finding not previously reported in studies on the genotype-induced effects of IL-7R α expression in multiple sclerosis.

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Keywords : Multiple Sclerosis; IL7RA gene, Polymorphism, Expression.



Count: 492

Abstract ID: 13

Presentation Type: Poster

Executive dysfunction in Alzheimer's disease(AD)

Submission Author: Fateme Satarian

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Background and Aim : Alzheimer Disease (AD) is a degenerative and progressive disease and the first common type of dementia. Deficit in memory is recognized as a major feature of AD, but other aspects of cognition such as executive dysfunction have received less attention. Majority of studies have focused on memory deficient in these patients and less attention on executive dysfunction. According to high prevalence of executive dysfunction in neurological disorders such as Dementia and AD, In this review we intend to describe the executive dysfunction in Alzheimer patients and discuss its neural substrate.

Methods : In this literature review, we report on papers indexed in Pub med, Google scholar and Science direct using keywords executive function, executive dysfunction, Dementia and Alzheimer.

Results : "Executive function" as a higher cognitive function is controlled by frontal cortex. It is consisted of planning, inhibition, organization and working memory. Executive function Impairments in AD patients were seen as deficits in decision making, planning, self-control, attention, set shifting, response inhibition and organization also they show low function in executive function Tasks such as Wisconsin Card Sorting Test (WSCT) and Tower of London(TOL).moreover Language disorder can be happened in AD .Although in some patients language disorder is occurred later but executive dysfunction is occurred earlier. the most of studies establish the executive deficient in Alzheimer disease.

Conclusion : According to results we conclude that Alzheimer patients show impairment in executive function such as, problems in social interaction, working memory deficient, making decision, initiation, organization and inhibition. diagnosis of executive dysfunction as soon as possible can help to improving symptoms and also improving Impairment Activities of Daily Living (IADL) in these patients.

Keywords : Alzheimer, Dementia, Executive function, Executive dysfunction



Count: 493

Abstract ID: 513

Presentation Type: Oral

Protective effect of alcoholic cinnamon extract (*Cinnamomum Zeylanicum*) on tau protein phosphorylation in the hippocampus and memory of formaldehyde treated male rats

Submission Author: Sara Sayad Fathi

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Background and Aim : Formaldehyde can cause memory impairment through different mechanisms such as tau aggregation both in vitro and in vivo and causing neuroinflammation. Regarding to its environmental availability and its ability to cross the blood- brain barrier, it may play a key role in Alzheimer's disease pathology. Cinnamon with active compounds such as cinnamaldehyde is found to be effective in ameliorating histopathological changes of the brain caused by Alzheimer's Disease. Thus, the aim of this study was to investigate the effect of alcoholic cinnamon extract on tau protein phosphorylation in the hippocampus and memory of formaldehyde treated male rats.

Methods : Forty-two 6-8 week old male wistar rats weighing 200-250 gr were assigned to 6 groups: the group without neither formaldehyde nor Cinnamon extract (C); the group received formaldehyde, FA were administered intraperitoneally at a dose of 60 mg/kg for 30 consecutive days; three treatment groups received alcoholic cinnamon extract, the extract were administered orally via a syringe at doses of 100, 200 and 400 mg/kg for 30 consecutive days following formaldehyde treatment. Afterwards spatial memory was assessed using Morris water maze test and after that animals were decapitated under anesthesia and brain tissues were removed. Immunohistochemistry method were performed to stain phospho-tau.

Results : Our study showed that ip injection of formaldehyde caused tau hyperphosphorylation and significantly increased the latency to platform ($p=0.003$) and decreased the time spent in target quadrant

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($p=0.001$). Alcoholic cinnamon extract especially at the dose of 200 mg/kg ameliorated the adverse effects of formaldehyde on tau protein phosphorylation status and latency to platform ($p=0.045$) and time spent in target quadrant ($p=0.001$).

Conclusion : In conclusion our study indicated that cinnamon has a beneficial effect on Morris water maze test indices through reduction of tau phosphorylation.

Keywords : Formaldehyde, Spatial memory, Hippocampus, Alzheimer's disease, Cinnamon



Count: 494

Abstract ID: 712

Presentation Type: Poster

A critical appraisal of the therapeutic outcomes of methylprednisolone (MPSS) emphasizing spinal cord injury (SCI)

Submission Author: Ahmad Sayahi

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Background and Aim : Traumatic injury to the spinal cord results in tissue oxidative stress and loss of function, and some axons are directly damaged by the physical deformation of the spinal cord (primary injury). However, it is likely that a large number of axons are lost due to a cascade of pathochemical and/or pathophysiological events (secondary injury) that are initiated by the original insult. The initial stages of SCI instigate a progressive cascade of secondary injuries, which exacerbate the extent of this destruction. In specific, apoptosis represents a major component of such secondary injuries and an impediment to functional recovery after spinal cord injury (SCI), which inhibiting these natural processes associated with spinal cord injury seem as the first protocol, To reduce the nerve-cell injury secondary to trauma occurrence. Randomized trials are widely recognized as providing the most reliable evidence for assessing efficacy and safety of therapeutic interventions. We attend to evaluate the current status of methylprednisolone (MPSS) in the early treatment of acute SCI as a systematic review.

Methods : As our searching strategy, we used scientific data-bases. We searched for methylprednisolone and SCI in titles in time period 2012-2016. We reached 36 papers and after exclusion of animal studies, we wrote this systematic review.

Results : the use of high-dose methylprednisolone has been confirmed as the standard treatment for spinal cord injuries. Studies have shown that the usage of this specific within eight hours of injury have improved sensory and motor outcomes.

Conclusion : Methylprednisolone has been used extensively as a pharmacological tool in the treatment of experimental traumatic SCI. In clinical trials, methylprednisolone has been shown to be an effective agent for the treatment of acute SCI. Further trials are needed to identify superior pharmacologic therapies and to test drugs that may sequentially influence the post-injury cascade.

Keywords : Methylprednisolone;spinal cord injury;pathochemical;pathophysiological;secondary injuries



Count: 495
Abstract ID: 714
Presentation Type: Oral

Multiple sclerosis is accompanied by lack of KIR2DS1 gene: A meta-analysis

Submission Author: Ahmad Sayahi

Ahmad Sayahi¹, Farhad shahsavari²

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Background and Aim : Multiple sclerosis (MS) is a disease in which we can recognize destruction of the myelin that is around nerve cells of brain and spinal cord called as oligodendrocytes. Both genetic and environmental factors play roles in MS. One of these genes is the killer-cell immunoglobulin like receptor (KIR) which expressed on surface of natural killer cells (NKs). These genes have loci (not locus) in human genome, so they inherit as haplotypes.

Methods : The results of previous studies show that different genes of KIR may affect both susceptibility and resistance to such autoimmune disorders that their pathogenesis in MS is still unclear. Since NKs play key roles in immune tolerance, we intend to perform a meta-analysis for the correlation of KIR genes and MS.

Results : We used the software comprehensive meta-analysis for data of totally 568 MS patients and 280 controls. Among the 14 genes of KIR in the human genome, lack of KIR2DS1 is accompanied by MS.

Conclusion : No KIR gene found to be a risk factor for MS. Further studies on other molecules of NKs like CD94 and NKG2a is suggested.

Keywords : Multiple sclerosis; CD94; NKG2a; killer cell immunoglobulin receptor; meta-analysis; KIR2DS1



Count: 496

Abstract ID: 380

Presentation Type: Poster

The Relationship between the Level of Copper, Lead, Mercury and Autism Disorders: A Systematic Review and Meta-analysis

Submission Author: Fatemeh Sayehmiri

Fatemeh Sayehmiri¹

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Background and Aim : Introduction: Autism is a developmental disorder of social relations which is determined through individuals' abnormal communicative and verbal behaviors. Symptoms of this disorder occur before the age of three, and its main reason is still unknown. There is likelihood for a possible relationship between the concentrations of copper, lead, and mercury and autism. Using meta-analysis, the present review study was carried out to determine the relationship between the concentrations of these elements and autism.

Methods : In this study, searching Google Scholar, Scopus, Pubmed, and ScienceDirect databases, 18 articles conducted in different countries from 1982 to 2015 were collected and the extracted data were analyzed using meta-analysis method and random-effects model. Studies' heterogeneity was investigated using the I² index. The data were analyzed using R and STATA software.

Results : In these 18 studies, 1797 patients (981 cases and 816 controls) aged 2 to 16 years were examined. Elements concentration of the samples (blood, hair and nails) for both case and control groups were evaluated using meta-analysis. There was no significant relationship between copper concentration and autism (SMD (95% CI): 0.02(-1.16, 1.20); I²=97.7%; P=0.972); there was a significant relationship between mercury concentration and autism (SMD (95% CI): 1.96(0.56, 3.35); I²=98.6%; P=0.006); there was also a significant relationship between lead concentration and autism (SMD (95% CI): 2.81(1.64,3.98); I²=97.8%; P=0.000). Moreover, there was no such significant relationships in hair and blood samples; however, a significant relationship was found in studies with plasma and nails samples.

Conclusion : Based on the results of this study, there is no significant relationship between copper and lead concentration and the development of autism. There is, nevertheless, a significant relationship between mercury concentration and autism. Thus, the concentration of mercury can be listed as a pathogenic cause (disease-causing) for autism.

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Keywords : Autism, copper, lead, mercury, meta-analysis

Count: 497

Abstract ID: 476

Presentation Type: Poster

Functional interaction between NMDA and 5HT_{1A} receptors in morphine-induced analgesia: the involvement of the ventral tegmental area

Submission Author: Masoud Seddighfar

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2. Department of Animal Biology, School of Biology, College of Science, University of Tehran, Tehran, Iran.

Background and Aim : A large body of evidence suggests that morphine, which is a potent pain reliever, develops tolerance and physical or psychological dependence. Considering that N-methyl-D-aspartate (NMDA) receptors play a critical role in pain and their antagonists have been suggested to improve or prolong the opiate analgesia, it seems that co-administration of these antagonists with morphine can decrease the side effects such as tolerance development. Previous studies showed that dextromethorphan (DM), a non-competitive NMDA receptor antagonist, has a potentiating effect on morphine-induced analgesia. While the ventral tegmental area (VTA) is an important neural substrate for pain modulation, no studies have directly assessed the role of VTA in morphine/DM-analgesia. In view of the fact that the VTA is markedly influenced by serotonin and highly expresses serotonergic 5-HT_{1A} receptors, the aim of the present study was to investigate the effect of co-administration of morphine and dextromethorphan on inflammatory and neuropathic pain states and also to examine a possible involvement of the VTA 5HT_{1A} receptors in morphine/dextromethorphan-induced analgesia.

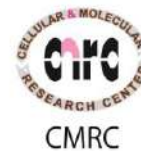
Methods : Male Wistar rats (220-250 g at the time of surgery) were bilaterally cannulated in the VTA by the stereotaxic instrument. The formalin test was performed to nociception assessment in the inflammatory tonic pain conditions. For this purpose, 50 μ l of 2.5% formalin solution subcutaneously injected to the plantar surface of the hind paw. Moreover, the mechanical allodynia was evaluated in the chronic constriction injury of the sciatic nerve (CCI) model of neuropathic pain using Von Frey filaments.

Results : Our results indicated that intraperitoneal (i.p.) administration of morphine (2-6 mg/kg) increased the paw withdrawal threshold in mechanical allodynia, also decreased the pain score of formalin test (2-8 mg/kg) in a time- and dose-dependent manner, showing an analgesic effect of the opiate. Co-administration of an ineffective dose of morphine (2 mg/kg) with DM (30 mg/kg, i.p.) induced analgesia in both chronic and tonic pain models. Interestingly, intra-VTA microinjection of 5HT_{1A} receptors antagonist, (S)-

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WAY100135 (1 μ g/rat) decreased the analgesic effect of morphine plus DM in the formalin and mechanical allodynia tests. It should be considered that the same doses of DM or (S)-WAY100135 by itself had no effect on antinociception in the animal models.

Conclusion : Overall, these results indicated that the systemic blockade of NMDA receptors improved morphine-induced analgesia. Moreover, it seems that the VTA serotonergic system via 5HT1A receptors mediates the potentiating effect of DM on morphine-induced analgesia.

Keywords : Morphine; Dextromethorphan; (S)-WAY100135; Ventral tegmental area; Analgesia; Rat(s)



Count: 498

Abstract ID: 370

Presentation Type: Poster

Electrical synapses of dentate gyrus are not involved in morphine state-dependent learning

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Background and Aim : Morphine produces a state-dependent learning. Dentate gyrus is involved in this kind of learning. Intercellular communication via gap junction channels is involved in some of the effects of morphine. Gap junction channels between neurons are called electrical synapses and these synapses exist in dentate gyrus. Here, we have studied the role of blockade of the electrical synapses of the dentate gyrus by means of quinine on morphine state-dependent learning.

Methods : Adult male rats were cannulated in their dentate gyrus, bilaterally. A passive avoidance paradigm was used to evaluate memory performance. Animals received morphine (7.5 mg/kg, s.c) post-training. 24 hours later, in the test day, different doses of quinine (100µM, 1mM, 10mM) was injected 10 min before sub-cutaneous, pre-test injection of morphine (7.5 mg/kg, s.c). Forty min later memory retrieval was measured.

Results : Pre-test injections of quinine did not prevent memory retrieval by post-training and pre-test injections of morphine.

Conclusion : The results suggest that intercellular coupling via electrical synapses of the dentate gyrus do not modulate morphine state-dependent learning.

Keywords : Electrical synapse; Morphine; State-dependent learning



Count: 499

Abstract ID: 443

Presentation Type: Poster

Effect of citrus aurantium extract signs of post-traumatic stress disorder (PTSD) induced by electric shock in rat

Submission Author: Parisa Seifi

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Background and Aim : Citrus aurantium is a medicinal plant which has been used in traditional medicine. Traditionally, this medicinal plant has sedative and anti-anxiety effects and has been used to cure different diseases such as migraine, sleep disorders, and etc. The post-traumatic stress disorder (PTSD) is among the most important mental disorders of our century which causes great stress and several complications for the afflicted person. Nowadays, the definition of PTSD comprises not only those affected by the accident, but also those who have witnessed it. Therefore, in the current study, we aimed to investigate the effects of citrus aurantium extract on hormonal signs of PTSD caused by electric foot shock.

Methods : Male Wistar rats (250-300 g weight) were used in this study. The animals randomly received electric foot shock (0.1 mA) for 100 seconds over a period of 10 days. After returned to cages to repose for 21 days, the animals were put back into the stress box but received no stress. The animals received different doses of citrus aurantium extract (2, 4, 8 mg/kg) intraperitoneally 10 min before placing into the stress box (n = 7-9 rats/group). Control group received saline (1 mg/kg). Plasma corticosterone levels were assessed in control and treated animals.

Results : One-way ANOVA showed that stress elevated plasma corticosterone level (124 nmol/L) concentration in the control animals. Intraperitoneal administration of the citrus aurantium extract reduced plasma corticosterone level (87 nmol/L).

Conclusion : These findings indicate that citrus aurantium extract can reduce hormonal signs of PTSD and can use as an agency for moderation of PTSD signs.

Keywords : Citrus aurantium; Post-traumatic stress disorder; corticosterone



Count: 500

Abstract ID: 628

Presentation Type: Oral

Interaction between sensory features and expectation of stimulus on subjective time representation

Submission Author: Hossein Sepasi Moghaddam

Hossein Sepasi Moghaddam¹, Mohammad Ali Nazari², Hassan Sabourimoghaddam³, Reza Khosrowabadi⁴

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2. Associate professor at department of psychology, Cognitive Neuroscience Laboratory, University of Tabriz, Tabriz, Iran
3. Assistant professor at department of psychology, University of Tabriz, Tabriz, Iran
4. Assistant professor at Institute for Cognitive and Brain Sciences, Shahid Beheshti University, Tehran, Iran

Background and Aim : Many of studies has been revealed that repetition of a stimulus, regularly reduces perceived duration (repetition suppression) and a non-repeated novel stimulus represents a subjective time longer than a repeated ones (oddball effect). There is a competition between two general types of explanations for the mechanism of these time distortions. The first one assert on primary perceptual clarity that is more generally related to stimulus characteristic. However, in this field of study, experimental findings are often involved overlapping factors not easily separable by temporal and non-temporal criteria. The other one, stay on second-order expectation processing, but there are some inconsistent evidences that show these phenomena are Independent of predictability. In this study, we tested three hypothesis related the mentioned explanations, by focusing on the oddball paradigm.

Methods : 18 adult subjects participated in a series of sub-second oddball temporal tasks. In experiment 1, we evaluated the basic temporal stimulus characteristics (apart from non-temporal) that may affect subjective duration. We tested the expectation effect on this kind of timing by implementing change in predictability of the stimuli, in experiment 2 and change in predictability of inter stimulus interval (ISI), in experiment 3.

Results : The analysis of data showed that in the auditory system, exposure to oddball stimuli can result in significant time dilation in all experiments. For visual system, the oddball stimulus led to time contraction in experiment 1, had no effect in experiment 2 and had same direction of time dilation in experiment 3.

Conclusion : The experiments result illustrated that time cues as a basic physical properties can provide contrast by itself for an oddball identity in temporal oddball paradigm and cause a time dilation distortion.

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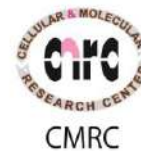
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In the auditory system, the greatest oddball effect was when the target stimulus placed well predictable, and in visual system, when the target stimulus perched in the unpredictable condition. So we suggested that, time distortion may have different direction by types of basic physical properties of oddball and its expectation that may interact with modalities. According to the findings we propose that at least in some cases, the sub-second representation of duration is consequence of interaction between first and second-order expectation processing.

Keywords : time perception, temporal processing mechanism, modality effect, expectation, sensory feature



Count: 501

Abstract ID: 632

Presentation Type: Poster

Effectiveness of Mindfulness-based Cognitive Therapy on Reduction of Cognitive Distortions and Dysfunctional Beliefs in Referrals to Addiction Counseling Centers

Submission Author: Pegah Seyfilaleh

Pegah Seyfilaleh¹, Negar Sarkhosh², Neda Seyfilaleh³

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2. B.A in Nursing, Faculty of Nursing and Midwifery, Hamadan University of Medical Sciences
3. Undergraduate student of Biology- Microbiology, Faculty of Sciences and Medicine, Azad University of Zanjan

Background and Aim : This study was performed aiming to evaluate the effectiveness of mindfulness-based cognitive therapy on reduction of cognitive distortions and irrational beliefs in referrals to drug addiction withdrawal counseling centers.

Methods : The research method was a quasi-experimental design with pretest-posttest and control group. Statistical population of the study included all referrals to addiction withdrawal counseling centers. 40 individuals among the mentioned population were selected as sample using in-convenience sampling method and were divided into two 20-person groups of test and control. The test group received eight sessions, but control group did not receive the training. Research tool included mindfulness-based cognitive therapy program, Cognitive Distortions questionnaire of Albert Ellis (2005), and Irrational Beliefs Test of Jones (1968). Covariance analysis was used to analyze the data.

Results : Analysis of results showed that mindfulness-based cognitive therapy was effective on reduction of irrational beliefs and cognitive distortions. This treatment have had impact on reduction of components of the reaction to frustration, emotional irresponsibility, tend to self-blame, avoiding the issues, dependency, despair to change, and perfectionism. But it had no effect on the components of measurement, verification and support from others, high self-expectations and too much preoccupation along with anxiety.

Conclusion : Also, it had impact on the reduction of components of all or nothing thinking, mental filter, discounting the positives, magnification or minimization, emotional reasoning, and labeling. But it did not affect components of overgeneralization, jumping to conclusions, “should statements”, personalization. The

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current study provides a step toward effective approaches for reduction of cognitive distortions and irrational beliefs in the referrals.

Keywords : mindfulness-based cognitive therapy, cognitive distortion, irrational beliefs, referrals to addiction withdrawal counseling centers



Count: 502

Abstract ID: 581

Presentation Type: Poster

The regulation of pituitary-thyroid abnormalities by Peripheral administration of Levothyroxine increased BDNF and Reelin proteins expression in an animal model of Alzheimer's disease

Submission Author: Sahreh Shabani

Sahreh Shabani¹, yaghoob farbod², seyed ali mars³

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2. Department of physiology, physiology research center (PRC), ahvaz
3. Department of physiology, physiology research center (PRC), ahvaz

Background and Aim : Alzheimer's disease (AD) is associated with decreased serum levels of thyroid hormones (THs), increase levels of thyroid stimulating hormone (TSH) and decreases in protein expression of brain-derived neurotrophic factor (BDNF) and reelin in the hippocampus. In this study, we have evaluated the effect of subcutaneously (SC) administration of levothyroxine (L-T4) on levels of THs and TSH as well as protein expression of BDNF and reelin in AD rats.

Methods : In order to induce an animal model of AD, Beta-amyloid peptide (10ng/ μ l, 3 μ l/side, bilaterally) plus ibotenic acid (Ibo, 0.6 μ g/ μ l) were infused intrahippocampally and rats treated with L-T4 and/or saline for 10 days. The levels of THs and TSH are measured by ELISA kits. Protein synthesis was detected by Western blotting method.

Results : Results showed that serum level of THs as well as BDNF and reelin protein expression in the hippocampus was significantly decreased ($p < 0.001$) in AD animals and elevated significantly in AD rats treated with different doses of L-T4 ($p < 0.01$, $p < 0.001$). Data shows TSH level significantly increase in the AD animals ($p < 0.05$) while decreased in AD rats treated with different doses of L-T4 ($p < 0.05$).

Conclusion : These findings indicate that L-T4 increased BDNF and reelin protein expression by regulation of serum THs and TSH level in A β -induced AD rats.

Keywords : Alzheimer's disease, Levothyroxine, Brain-derived neurotrophic factor, Reelin



Count: 503

Abstract ID: 70

Presentation Type: Oral

The interface of biomaterials and neural stem cells. a new exiting approach for neural tissue regeneration in the neurological conditions.

Submission Author: Kobra Shabani

Kobra Shabani¹, zahra Shabani²

1. -
2. Phd student of neuroscience, Tabriz university of medical science, Tabriz, Iran

Background and Aim : Neural tissue regeneration in the neurological disease has been a major challenge in the context of regenerative medicine for a long time. But in recent decade with respect to advances in biotechnology and neurogenesis discovery, the strategy of cell therapy is seems as a promising therapeutic intervention. Stem cells are cells that have ability to self-renew and differentiate into different lineage. Neural stem cells exist in the adult mammalian SVZ and dentate gyrus of brain and give rise to neurons. But disintegration of tissue architecture and extracellular matrix low survival rate of the cells in the most of grafted cases, acute inflammation, low interaction with host tissue, oxidative stress, lack of trophic factors have limited the transplant efficacy. Therefore, it is necessary to develop advanced biomaterials generating bioactive artificial microenvironments, which mimic the natural neural cell niche to support neural regeneration. The stem cell/material interface is a complex microenvironment in which the cell and the material dictate one another's fate with 'give and take' between them. Materials can 'give' signals to stem cells in the form of degradation by-products and nanostructural properties and 'take' cell-secreted signals from cells. It is concluded that, the combination of nanotechnology and stem cell biology is one of the strongest hopes for regenerative medicine. This is particularly the case for neurodegenerative diseases, such as Parkinson's and Alzheimer's disease as well as stroke, brain trauma and spinal cord injury, since the brain and spinal cord have a limited capacity to replace dying neurons.

Methods : In this review article, have used of 30 article from 2005 up to 2016 with key words including biomaterials, stem cells, scaffolds, neurogenesis, Hydrogels, cell niche and etc.

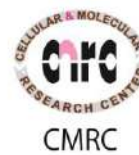
Results : biomaterials make structural support for stem cells and alter cells fate. The neural stem cell/material interface is a complex microenvironment in which the cell and the material dictate one another's fate with 'give and take' between them.

Conclusion : use of biomaterials is a new exiting approach for regeneration. It is important to select appropriate biomaterial for nerve tissue engineering in the CNS and PNS.

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Keywords : scaffold, biomaterials, neurogenesis, extracellular matrix, hydrogels



Count: 504

Abstract ID: 78

Presentation Type: Poster

The role of Vitamin E consumption in prevention and treatment of Alzheimer disease and cognitive deficite.

Submission Author: Kobra Shabani

Kobra Shabani¹, zahra shabani²

1. -
2. Phd student of neuroscience, Tabriz university of medical science, Tabriz, Iran

Background and Aim : AD is a neurodegenerative disorder associated with aging and characterized by progressive memory loss and cognitive deterioration. . Oxidative stress, defined as the imbalance between generation of reactive oxygen species and antioxidant defense, leads to damage of DNA and proteins and lipids and it is involved in the pathogenesis of AD. The polyunsaturated fatty acids of membrane lipids are the main targets for ROS. In patients with AD, concentrations of malondialdehyde, an index of lipid peroxidation, are significantly elevated. Deposition of amyloid b (Ab) is a constant feature in the brains of patients with AD, which leads to increased free radical formation. Vitamin E is able to decrease lipid peroxidation susceptibility by 60% in AD patients compared with controls. vitamin E (a-tocopherol) interacts with cell membranes and protects membrane from free radicals attack. a-Tocopherol is the most abundant form of Vitamin E. several studies evaluated the association between vitamin E and AD. a-Tocopherol was shown to enhance the protein phosphatase 2A (PP2A) activity, an enzyme that is implicated in AD pathophysiology. Increased levels of pro inflammatory cytokines (such as IL-1, IL-6, and TNFa) have been detected in brain tissue and cerebrospinal fluid of patients with AD that can increase expression of Ab peptide and anti inflammatory agents, including vitamin E, might reduce the probability of developing AD or slow its progression. vitamin E and related tocopherols inhibit several AD-relevant enzymes, which include COX2, implicated in development of AD pathology. Results demonstrated that subjects with the highest levels of vitamin E had a reduced risk of developing AD in comparison with those with lower levels.the vitamins C and E support each other's antioxidant function. intake of vitamins E and C alone showed little evidence of improving the cognitive capacities of users than their combination. No unexpected side effects were observed after vitamin E treatment.

Methods : A literature search with the key words: Vitamin E, Alzheimer, oxidative stress beta amyloid, has been carried out.

Results : High plasma vitamin E levels are associated with better cognitive performance, several studies evaluated the association between vitamin E and AD. intake of vitamins E and C influence improving the

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cognitive capacities of users and vitamin E had a reduced risk of developing AD in comparison with the patients did not used of it.

Conclusion : vitamin E intake has protective effects on preventing of Alzheimer disease and cognitive function in patients with AD

Keywords : Vitamin E, oxidative stress, Alzheimer



Count: 505

Abstract ID: 217

Presentation Type: Poster

Long term treatment by oral probiotics can improve hyperalgesia and edema during adjuvant-induced inflammation

Submission Author: Mahdi Shadnoush

Mahdi Shadnoush¹, Vida Nazemian², Jalal Zaringhalam³, Homa Manaheji⁴

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2. Neurophysiology Research Center, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran
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4. Faculty Member of Physiology Department, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Background and Aim : Rheumatoid arthritis is a chronic autoimmune disease with unknown etiology which can lead to progressive damage of bone and cartilage. Some evidence supports the substantial role of probiotics in the alleviation of inflammatory symptoms such as pain, hyperalgesia and edema. Then, the purpose of this study was to investigate the role of probiotic oral administration on behavioral aspects of inflammation during adjuvant-induced arthritis in rats.

Methods : Complete Freund's adjuvant (CFA)-induced arthritis was caused by single subcutaneous injection of CFA into the rat right hind paw on day 0. Different doses of probiotics (250, 500 and 1000) were administered daily (gavage) during the 21 days of the study after CFA injection. The paw edema and hyperalgesia were assessed by plethysmometer and plantar test respectively in each group on days 0, 7, 14, and 21 of study.

Results : The results of this study indicated the efficacy of probiotics in reducing hyperalgesia and edema during different phases of inflammation caused by CFA.

Conclusion : In our study, we observed a strong reduction of inflammatory symptoms following administration of effective dose of probiotics in CFA model of arthritis which decreased the hyperalgesia and edema severity.

Keywords : Inflammation; Rheumatoid arthritis; Probiotic; Edema; Hyperalgesia



Count: 506

Abstract ID: 103

Presentation Type: Poster

Autophagy inhibition exacerbates impairment of spatial memory in rat model of Alzheimer's disease: role of metabotropic glutamate receptor 5

Submission Author: Fatemeh Shaerzadeh

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2. Neuroscience Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
3. Neuroscience Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Background and Aim : 3-methyladenine (3-MA) is a well-known autophagy inhibitor. 3-MA inhibits activity of PI3K class III at the upstream of autophagy pathway. Accordingly, in the present study, we aimed to determine the effect of autophagy inhibition on spatial and recognition memory in 3-MA-injected rats following A β insult.

Methods : Based on the highlighted roles of the glutamatergic neurons on several aspects of animal behavior, we tried to examine the effect of 3-MA on metabotropic glutamate receptor 5 level by western blot. Spatial learning and memory was assessed using Morris water maze (MWM).

Results : Our data revealed that inhibition of autophagy impaired spatial learning and memory in MWM. Our data showed that decrease in learning and memory ability in rats receiving 3-MA and A β was more compared to the rats received either alone; indicating the additive destructive effects of these two agents. In addition, level of metabotropic glutamate receptor 5 increased significantly in hippocampus of 3-MA injected rats with or without A β .

Conclusion : Based on the role of autophagy system in the turnover of cytoplasmic and membrane components, it seems that accumulation of metabotropic glutamate receptor 5 receptors following autophagy inhibition presumably leads to dysfunction of neuronal cells involved in learning, memory and cognition formation.

Keywords : Autophagy, 3-methyladenine, memory, learning, metabotropic glutamate receptor 5



Count: 507
Abstract ID: 516
Presentation Type: Poster

Neuroprotective Actions of Erythropoietin in Cerebral ischemia

Submission Author: Mehdi Shafiee sabet

Mehdi Shafiee sabet¹

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Background and Aim : Cerebral ischemia occurs when the amount of oxygen and other nutrients supplied by blood flow is insufficient to meet the metabolic demands of brain tissue. The final event in cerebral ischemia is the death of neurons, resulting in irreversible loss of neurologic function. It has become increasingly clear that many secondary biochemical changes that exacerbate injury occur in response to the initial insult. Understanding of the mechanisms by which neuronal cell death takes place has resulted in a number of therapeutic strategies that aim to prevent secondary biochemical changes and thus decrease the damage that results from cerebral ischemia. Erythropoietin is a hypoxia-induced cytokine that stimulates erythropoiesis. Recent evidence supports that erythropoietin has a broad spectrum of tissue protecting actions affecting other systems than hemopoietic.

Methods : Neuroprotective actions of erythropoietin are reviewed in the context of cerebral ischemia and its potential benefits in new treatment strategies are discussed.

Results : Erythropoietin (i) decreases glutamate toxicity, (ii) induces the generation of neuronal anti-apoptotic factors, (iii) reduces inflammation, (iv) decreases nitric oxide-mediated injury, and (v) has direct antioxidant effects.

Conclusion : Collectively, the evidence suggests that erythropoietin may provide a new approach to the treatment of cerebral ischemia.

Keywords : Neuroprotection; Erythropoietin; Cerebral ischemia



Count: 508
Abstract ID: 183
Presentation Type: Oral

Abstract for normal brain aging symposium: Brain dimorphism in normal aging; Estrogen Actions in the Brain

Submission Author: Mehdi Shafiee sabet

Mehdi Shafiee sabet¹

1. Department of Neurology, School of Medicine, Arash Hospital, Tehran University of Medical Sciences, Tehran, Iran

Background and Aim : In recent researches a revolution in our understanding of the actions of estrogen in the body has occurred. Most data derive from studies in females, but there is mounting recognition that estrogens play important roles in the male brain, where they can be generated from circulating testosterone by local aromatase enzymes or synthesized de novo by neurons and glia. Researches now document profound effects of estrogens on learning, memory, and mood as well as neurodevelopmental and neurodegenerative processes. Estrogen-based therapy therefore holds considerable promise for brain disorders that affect both men and women. However, as investigations are beginning to consider the role of estrogens in the male brain more carefully, it emerges that they have different, even opposite, effects as well as similar effects in male and female brains.

Methods : Brain dimorphism in normal aging and Estrogen Actions in the Brain is reviewed in recent researches and neuroscience texts.

Results : There are notable sex differences in the incidence and manifestations of virtually all central nervous system disorders, including neurodegenerative disease (Parkinson's and Alzheimer's), drug abuse, anxiety, and depression. Differences are also seen in physiologic brain aging changes. In brain mapping studies, regarding age-related changes, in both sexes brain atrophy is observed in the lateral frontal and parietal regions and glucose hypometabolism in the medial frontal regions. There are significant differences in these parameters between the sexes; parallel changes in volume and metabolism were manifested in the medial frontal cortex in men and in the lateral and medial temporal cortex in women. By contrast, metabolism-dominant reductions were manifested in the lateral and medial parietal cortex in men and in the ventrolateral prefrontal cortex, including the Broca area, in women. These findings may suggest an aging vulnerability in sex-specific brain regions: the parietal cortex for visuospatial ability in men and the Broca area for speech processing in women.

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Conclusion : Understanding the cellular and molecular basis of sex differences in brain physiology and responses to estrogen and estrogen mimics is, therefore, vitally important for understanding the nature and origins of sex-specific pathological conditions and for designing novel hormone-based therapeutic agents that will have optimal effectiveness in men or women. This review focuses on these differences, including sex dimorphisms in the ability of estradiol to influence synaptic plasticity, neurotransmission, neurodegeneration, and cognition, which, we argue, are due in a large part to sex differences in the organization of the underlying circuitry.

Keywords : Brain Dimorphism, Brain Aging, Estrogen



Count: 509

Abstract ID: 348

Presentation Type: Oral

Harmane decreases the effect of treadmill exercise on spatial recognition learning in restraint stressed mice

Submission Author: Faeze Shahini

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Background and Aim : Harmane first isolated in *Peganum harmala*, and related alkaloids are distributed widely in medicinal plants and found endogenously in mammalian tissues, including the central nervous system, liver, platelets, in plasma and urine. Functional studies have shown that harmane binds to imidazoline (I) I1, I2 and I3 receptors with changes in blood pressure, monoamine turnover and insulin secretion following harmane administration. Several evidence support that harmane is capable of modulating neuronal responses to restraint stress, learning and memory. On the other hand, it had been reported that treadmill exercise alleviates chronic stress-induced hippocampal-dependent memory deficits. In the present study, the effect of harmane alone or in association with treadmill exercise on spatial memory deficit induced by restraint stress in mice was investigated.

Methods : Stress induced by restrainer, which prevented forward or backward movement. The mice in the treadmill exercise groups were subjected to run on a treadmill for 30 min once a day during 5 weeks. Spatial learning ability was determined by Y-maze task.

Results : The results showed that intraperitoneal administration of harmane (0.3 mg/kg) during 24 days prior to training, with a 48h interval, did not alter the percent of time in the novel arm, suggestion a spatial memory acquisition. Moreover, restraint stress (for 6 or 9 days) impaired spatial learning. Harmane alone improved spatial memory in mice were subjected to the restraint stress during 9 days, while treadmill exercise did not alter. Furthermore, harmane in association with exercise potentiated spatial memory impairment induced by stress during 6 days.

Conclusion : Our results suggest that notwithstanding the protective effect harmane against chronic stress, its administration in association with exercise is not suggested.

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Keywords : Harmane; Restrain stress; Treadmill exercise; spatial memory



Count: 510

Abstract ID: 568

Presentation Type: Poster

The Effect of Management of Fatigue on Prospective memory

Submission Author: Tayebeh Shahsavandbaghdadi

Tayebeh Shahsavandbaghdadi¹

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Background and Aim : Prospective memory (PM), the ability to remember to do something at the appropriate time in the future, is one of crucial difficulties in patients with MS . One way to improve PM performance is to manage fatigue . Multiple sclerosis (MS) patients often report PM failures and there is growing evidence of PM deficits among this population. However, such deficits are poorly characterized and their relation to cognitive and physical status remains unclear. To better understand PM deficits in MS patients, this study investigated the impact of management of fatigue on PM, that fatigue affect up to 80% of the people with MS.

Methods : Forty- Five MS women as the experimental group and thirty patients as a control group randomly were recruited among those who referred to Khoramabad Clinics in 2015. The FACETS program, which consisted of six weekly sessions of around 90 min, on fatigue levels, as a method of management of fatigue and the PM task were used in this study to data collecting. Logistic regression analyses were conducted to examine the impact of management of fatigue on PM performance.

Results : This study showed a beneficial effect of the FACETS program on PM Task. Actually, after training management of fatigue(6 sessions), the experimental group performed significantly better than the control group on the PM task.

Conclusion : These findings add to the growing evidence of PM deficits in MS and highlight the role of management of fatigue on improving PM. Also, this study showed that fatigue is one of factors that has an effect on PM deficit and with controlling fatigue we will be able to intensify PM performance. Due to this effect, paying attention to management of fatigue in MS people in the design of treatment is recommended.

Keywords : Women with multiple sclerosis, Prospective memory (PM), Management of fatigue



Count: 511

Abstract ID: 569

Presentation Type: Poster

Evaluation of the Effectiveness of Empowerment of Executive Functions on the Weight Loss of Obese Students

Submission Author: Tayebeh Shamsavandbaghdadi

Tayebeh Shamsavandbaghdadi¹

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Background and Aim : Assessing neuropsychological interactions between attention and working memory in obesity Evaluating the effectiveness of cognitive rehabilitation of working memory and attention bias modification on weight loss in the long term

Methods : First, the subjects' weights were specified and then, the tests of assessment (Visual prob task and, N-Back) of attentional bias and working memory were implemented on them after that through Modified dot -probe test and Anti saccade task they went under rehabilitation. During follow-up at 6 months, 1 year, their weights recorded and evaluated again. Then, through SPSS software data were analyzed. MANOVA was used to show whether rehabilitation of attention and working memory, were effective on the weight loss. Also, analysis of Covariance was utilized to determine whether each of the rehabilitation of attention and working memory, was separately effective based on a comparison of their pre- and post-tests. Finally, Multiple Correlations was applied to specify the existence of a neuropsychological relationship between the two components.

Results : The study showed significant difference in losing weight between three groups. Indeed, the group who received attentional bias modification lost more weight than working memory group and less than those who rehabilitated by attentional bias modification and working memory rehabilitation. And a group who received attentional bias modification and working memory rehabilitation were success compare to two other groups in all period of follow up.

Conclusion : The findings indicated that attentional bias modification plus working memory rehabilitation can be a suitable treatment for obese students. Actually, the size of effect is greater than just one of them. Through this finding paying attention and working memory rehabilitation and attentional bias modification in the design of their treatment is recommended. It also remind that there is an existence of a neuropsychological relationship between the two components that need another research to be strongly proven.

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Keywords : Effectiveness , Executive Functions, Weight Loss , Obese Students



Count: 512

Abstract ID: 222

Presentation Type: Poster

Involvement of Nitric Oxide in stress-induced anxiety in mice

Submission Author: Mona Shakibajoo

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Background and Aim : Stress can induce anxiety in the animal models and human. The role of nitric oxide (NO) in this regard is not well understood.

Methods : In the present study, attempts were made to exploring the effects of L-arginine (NO Precursor), and L-NAME (NO synthase inhibitor) on stress induced-anxiety in male mice (20-25 g). Elevated plus maze (EPM) was used and animals were received electro foot shock in the communication box. Electro foot shock (40 mV, 10 sec, 10 Hz) was applied to the animals for 4 consecutive days in a random manner. L-arginine (1, 5 and 10 mg/kg, i.p.) and L-NAME (1, 5 and 10 mg/kg, i.p.) were administered 30 min before each stress sessions. The EPM test was conducted on the 5th day in drug free state. The time and frequency of open arm entry were recorded by video camera and considered as the signs of anxiety.

Results : Our data showed that stress can increase the time and frequency of open arm entering of the mice, indicating the severe anxiety. L-arginine (1, 5 m and 10 mg/kg, i.p.) reduces stress-induced anxiety. The response was similar for L-NAME. None of the drugs induced anxiety by them self in non-stressed animals.

Conclusion : In conclusion, it is clear that stress -induced anxiety can be modulated by L-arginine and L-NAME pretreatment. The exact role of NO in this regard must be evaluated in the future studies.

Keywords : Anxiety, L-Arginine, L-NAME, Nitric Oxide, Stress.



Count: 513

Abstract ID: 433

Presentation Type: Oral

An overview on the role of serotonergic system for treatment of Obsessive-Compulsive Disorder, Clomipramine to Ondansetron: A literature review

Submission Author: Mohammadreza Shalbafan

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Background and Aim : Obsessive-Compulsive Disorder (OCD) is a common mental disorder and its prevalence is about 3% but recent Iranian survey has reported that in this country, 12 months prevalence is 5.1% in last year. Main treatment choice for OCD is pharmacological approach including Selective Serotonin Reuptake Inhibitors (SSRIs) but response to this class is only about 50%. Therefore, finding other choices especially as add-on therapy is an important target in recent studies and the role of serotonergic drugs is one of the most noticeable modality in last years.

Methods : We have searched some related terms such as “serotonin”, “serotonergic system”, “5HT”, “SSRIs”, “5HT3 Antagonist” and “OCD” in PubMed, Google scholar and other important indexes.

Results : First choice for treatment of OCD is SSRIs. Four drugs from this class included Fluvoxamine, Fluoxetine, Paroxetine and Sertraline and one drug from another Serotonin Reuptake Inhibitor, Tricyclic Antidepressant, named Clomipramine are approved treatments for this disorder but Clomipramine is suggested as the second line because of its adverse effects. Other drugs from SSRIs class such as Escitalopram has been shown as a treatment for OCD. Another target for recent studies is 5HT-3 Antagonists as an adjuvant to SSRIs. Most studied drug from this class is Ondansetron and some double

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blind randomized controlled trials have supported its efficacy as add-on therapy in OCD. One study supported same effect for Granisetron, another drug from this class. Adverse effects in those studies were not severe or serious and were transient and mild overall.

Conclusion : Serotonergic system has main role in treatment of OCD and recent studies support the role of serotonergic drugs from different classes. Further trials with larger samples and longer follow up times can clarify effect of 5HT-3 antagonists such as Ondansetron and Granisetron. Another drug from this class, Tropisetron, May be a good target for a same study.

Keywords : Obsessive-Compulsive Disorder, Treatment, Serotonin, 5HT, Selective serotonin Reuptake Inhibitors, Ondansetron



Count: 514

Abstract ID: 472

Presentation Type: Poster

The Efficacy of Cognitive rehabilitation interventions on Executive Function Autobiographical Memory in Stimulant Addicts

Submission Author: Atefe Shamsedinzade

Atefe Shamsedinzade¹

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Background and Aim : The aim of this study was to Efficacy of Cognitive rehabilitation interventions on executive function autobiographical memory in Stimulant Addicts

Methods : This quasi-experimental research design was pretest and posttest, the population consisted of all men who use Stimulant in the second 6 months of 1393, the MMT, of these, and 27 were selected by convenience sampling. Wisconsin test, Stroop, the Tower of London, Digit Span and autobiographical memory questionnaire was used for data collection. The clientele at twice the pre-test (admission) and post (1 months after treatment) was performed. Paired t-test of descriptive and inferential statistics were used to analyze the data.

Results : The results showed that the Cognitive rehabilitation interventions significantly improve test scores Wisconsin, Stroop, the Tower of London and Digit Span accompanied, As well as scores of dedicated memories, the impact was significant.

Conclusion : Based on these findings for improved Cognitive rehabilitation interventions has a significant effect on executive function and autobiographical memory in Stimulant Addicts. Due to the impact of these factors to improve addiction and craving, it is recommended in the treatment and prevention of recurrence of this plan should be used.

Keywords : autobiographical memory, executive function, Stimulant Addicts, Cognitive rehabilitation interventions



Count: 515
Abstract ID: 473
Presentation Type: Poster

Comparison the brain-behavioral systems and psychological distress in Epilepsy patients and normal

Submission Author: Atefe Shamsedinzade

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Background and Aim : Epilepsy is a common disorder worldwide. It imposes excessive psychological stress on patients which negatively affect the course of the disease. The brain-behavioral systems have a role in dealing with stressful events such as chronic disorders.

Methods : This causal-comparative study was conducted on patients with Epilepsy and controls that were selected by simple sampling method from January to March 2015 in Tehran, Iran. A demographic questionnaire and also Behavioral Inhibition/Activation systems scale (BIS/BAS) and Depression, Anxiety, Stress Scale (DASS) were used to assess subjects. The data were analysed in SPSS 18 software using descriptive statistics and multi-variate analysis of variance (MANOVA).

Results : A total of forty-three subjects (22 female and 21 male) were included in each group of Epilepsy and control subjects with mean age of 41.77 ± 5.34 and 40.21 ± 6.47 years respectively ($p > 0.01$). The groups had a significant difference in terms of brain-behavioral systems activity [$F(5, 80) = 22.33, p < 0.001$] with significant differences in BAS and its subscales of drive and pleasure seeking, while no significant difference was observed between the two groups in BIS activity or BAS subscale of reply to reward. Also results demonstrated significant differences as the matter of psychological distress [$F(3, 82) = 26.26, p < 0.001$] with difference in all of its dimensions.

Conclusion : People with Epilepsy are prone to psychological distress, also strong behavioral activation system can be considered as factors in the persistence and exacerbation Epilepsy.

Keywords : Epilepsy, Psychological Distress, Brain-Behavioral Systems



Count: 516
Abstract ID: 431
Presentation Type: Poster

Melatonin versus Valproic Acid in Prophylaxis of Migraine patients: Clinical results of a randomized, double-blind, placebo-controlled trial

Submission Author: Mojtaba Sharafkhah

Mojtaba Sharafkhah¹

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Background and Aim : Melatonin has been linked to migraine in several ways, from mechanisms to treatment. The aim of this study was to investigate the therapeutic effect of melatonin as compared to sodium valproate in prophylaxis of chronic migraine.

Methods : In this randomized, double-blind, placebo-controlled clinical trial patients with chronic migraine were assigned into three groups of equal size and under baseline therapy with nortriptyline (10-25 mg) and propranolol (20-40 mg). Patients in groups A, B and C received adjunctive daily treatments with melatonin 3 mg, sodium valproate 200 mg, and placebo, respectively. The treatment period was two months and follow-up was done in three steps (at baseline (baseline), first month (I), and second month (II)). Attack frequency (AF), duration of attacks, severity of attacks, Migraine Disability Assessment (MIDAS) score (within 3 months in two steps), analgesic intake and drug side effects between the groups and during follow-up were compared.

Results : The mean of monthly AF (melatonin: baseline:4.2, I:3.1, II:2.5, $p=0.018$; valproate: baseline:4.3, I:3.1, II:2.3, $p=0.001$; placebo: baseline:4.1, I:3.8, II:3.8 $p=0.211$), duration of attacks (hr) (melatonin: baseline:19.8, I:10.1, II:8.7, $p<0.001$; valproate: baseline:19.5, I:10.2, II:8.8, $p<0.001$; placebo: baseline:19.6, I:15.4, II:14.1 $p=0.271$), severity of attacks (melatonin: baseline:7.3, I:5.4, II:3.5 $p<0.001$; valproate: baseline:7.4, I:5.3, II:3.4, $p=0.000$; placebo: baseline:7.3, I:6.4, II:6, $p=0.321$) and MIDAS score (melatonin: baseline:15.2, II:8.9, $p=0.005$; valproate: baseline:16.1, II:8.3, $p=0.001$; placebo: baseline:16, II:12.1, $p=0.44$), significantly reduced in three follow-up steps in melatonin and sodium valproate groups, but not in placebo. Eleven patients (10.47%) reported adverse events: 2 (5.71%) patients during melatonin treatment, 8 (22.85%) patients during valproate and 1 (2.85%) patient during placebo.

Conclusion : Adjuvant treatment with melatonin in a short period was superior to placebo and has the same clinical efficacy as sodium valproate, but higher tolerability. Melatonin may be a good substitute for sodium valproate, as a chronic migraine prophylaxis.

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Keywords : Migraine Disorders, Melatonin, Valproic Acid



Count: 517
Abstract ID: 127
Presentation Type: Oral

Age related cognitive changes (abstract for brain aging symposium)

Submission Author: Behnam Shariati

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Background and Aim : Aging causes changes in both biological and psychological aspects of person. Some of these changes may be for the better, and others are not. This lecture discusses the normally aging brain, and cognitive concomitants of these changes.

Methods : Changes in brain structure and function are tied to alterations in cognitive function. Age-related changes in cognition are not uniform across all cognitive domains or across all older people. The basic cognitive functions which are affected by age are attention and memory. But some aspects of attention and memory hold up well while others show significant declines. Perception also shows significant age-related declines. Higher-level cognitive functions such as language processing and decision making may also be affected. These tasks naturally rely on basic cognitive functions and will generally show deficits to the extent that those fundamental processes are impaired. Moreover, complex cognitive tasks may also depend on executive functions, which manage and coordinate the various components of the tasks. Considerable evidence points to impairment of executive function as a key contributor to age-related declines in cognitive tasks.

Results : Although these cognitive functions will be reviewed separately in the lecture, it is clear that they overlap and interact complex ways.

Conclusion : This lecture highlights the cognitive domains that show the greatest declines with age and are also the most variable. Areas of cognitive strength in normal aging are also discussed, because these may compensate areas of weakness.

Keywords : Age, brain, cognition



Count: 518

Abstract ID: 424

Presentation Type: Oral

Spinal cord injury: a systematic review of experimental models

Submission Author: Mahdi Sharif Alhoseini

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Background and Aim : Animal spinal cord injury (SCI) models have proved valuable in better understanding the mechanisms involved in SCI and assessing the effectiveness of therapeutic interventions. Although some studies reviewed the existing SCI models and their general pros and cons in a descriptive manner, a systematic review could provide a comprehensive frame of current animal models of SCI and categorized them based on different variables.

Methods : In this study, we systematically reviewed the literature using a broad PubMed and a manual search. Our inclusion criteria consisted of the original articles utilizing any animal model of SCI. The data were extracted and categorized based on the goal of study, the type of animal, the injury paradigm, the level of injury, the outcome assessment, etc.

Results : 2870 publications met our prespecified inclusion criteria. Among 2209 included original studies, SCI models were classified based on the mechanism of injury into mechanical or non-mechanical models. Testing the effects of a factor or drug was the most common aim (36.6%). The most common spinal region involved was thoracic (81%). Contusion was the most common pattern of injury (41%). Although rats remain the most commonly used species and are best suited for basic SCI studies, nonhuman primate experiments better approximate human SCI.

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Conclusion : All SCI models aim to replicate SCI in humans as closely as possible. Prior to choosing an animal model, the objectives of the proposed study must precisely be defined. The present study could help researchers to choose the most proper model and outcome assessment regarding the specific objectives.

Keywords : Spinal cord injury; Experimental animal model



Count: 519

Abstract ID: 439

Presentation Type: Poster

Comparison effect of neurofeedback training with occupational therapy and occupational therapy alone on stroke patient memory

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Background and Aim : Different perceptual and cognitive impairments occur after stroke. Because cognitive impairments after stroke can affect activity of daily living, identification and improvement of these problems is very important. Cognitive problems after stroke can be as a result of working memory impairments. Neurofeedback training can regulate brain waves and this action can affect cognitive function. In this study we tried to examine and compare the effect of Neurofeedback training on memory in stroke patients.

Methods : This study used a single-system design with a control group in a sample of four patients. In the study results of the B phase (therapy phase) were compared with the A phase (baseline). Any improvement in memory in the two groups was evaluated with the CANTAB test.

Results : Regarding the data, the effect size of the therapy in the two groups was analyzed with Cohen's d test. The effect size in spatial span (ssp) and spatial working memory (SWM) for the test group was (0.2/38 and 0.3/87) and for the control group was (0.0/73 and 0.1/63). The change in mean for ssp and swm for the test group was (1.3 and 17/2) and for the control group was (0.2/25 and 0.3/8).

Conclusion : Regarding the results, it may be used as a complementary therapy.

Keywords : neurofeedback, stroke, cognition, working memory.



Count: 520

Abstract ID: 404

Presentation Type: Poster

The effect of transcranial direct-current stimulation on the language skills of children with agenesis of the corpus callosum: case study

Submission Author: Ehsan Shekari

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Background and Aim : The corpus callosum is the main between hemispheric connector which transfer cognitive, sensory, and motor information between the two hemispheres of the brain. In terms of performance, the corpus callosum not only transfers the information between the cerebral hemispheres, but inhibits simultaneous action in the opposite hemisphere. Transcranial direct current stimulation (TDCS) is one of the easiest ways to stimulate local brain. TDCS involves passing a weak current (usually ≤ 2 mA) directly through the brain between the two electrodes. Given that Agensis cause Interference between left and right hemisphere activity, and that the use of tDCS can stimulated hemisphere activity and inhibited the activity of the other hemisphere, this study aimed to investigate the effect of tDCS in the treatment of language disorders in a child with Agensis in corpus callosum.

Methods : the child was treated with tDCS. For 4 weeks and 20 treatments (5 times a week, each session lasting 20 minutes) with current of 2 mA and simultaneously naming pictures and verbs and nouns. The anode was placed on left frontal operculum and cathode was placed on right frontal operculum. Child's language skills were evaluated using TOLD-P: 3.

Results : The child showed complete score in substests of visual, associations, and oral words and word production in pre and post-treatment. Scores of assessment in substests of sentence imitation, grammar completion showed significance different after treatment comparing before treatment. The scores of phonological analysis subtest were both low before and after treatment, and the subtest of distinguishing words showed no significant changes before and after treatment.

Conclusion : It seems that stimulate the brain using tDCS could improve the language skills of children with Agensis of corpus callosum. However, the results of this study showed that the effects of stimulation are limited to the stimulated region and for increasing effects we can stimulate other relevant areas.

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Keywords : Agensis of corpus callosum, tDCS, language skills



Count: 521

Abstract ID: 615

Presentation Type: Poster

Mental imagery Efficacy on Sensory and Motor function in patients suffering from Focal dystonia and under drug treatment

Submission Author: Mahnaz Shirani

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Background and Aim : Abstract Introduction: Focal dystonia is a chronic disease with unwanted side effects. Therefore the present study aims to investigate the efficacy of mental imagery on Sensory and Motor function in patients suffering from focal dystonia and under drug treatment.

Methods : Methods: This study carried out based on a multiple baseline with a staging initiation of treatment. The subjects were comprised of five patients suffering from focal dystonia and under drug treatment who were referred from neurologic clinics. The patients firstly were selected according to a purposeful procedure. Then, they were identified according to an interview administered by the neurologist and reviewing their medical records (patients suffering from Focal dystonia with motor weakness of mild to moderate intensity according to Fahn-Marsden scale), and finally five subjects were randomly selected as the sample. In this study, Fahn-Marsden scale (F-M scale) was used to collect the data. Intervention was conducted 8 weeks and individually.

Results : Results: The results of data chart visual analysis revealed a significant difference between the intervention and baseline phases for the five patients in Sensory and Motor function (PND:80% subject number 1 & 100% subject number 2&80% subject number 3 &80% subject number 4 and 100% subject number 5).In other words, mental imagery intervention can be might lead to recovery in the sensory and motor . The rate of recovery remained stable in the follow up phase (4 week after intervention).

Conclusion : Conclusion: It seems that mental imagery intervention can be might lead to change and improved in the sensory and motor function in patients suffering from Focal dystonia and under drug treatment.

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Keywords : Keywords: mental imagery - Sensory and Motor function - patients suffering from Focal dystonia



Count: 522

Abstract ID: 318

Presentation Type: Poster

The effect of different time progesterone administration on experimental outcomes after traumatic brain injury

Submission Author: Sara Shirazpour

Sara Shirazpour¹, Mohammad Khaksari²

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Background and Aim : Following our previous studies on the neuroprotective effects of progesterone, this study was designed to determine the effects of progesterone administration on traumatic brain injury (TBI) at different times of a 30 min and 2h after TBI.

Methods : Female ovariectomized rats were divided into 9 groups: intact, sham, TBI and 6 groups treated by vehicle or progesterone, including: two groups of vehicle, two groups of low progesterone (1.7 mg/kg) and two groups of high progesterone (8 mg/kg). Brain water content (BWC), blood-brain barrier (BBB) disruption, and veterinary coma scale (VCS) measured following diffuse TBI.

Results : After TBI, BWC in the TBI group decreased significantly compared with intact and sham groups ($p < 0.001$). Progesterone administration at 0.5 min after TBI, is causing a significant reduction in BWC ($p < 0.05$). The same results were obtained for injection after 2 h; In addition, there was no significant difference between groups for different doses, and at different times. Evans blue content (BBB disruption) in the TBI and vehicle groups increased significantly compared to intact and sham groups ($p < 0.001$) after TBI. Evans blue content is reduced by low dose, at 30 min after TBI, but this dose was ineffective at 2h after TBI; In addition, High dose at 30 min, increased this index and has been ineffective at 2h. There was no significant difference for VCS at different times and in different doses

Conclusion : The results of this study suggested that progesterone have neuroprotective effects on brain edema at different times, but at 30 min causes increase in Evans blue content.

Keywords : TBI ,Progesterone , Brain water content , Blood-brain barrier



Count: 523

Abstract ID: 346

Presentation Type: Poster

Harmane prevents contextual fear memory impairment induced by REM sleep deprivation during short periods

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Background and Aim : The β -carboline harmane, a putative endogenous agonist at imidazoline binding sites, possesses binding affinity for monoamine oxidase-A (MAO-A) at which it acts as an allosteric inhibitor, and for the gammaaminobutyric acid (GABA-A) receptor, where it has an inverse agonistic effect. There is a well-established role for MAO-A and GABAA receptors in the regulation of emotional processing and a significant body of evidence suggesting that imidazoline binding sites (I1 and I2 subtypes) may represent a novel therapeutic target for the treatment of psychiatric disorders. However, there is a paucity of studies investigating the effects of harmane on conditioned fear responding. On the other hand, evidence support this hypothesis that sleep has roles in learning and memory processes. At present study, we tested the effects of harmane on contextual fear memory deficit induced by rapid eye movement (REM) sleep deprivation in mice.

Methods : Flower pot technique was used for REM sleep deprivation and fear conditioning paradigm was used for assessment of contextual fear memory.

Results : Free moving group (FMG) received twice or thrice intraperitoneal administrations of harmane at the dose of 2.5 mg/kg, prior training and with a 12 h interval, decreased freezing time percentage and increased latency to freezing, suggesting an impairment of contextual fear memory. Moreover, REM sleep deprivation administered 12, 24 and 36 h before training session impaired contextual fear memory. Harmane improved contextual fear memory impairment in REM deprived mice in the periods of 12 and 24 h, but not 36 h.

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Conclusion : It might be suggested that harmane may be a therapeutic option for memory deficits induced by REM sleep deprivation.

Keywords : Harmane; REM sleep deprivation; contextual fear memory



Count: 524

Abstract ID: 87

Presentation Type: Oral

Changes of the c-fos and p-CREB/CREB ratio in the nucleus accumbens, hippocampus and prefrontal cortex during extinction and reinstatement of morphine-induced conditioned place preference: The role of

Submission Author: Ali Siahposht khachaki

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Background and Aim : Introduction: Glutamate mesocorticolimbic pathway and dopamine (DA) system have a closely relationship in the reward phenomena, enjoyment, arousal and memory. This neurocircuitry comprised from ventral tegmental area (VTA), nucleus accumbens, hippocampus (HIP), amigdala and prefrontal cortex (PFC) that are neuronal regions underlying drug-induced reward and can change the firing frequency of dopaminergic neurons in the reward system. The most studies indicated that alterations in phosphorylated cAMP response element binding protein (p-CREB) and c-fos in the regions associated with reward phenomena is related to drugs exposure. So, we design this study for elucidate the changes in p-CREB and c-fos in NAc, HIP and PFC after intracerebroventricular (ICV) administration of different doses of AP5 or vehicle during extinction period or reinstatement of morphine-induced CPP in rats.

Methods : Materials and methods: Forty eight adult male albino Wistar rats weighing 240-290g have done the CPP procedure; after extinction period or reinstatement, we dissected out the NAc, HIP, and PFC regions and estimated the p-CREB/CREB ratio and c-fos level by Western blot analysis.

Results : Results: The results indicated that above factors were dose-dependently decreased in comparison with vehicle group (saline) after ICV administration of different doses of AP5 (except for p-CREB/CREB ratio in pre-reinstatement group in the NAc and c-fos level in pre-extinction-reinstatement groups in HIP).

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Our findings revealed that antagonism of NMDA receptor decreased p-CREB/CREB ratio and c-fos level in the, NAc, HIP and PFC that are involved reward memory and cell activation, respectively.

Conclusion : Discussion: So, it seems that blockade of the NMDA receptor disrupt connection between drug memory and context may be useful for decrease of extinction period of drug-induced reward and attenuation of cue-induced drug reinstatement.

Keywords : Reward, Extinction, Reinstatement, CPP, Glutamate



Count: 525

Abstract ID: 46

Presentation Type: Oral

Association of long-term Atorvastatin with escalated stroke-induced neuroinflammation in rats

Submission Author: Leila Simani

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Background and Aim : Statins are widely used in high risk patients to reduce the stroke incidence. However little has been investigated about the impact of chronic pretreatment with statins on cerebral ischemic insult following defined arterial occlusion. To address this in experimental rats, in the present work atorvastatin was orally dosed for one month to evaluate the outcomes of the subsequent occlusive stroke induced by middle cerebral artery occlusion (MCAO).

Methods : To induce well defined arterial occlusion animals were subjected to 60-minute middle cerebral artery occlusion (MCAO) following daily Atorvastatin (5 and 10 mg/kg; 30 days). Besides behavioral and infarct lesion assessments 24 h post stroke, cerebral tissues were subjected to TNF- α , IL-6, Bax, Bcl2 and cleaved Caspas-9 immunoblotting or calorimetric assays of antioxidants superoxide dismutase and glutathione as well as the due peroxidation products.

Results : Our data was suggestive of potential escalating impact of chronic Atv (10 mg/kg) on neurological function but not infarct volume. According to our immunoblotting data, such escalations was consistent with prominent rise in TNF- α and IL-6 which paralleled with augmented Bax/Bcl2 ratio and Caspase-9 activation however not enough to worsen acute neurodegeneration determined by Fluoro Jdae B staining. Noteworthy, such deteriorating effects were also partly detected in non-ischemic animals.

Conclusion : our data are indicative of cerebral proinflammatory effects of chronic Atv which might overwhelm the beneficial pliotropic of the drug and predispose animals' brain to ischemic insult. To

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specifically focus on primates, further studies are required to precisely explore stroke outcomes following long term prophylactic therapy with statins possessing discrete pharmacokinetic properties

Keywords : Atorvastatin; Cerebral ischemia; Neuroinflammation



Count: 526

Abstract ID: 403

Presentation Type: Poster

Royal jelly improves passive avoidance learning and memory in diabetic rats

Submission Author: Mohammad SOFIABADI

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Background and Aim : Diabetes, possibly through the production of free radicals leads to learning and memory disorders. Royal jelly, in several experimental models improved neurological defects of diabetes. In this study, oral administration of royal jelly were studied on memory and passive avoidance learning in male Diabetic rats.

Methods : Rats were divided in to; control (healthy), diabetic without treatment, diabetic glibenclamide 5 mg / kg and three diabetic groups treated with royal jelly (50, 100 and 200 mg / kg). Diabetes was induced in the animals with intraperitoneal injection of STZ (60mg / kg). Three days later, blood samples taken from the tail and plasma glucose was measured and if more than 200 mg /dL, diabetes were confirmed. Treatment in groups at starting of hyperglycemia with gavage and continued for 30 days. At the end of period, the passive avoidance learning and memory tests conducted and animal weight and glucose were measured.

Results : Diabetes impaired passive avoidance learning and memory processes in animals. Treatment with royal jelly improves learning and memory in diabetic rats. In diabetic treated groups, the weight loss and hyperglycemia were lower than non-treated rats.

Conclusion : Royal jelly has antioxidant and anti-free radical's properties that can be protect cognitive impairment associated with diabetes when administrated during the 30 days from the beginning of diabetes. Royal jelly is possible to use as a supplement to improve cognitive disorders caused by diabetes.

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Keywords : Diabetes, Royal jelly, Learning, Memory, Rat



Count: 527
Abstract ID: 744
Presentation Type: Oral

stress hyper sensitivity like Behavior Prevention by Histone Deacetylase Inhibition

Submission Author: Somaye Soleimaniomid

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Background and Aim : Response to stress is major determinant of mental health. Stress hypersensitivity which is exaggerated physiologic and mental reaction to stress predispose organism to psychiatric condition, especially mental depression. Stress hypersensitivity gene and its polymorphisms, have been detected before. Epigenetics is an important mechanism for gene polymorphism following, special situations. Therefore we investigated the possibility stress-hypersensitivity behavior by histone deacetylase inhibitor agents.

Methods : We used 80 2 weeks old pups, divided in 8 groups (n=10). Social isolation technique performed to induce stress sensitivity like behavior. Isolation was proposed for four conditions weeks. Two isolated groups took histone deacetylase inhibitors, actually and chronically (one week) one month. Stress sensitivity like behavior was examined by startle test.

Results : Our results showed increased hypersensitivity like behavior in isolated group, compared with non-isolated one. Chronic HDACI, could ameliorated stress hypersensitivity like behavior, meaningfully although acute HDACI, didn't show this effect.

Conclusion : Stress hypersensitivity like behavior predisposes organism mental depression. This behavior is genetically mediated. We showed chronic administration of histone deacetylase inhibitor agents, following social isolation could prevent stress hypersensitivity like behavior. We can conclude that chronically used HDACI could be counted as a preventive factor toward hypersensitivity induction following, pathologic situation.

Keywords : Stress Hypersensitivity, Depression, Histone deacetylase, Behavior



Count: 528
Abstract ID: 411
Presentation Type: Poster

Top-Down Contextual Information enhance object recognition performance under challenging condition: a computational study

Submission Author: Elahe sadat Soltandoost nari

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Background and Aim : Object recognition is one of the important issues in neuroscience and machine vision that has achieved significant progress in recent years. Convolutional neural networks (CNNs) are state of the art computational vision models for object recognition problem. Despite their good performance, they couldn't mimic some aspects of the human visual system. In contrary to experimental conditions, objects in the natural scene appear in complex background. It seems that the brain use prior contextual information of presence of each object in scenes. In order to incorporate contextual information in object recognition, we used Alexnet network for object recognition and the places-CNN for scene recognition. According to the selected scene, most likely objects appear with a higher score in the feedback vector. In this way, by reducing the number of target classes in the competition, the accuracy and speed of the object recognition task increased.

Methods : In this study two CNN networks consists of five convolutional layers and three fully-connected layers are used. Some of the convolutional layers are followed by max-pooling layers. We applied places_CNN for place recognition and AlexNet for object recognition. In the experiment Places_CNN was fine-tuned from places database to classify five classes and AlexNet was fine-tuned from Imagenet data set to classify 50 classes. The AlexNet's targets is chosen so that they were existed in the at least one of scenes. The input scene image enters into the places_CNN and a crop of it that contains an object enters into the AlexNet network. According to the scene recognition results, a feedback vector is produced and backpropagated in last fully connected layer of AlexNet network. In the feedback vector, each class receives a value according to the frequency of that class in the winner scene of Places_CNN.

Results : The results show that the accuracy of the object recognition model is increased from 54.96% to 58.36% by using the context information such as frequency of object appearances (significance is calculated by Wilcoxon rank sum test and p-value=0.00015540)

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Conclusion : Evidences show that the knowledge of where we are, help to make an “initial guess” for what we will see soon. These initial guesses increase the accuracy and speed of object recognition task. In this study, we tried to use contextual information to make some expectation about object in complex background. It enhances accuracy of object recognition task.

Keywords : CNN;Object recognition;Places_CNN;Context



Count: 529

Abstract ID: 715

Presentation Type: Oral

EFFECT OF IMAGE SCALE ON HUMAN REGION OF INTEREST

Submission Author: Javad Soltani

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Background and Aim : How changing the spatial scale of a part of an image makes differences in fixational behavior? We hypothesized that there is a relation between gaze distributions when observer has encountered the holistic structure or envelope of a natural scene and the gaze distributions when he's been shown only a part of that natural scene image.

Methods : top-down and bottom-up discovery mechanism are two approaches that subjects invoke to percept the low level and high level properties of image. Our purpose is finding the gaze distribution pattern on the screen by an eye tracking task in small and divided patches of a specific natural scene, and compare them with gaze patterns achieved from larger patches of that image which consist of the smaller patches, but obviously in a different scale. Hence we divided each of images into the 4 smaller and same size on the screen and each one of those patches into 4 other patches, we've done this procedure 3 times and then we obtained 4 layer of each image (a total of 64 patches). In this task we had 3 images, which by applying the dividing process we obtained a total of 255 pictures and show them to observers. We had 5 male and 5 female as observers. We've shown the patches in same size and same resolution.

Results : We measured the gaze pattern of subjects and by mining the hROI (human region of interest) compare received patterns from different layers to each other. We found the overlaps and similarity between gaze distributions patterns received from subjects from patches of each layer. All gaze points received were used as an accumulative data set of gaze points for each image. In order to compare the gaze points, different measures like kullback leibler divergence and ROC have been employed.

Conclusion : We found a significant relation between the gaze patterns, and different scales of these patches.

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Keywords : Eye Tracking;Image Scale;Human Region of interest;top-down;bottom-up;data mining;



Count: 530

Abstract ID: 685

Presentation Type: Poster

The effectiveness of neuropsychological rehabilitation treatment on improving the performance of Response Inhibition in students with learning disability in math and reading

Submission Author: Seyed Hasan Tabatabaee

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Background and Aim : This study examines the effectiveness of neuropsychological rehabilitation treatment on improving the performance of Response Inhibition in people with learning disability in math and reading

Methods : among the population of the city of Tabriz, that all students with disabilities in math and reading centers of learning disorders in the 2015-16 school year, 30 students with these disabilities, aged 8 to 12 years, 20 sessions of 30 to 45 minutes, with the Persian version educational software company SOUND SMART BRAIN tRAIN, received relevant training and in the end was to evaluate differences, the above test, then the test and control groups was implemented (post-test).

Results : in addition to descriptive statistics and multivariate regression analysis were used. Data analysis showed that neuropsychological rehabilitation of response inhibition students with learning disabilities in math and reading had a significant positive impact on the level of $p < 0/01$ was significant.

Conclusion : Data analysis showed that neuropsychological rehabilitation of response inhibition students with learning disabilities in math and reading had a significant positive impact on the level of $p < 0/01$ was significant.

Keywords : Neuropsychological Rehabilitation; response inhibition; mathematic; reading



Count: 531

Abstract ID: 700

Presentation Type: Poster

The effectiveness of neuropsychological rehabilitation on the pattern of brain waves in students with learning disabilities in math and reading

Submission Author: Seyed Hasan Tabatabaee

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Background and Aim : This study examined the effectiveness of neuropsychological rehabilitation on the pattern of brain waves of student with learning disabilities in math and reading

Methods : The study population was all students with disabilities in math and reading in city of Tabriz in the 2015-16 school year. Among this population, 30 students with disabilities, the aged 8 to 12 years, for sample, purposefully selected and randomly divided into two groups math and reading and then both groups were evaluated of alpha and theta brain waves (pre-test). After the pre-test, experimental group received related training in 20 sessions of 30 to 45 minutes with the Persian version educational software SOUND SMART of company of BRAIN TRAIN, and in the end for evaluate differences, each the control and experimental group were evaluated of alpha and theta brain waves (post-test)

Results : The data from this study were analyzed using the software Neuroguid and research methods of experimental study with pretest and posttest with the control group, for data analysis in addition to descriptive statistics and multivariate regression analysis were used

Conclusion : Results of this study showed that neuropsychological rehabilitation on the pattern of brain waves alpha and theta no had no significant effect

Keywords : neuropsychological rehabilitation, brain wave pattern, mathematical, reading



Count: 532

Abstract ID: 646

Presentation Type: Oral

Investigate the effectiveness of psycho-social interventions in reducing symptoms of hyperactivity/attention deficit children

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Seyed Mahmoud Tabatabaei¹, Robabeh Zolfi²

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Background and Aim : The aim of this study was to investigate the effectiveness of psycho-social interventions in reducing symptoms of hyperactivity / attention deficit children.

Methods : This study had a quasi-experimental design with pretest-post test control group. The population consisted of 60 boys of primary school boys (6 to 12 years) with ADHD in Tabriz. Therefore, based on sampling, subjects were selected and were assigned to experimental groups of parents-centered, child-centered, combined and control group.

Results : The findings showed that the intervention of child-centered and family-centered interventions 0.58 and 0.18 respectively caused change or reduction of scores "behavioral problems" of children with ADHD. Also the combined interventions of child-centered and family-centered simultaneously made 0.82 percent of the variation in reduction of scores "behavioral problems", children with ADHD ($P < 0.05$).

Conclusion : Psycho-social interventions help children with ADHD and their families to efficiently expand their knowledge and abilities in the field of education and children with attention deficit / hyperactivity. Therefore, this therapy avoids the development of social and emotional maladjustment in children and helps in improving child and family's mental health.

Keywords : ADHD; psycho-social interventions; behavioral problems



Count: 533

Abstract ID: 650

Presentation Type: Poster

Exploring the difference between executive memory function and sensory memory in children with Learning Disabilities and control group

Submission Author: Seyed Mahmoud Tabatabaei

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Background and Aim : This study is conducted with the aim of determining the difference between executive memory function and sensory memory in children with Learning Disabled (LD) and a control group.

Methods : This study is causal – comparative in terms of description. The statistical population of research consists of all the primary school children with learning disorder. 30 boy students of the total statistical population were choosing randomly accessible. The same amount of students (30) were then selected from the healthy population of society as the control sample and inserted into the study. “Span of direct and inverse figures” and “verbal reasoning” subscales were used as the explanatory factors of executive memory. The visual memory test of Andre Rey (scrambled geometric images test) is used to examine the sensory memory.

Results : The results indicated that the performance of executive and sensory memory in normal children is higher than LD children ($p < 0.000$). The scores of both tests for the performance of number span subtest and verbal reasoning scale, are higher in normal children than LD children, and the average score of normal students is significantly higher for normal students in perception and memory tests (in the Andre Rey scale) compared to the average score obtained by LD children ($p < 0.001$).

Conclusion : It is concluded that early and comprehensive assessment of administrative functions can help children with learning disabilities to be effective in the future academic performance.

Keywords : Learning Disabled Children; Executive Memory; Sensory Memory



Count: 534
Abstract ID: 640
Presentation Type: Oral

Prolonged sensory deprivation of rat barrel cortex sex-dependently affects learning function and density of pyramidal neurons in hippocampal formation

Submission Author: Hamid Taghipour Bibalan

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Background and Aim : The mammalian neocortex is a densely interconnected neural network that processes sensory information and transforms them into conscious sensory perception to be acted on or storage for memory. Because of its well-understood features, rodents' barrel cortex offers a fine model to investigate the probable relationships between early sensory experiences and ultimate structural and functional properties of the cerebral circuits. In the current study, we evaluated the effects of long-term reduction in sensory input to the rat barrel cortex via whisker trimming on the performance in passive avoidance (PA) task and neuronal density in major subfields of hippocampus.

Methods : Wistar rats belonging to the experimental group had their whiskers trimmed bilaterally (SD rats) every other day to the length of <1 mm from postnatal day 3(PND3) to PND59. Rats in the control group were only handled in the same time period. On PND 96 the rats were tested for memory retention deficits using PA apparatus, while whiskers were fully regrown and neuroanatomical maturation was reached. Different elements of acquisition and memory retention parameters were recorded in a two session test paradigm for further analysis. On PND 100, paraffin embedded blocks of the forebrain from the two groups were sectioned in the coronal plane, stained with cresyl violet and pyramidal neurons were counted in fixed areas within different parts of hippocampal formation.

Results : Statistical analysis of collected data showed no significant difference in PA performance between male rats in SD and control groups but on the other side, long-term ablation of sensory inputs to barrel

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cortex induced a significant increase ($P<0.001$) in the number of trials needed for acquisition of PA during training. Our data indicates that female SD rats show lower step through latency (STL) to enter the dark compartment in comparison with control rats ($P<0.01$). Moreover, there was a statistically meaningful ($P<0.05$) increase in time spent in the dark compartment (TDC) and frequency of entries to the dark compartment ($P<0.05$) in female SD rats. Preliminary results of histological experiments revealed that in adult male rats the number of neurons in the studied hippocampal subfields does not show a significant change with the exception of a mild decrease ($P<0.05$) in CA3 subfield of SD animals. However, in female rats an evident loss of pyramidal neurons was detected in CA1, CA2 and CA3 subfields of SD animals ($P<0.001$).

Conclusion : These results indicate that long-term sensory deprivation of rat barrel cortex induced from early PND to young adulthood causes durable effects on learning and long-term memory abilities in a sex-dependently manner only in female rats. This is in direct correlation with our histological findings which showed a decrease in neuronal population of different subfields of hippocampal formation in female SD rats. Our findings suggest that neuronal loss in hippocampus may contribute to the cognitive deficits observed after sensory deprivation.

Keywords : Barrel cortex; Sensory deprivation; Passive avoidance; Hippocampus; Development



Count: 535

Abstract ID: 515

Presentation Type: Poster

The protective effect of renal ischemic postconditioning on renal ischemic reperfusion-induced brain dysfunctions

Submission Author: Mahshid Tahamtan

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Background and Aim : Acute kidney injury (AKI) is a frequent complication with high mortality which leads to brain dysfunction. The aim of this study was to investigate the possible protective effect of ischemic postconditioning (IPO) against brain dysfunctions induced by renal ischemia.

Methods : Male Wistar rats underwent bilateral renal ischemia (BRI), sham or IPO surgery 24h and 1w after reperfusion. Explorative behaviors and motor function of the rats was evaluated by open field, rotarod and wire grip tests. The cognitive function was assessed by passive avoidance learning and morris water maze tests. Western blotting was performed to assess hippocampal BDNF protein expression.

Results : Impairment of balance function by BRI was not reversed by postconditioning 24h after reperfusion. IPO increased muscle strength compared to BRI group, but explorative behaviors and balance function had no difference 1w after reperfusion. Explorative behaviors had no difference 24h after reperfusion but velocity was increased in IPO group compared to BRI group. Passive avoidance learning impairment in BRI group was reversed by postconditioning 24h after reperfusion, but no significant alterations was indicated 1w after reperfusion. BRI decreased significantly the BDNF protein expression in the hippocampus and postconditioning increased the level of this protein 24h after reperfusion.

Conclusion : Results of this study demonstrated deleterious effect of BRI on cognitive and balance function 24h after reperfusion. IPO showed protective effect against cognitive dysfunctions. Further studies are required to demonstrate the exact mechanisms of the neuroprotective properties of IPO.

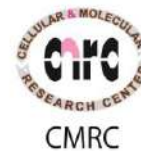
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Keywords : Acute kidney injury; Postconditioning; Bilateral renal ischemia; Neuroprotection; Cognition; Motor



Count: 536
Abstract ID: 19
Presentation Type: Poster

The incidence and prevalence of spasticity after first-time stroke

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Background and Aim : Spasticity is one of the most important causes of disability in stroke patients. In spite of high incidence of spasticity, little is known about the relationship between the occurrence and the development of spasticity with the early impairments following a stroke. Objectives: Determining the incidence and prevalence of spasticity after stroke and exploring the risk-factors for developing spasticity following a stroke.

Methods : One hundred fifty first-time stroke victims were participated in this observational study. The following parameters were assessed at four different time-points poststroke. 1. Stroke severity based on National Institutes of Health Stroke scale; 2. Spasticity based on Modified Ashworth Scale; 3. Disability and 4. Joint contracture based on Barthel Index and goniometer respectively.

Results : Prevalence of spasticity was between 17-25% during the first 4 months after stroke. The onset of spasticity was 13.79% and 4.16% at 1 and 3 months after stroke respectively and dropped to 0% at 4 months. The prevalence of spasticity in the upper extremity was significantly more than lower extremity at 1 month ($p=0.02$). Spasticity was significantly more severe in the upper extremity than lower extremity at 1 month ($p=0.007$), 3 months ($p=0.014$), and 4 months ($p=0.025$). In patients with hemorrhagic stroke Odds ratios of spasticity was 2.5 times more than patients with ischemic stroke ($P=0.021$). The severity of spasticity was increased by time during the first 3 months. The Odds ratios of severe spasticity at 1 and 3 months were 1.66 and 1.75 times more than the first week ($P=0.024$ and $P=0.042$ respectively).

Conclusion : After first-time stroke, the onset of spasticity mostly occurs during the first month. Post stroke spasticity is more common in patients with hemorrhagic stroke, severe paresis and lower functional abilities. Post stroke spasticity is more severe in the upper extremity than lower extremity.

Keywords : Stroke; Spasticity; Prevalence; Incidence; Risk-factors



Count: 537

Abstract ID: 362

Presentation Type: Oral

Myxovirus resistance protein A (MxA) polymorphism is associated with IFN β response in Iranian multiple sclerosis patients.

Submission Author: Mohammad Taheri

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Background and Aim : Multiple sclerosis (MS) is a heterogeneous immune-related demyelinating disorder of central nervous system with several genetic and environmental factors contributing in its pathogenesis or patients' response to therapies. Myxovirus resistance protein A (MxA) is among genes which are induced by IFN β and are involved in the MS pathogenesis and/or response to IFN β .

Methods : In the present case-control study we evaluated the association between three SNPs at nt -123 (A or C, rs17000900), nt -88 (G or T, rs2071430) and nt +20 (A or C, rs464138) and MS risk as well as treatment response in a population of Iranian MS patients including 146 IFN β responders and 85 non-responders as well as 180 healthy controls.

Results : The AGA (-123, -88, +20) haplotype was more frequent in controls compared with MS cases (P=0.038, OR (95% CI) =1.77 (1.03–3.02)). Of particular note, the frequency of rs464138 AA genotype was significantly higher in responders compared with non-responders. However, the allele and genotype frequencies of other SNPs were not significantly different among patient subtypes or between patients and controls. Besides, we have demonstrated that CGC, ATA and AGA (-123, -88, +20) haplotypes were significantly associated with IFN β response in MS patients.

Conclusion : As SNPs on MxA promoter region might participate in MS patients' response to IFN β , prior patients genotyping may increase the rate of responsiveness and help in individualized selection of treatment options.

Keywords : multiple sclerosis, MxA, polymorphism



Count: 538

Abstract ID: 363

Presentation Type: Poster

RAR-related orphan receptor A (RORA): a new susceptible gene for multiple sclerosis

Submission Author: Mohammad Taheri

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Background and Aim : Retinoic acid receptor-related orphan receptor alpha (RORA) is proposed to promote Th17 cells differentiation that play a crucial role in many inflammatory diseases, including multiple sclerosis (MS). The gene is also involved in regulation of inflammatory responses and neuronal cell development.

Methods : The aim of the present study to determine if any relation exists between RORA rs11639084 and rs4774388 gene polymorphisms on the individual susceptibility of multiple sclerosis. 410 patients with clinically definite MS and 500 ethnically-matched healthy controls were participated in this study. Genotyping was performed using tetra primer-amplification refractory mutation system-PCR (4P-ARMS-PCR) method for the mentioned polymorphisms in the RORA gene.

Results : Both variants showed significant differences in allele and genotype distributions between the studied groups. Genotypes were risk associated in additive (P-value of 0.0003 and odds ratio equal to 1.7 (95% CI: 1.27-2.26)), dominant (P-value of < 0.0001 and odds ratio equal to 0.55 (95% CI: 0.41-0.73)) and recessive (P-value of 0.04 and odds ratio equal to 0.33 (95% CI: (0.12-0.96))) models for rs11639084. However, the rs4774388 genotypes were risk associated in recessive model with a P-value of 0.036 and an odds ratio of 0.62 (95% CI: (0.4-0.97)).

Conclusion : To the best of our knowledge this is the first report concerning the association between RORA gene polymorphisms and MS. The further study of RORA related pathways and gene networks might result in the better understanding of the pathophysiology of MS and related symptoms.

Keywords : multiple sclerosis, RORA, polymorphism



Count: 539

Abstract ID: 364

Presentation Type: Poster

The importance of VEGF-KDR signaling pathway genes, should not be ignored, when the risk of developing Multiple Sclerosis is taken into consideration

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Background and Aim : Vascular endothelial growth factor (VEGF) and its receptor kinase insert domain-containing receptor (KDR) pathway has trigger processing of angiogenesis as well as inflammation which contributes to the development and progression of demyelinating lesions in Multiple Sclerosis.

Methods : This work as a case-control study, consisting of a total of 400 subjects with multiple sclerosis and 400 healthy controls. Participants were subjected to neurological examination and peripheral blood sampling for genotyping. Polymorphisms in the VEGF and KDR genes were assessed by Restriction Fragment Length Polymorphism (RFLP- PCR) method.

Results : A significantly higher frequency of the TT genotype of the VEGF 936C>T (rs3025039) polymorphism was found in the multiple sclerosis group than in the healthy control group ($P < 0.01$). On the other hand, the frequency of the TT genotype of the KDR -604T>C (rs2071559) polymorphism was lower in patients than in control group ($P < 0.001$).

Conclusion : The present study demonstrated that the TT genotype of the VEGF rs3025039 polymorphism is a possible risk factor for multiple sclerosis in Iranian population.

Keywords : Multiple Sclerosis; VEGF; KDR; Polymorphism

Count: 540

Abstract ID: 150

Presentation Type: Poster

Effect of Aqueous Alcoholic Extract of Ginseng on Aggression Behavior in Rat with Migraine-like induction

Submission Author: Mahnaz Taherianfard

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Background and Aim : Aggression is found among people with Migraine, especially for people who are female, 30-39 old. On the other hand Panax ginseng contains a psychoactive ingredient, GS-Rb1, which can suppress aggression. So the aim of present study was to investigate the effect of Korean red ginseng on aggression behavior induced by migraine like headache.

Methods : Forty male albino rat weighting 250 ± 50 were used. Rats were divided into 8 equal groups 1- intact control; 2- rats were received IP injection of bisphenol A (BPA) 500mg/kg/day for 7 days; 3- rats were received inflammatory soup (IS) in ménages membrane; 4- rats were received PBS instead of IS in ménages membrane; 5- rats were received IP injection of BPA 500mg/kg/day for 7 days + PBS in ménages membrane; 6- rats were received IP injection of BPA 500mg/kg/day for 7 days + IS in ménages membrane; 7- rats were received IP injection of BPA 500mg/kg/day for 7 days + IS in ménages membrane + ginseng 100mg/kg/day for 7 days; rats were received IP injection of BPA 500mg/kg/day for 7 days + IS in ménages membrane + ginseng 100mg/kg/day for 7 days. Animal were maintained in standard condition of 12 hours of light-dark cycle and temperature 20-22, food and water were used ad libitum. Migraine was induced by microinjection of 40 μ l inflammatory soups in ménages membrane of rats were exposure to IP injection of BPA 500 μ g/kg/day for 7 days. Aggression was induced by electrical shock of 0.7 mA every 3 sec for 5 minutes. Data were analyzed by SPSS and Graphpad instat.

Results : In the present study combination of BPA and inflammatory soups induces the symptoms of migraine like headache. In migraine like headache that, there are not treated, rats were shown increase in aggression; on the other hand in animal that after migraine like headache were treated with hydroalcoholic extract of ginseng, symptoms of migraine and aggression behavior were diminished to low level.

Conclusion : According to our result, hydroalcoholic extract of ginseng lead to decrease the aggression behavior that induced by migraine like headache.

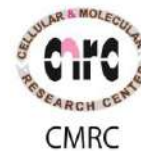
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Keywords : Aqueous Alcoholic Extract of Ginseng, Migraine-like Pain, Aggression Behavior



Count: 541

Abstract ID: 156

Presentation Type: Poster

Effect of GABAA receptor agonist and antagonist on analgesic effect of chloroform extract of *Valeriana Officinalie* by formalin test in male rat.

Submission Author: Mahnaz Taherianfard

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Background and Aim : *Valeriana officinalis* (Valerian) extract possesses a clear analgesic effect. It is thought to enhance the signaling of gamma-amino-butyric acid (GABA). So the aim of present study was to investigate effect of coadministration of Valerian with muscimol (GABAA agonist) and picrotoxin (GABAA antagonist) on pain sensitivity in formalin test.

Methods : Thirty six male Sprague dawley rats weighing 200- 250 gr were used. Animal were housed in standard temperature $20\pm 2^{\circ}$ C and light cycle as 12/ 12 light-dark cycle. Animal were randomly divided to 6 groups: 1- sham (IP injection of saline); 2- Control positive (IP injection of Valerian 400 mg/ kg and intracerebroventricular (ICV) injection of Acsf) 3- experimental 1 (IP injection of Valerian 400 mg/ kg); 4 and 5 Experimental 2 and 3 (received IP injection of Valerian 400 mg/ kg and ICV injection of muscimol 250 and 500 ng/rat); 5- Experimental 6, 7 (received IP injection of Valerian and ICV injection of picrotoxin 250 and 500 ng/rat). In all group pain test were done by formalin test. Lateral ventricles were cannulated unilaterally by the stereotaxic procedure. The data were analyzed by the one-way ANOVA, repeated measure ANOVA and post-hoc test was Tuckey test. P value was considered as $p < 0.05$.

Results : Data were shown that Valerian had no significant effect in early phase ($p < 0.05$) of formalin test, but it significantly decrease pain sensitivity in late phase of formalin test in comparison to sham. Muscimol in two dose had not significant effect in early phase of formalin test, but it in two doses in late phase of formalin test significantly ($p < 0.05$) decrease pain sensitivity in comparison to sham. Also, muscimol 500 ng/rat significantly ($p < 0.05$) decreases pain sensitivity in comparison to control positive and experimental 1. Picrotoxin in two doses had no significant effect in early phase of formalin test, but it in two doses in late phase of formalin test significantly ($p < 0.05$) decreases pain sensitivity in comparison to sham, but picrotoxin in two doses significantly ($p < 0.05$) increases pain sensitivity in comparison to control positive and experimental 1 in late phase of formalin test.

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Conclusion : According to our result both muscimol and picrotoxin in comparison to sham had similar effect, but in comparison to control positive and experimental 1 muscimol had analgesic effect and picrotoxin had hyperalgesic effect.

Keywords : Valerian, GABAA agonist, GABAA antagonist, Pain, Rat



Count: 542

Abstract ID: 307

Presentation Type: Poster

Automatic detection of Alzheimer's disease using ROI-based feature extraction of MRI images

Submission Author: Shima Tajeddini

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Background and Aim : Alzheimer's disease (AD) which is a neurodegenerative disease is the most common type of Dementia in which the memory and other brain abilities are harmed gradually such that the routine life is disturbed. Until now, no final cure has been found for AD, however its early detection can reduce its symptoms effectively. Studies have shown that magnetic resonance imaging (MRI) is a reliable tool for the early diagnosis of AD. MRI can assess the atrophy and visualize the structural changes of the brain made by the disease. Computer aided diagnosis (CAD) systems using MRI images can help physicians for early detection of AD. In CAD systems, extracting the proper features is highly important. It must be noted that although in other methods proper features are extracted from the brain, different roles of these features are not considered. Moreover they do not consider the grey matter (GM) statistical features combined with other bio-markers. In the present study, a CAD system is proposed to automatically detect AD by means of the MRI images.

Methods : In the proposed system, first all t1-weighted MRI images have been spatially normalized and then segmented into their three main tissues known as GM, white matter (WM) and cerebrospinal fluid (CSF). Then, the region of interest (ROI)-based feature extraction method is used to extract the proper features. For this purpose, the two brain structures known as Hippocampus and Amygdala which undergoes the most changes during the disease are segmented by AAL atlas. Then, their volume and the GM statistical features (mean and standard deviation) are considered as features for proposed system. These extracted features do not play the same role in detection of AD; thus, an evolutionary algorithm named ICA (Imperial Competitive Algorithm) is used to determine the role of each feature and to weigh those features which play more significant roles in AD detection. Finally, these weighted features are given to a SVM classifier with radial basis function (RBF) kernel to separate AD patients from the healthy control subjects.



Results : The performance of the proposed system is evaluated with 10-fold cross validation and applied on the OASIS database. 90.9% accuracy, 85.8% sensitivity and 93.9% specificity is achieved. The proposed method shows better performance in comparison to other related works by using the same database. When the roles of the extracted features are not considered, the classifier accuracy, sensitivity and specificity is reduced to 83.7%, 77.6% and 89.8% respectively.

Conclusion : In this paper a CAD system for automatic detection of AD from MRI images was proposed. The obtained results show that using the ROI-based feature extraction method is a suitable method to extract proper information from the MRI images for early and automatically detection of the AD. Besides, considering the role of each feature can significantly improves the performance of the proposed system.

Keywords : Alzheimer's disease; Classification; Feature extraction; Magnetic resonance imaging; Region of interest



Count: 543

Abstract ID: 728

Presentation Type: Oral

Neuronal Activity in Rat Hippocampus and Secondary Somatosensory Cortex during a Tactile Working Memory Task

Submission Author: Shima Talehy Moineddin

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Background and Aim : Many perceptual tasks require neuronal activity to transform sensory information into decision and action. These procedures supposedly have several steps and different brain areas are presumed to interact at different stages in order to fulfil this sensory translation into an appropriate action. Tasks with working memory component are among these processes. We investigated how the activity of two brain areas, secondary somatosensory cortex (SII) and hippocampus, change over time in a prototype of sensory-motor integration using a parametric working memory task (WM).

Methods : In the setting of a tactile working memory task, two noisy vibratory stimuli separated by a delay, were applied on rats whiskers. Rats had to compare the two stimuli to make a two-forced choice decision. To solve the task, the rats needed to perceive the first stimulus, keep its trace in memory during delay, perceive second stimulus, compare second stimulus to the trace of the first one and choose an action based on this comparison. Once the performance of a rat was constantly above 70% for one week, the rat underwent a surgery for chronic electrode implantation. Through multi-electrode neuronal recordings in behaving rats, we separately explored the activity of two brain areas, secondary somatosensory cortex and hippocampus, to unravel their engagement across different epochs of working memory task. Using spike sorting methods, we extracted single-unit firing activities from the recorded electrical signals and aligned the spiking activity of each neuron with the timeline of the task. We used multivariate regression analysis to approximate the firing activity of each neuron as a linear function of both of the stimuli to measure the dependence of firing counts on the first and second stimuli.

Results : A high percentage of SII neurons (30%) in our sample showed sensory stimulus coding during its presentation. In a substantial set of SII neurons (25%), late in the presentation of the second stimulus and during the following delay before animal action, the neuronal activity got correlated with comparison rule indicating a history dependent activity at this epoch. In the hippocampus of rats, place coding was prevalent among the neurons (54%), as expected by the cognitive map theory but no sensory coding was

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observed. In addition, in the hippocampus, another subset of neurons with decision-correlated activity during the post-stimulus delay were identified.

Conclusion : In the current setting of working memory task, we took advantage of the separation of sensory processing and decision making. The major findings in rats that performed the tactile WM task were as follows: (1) sensory coding of vibratory stimulus was prevalent among the sample SII population, and (2) evidence of choice-related activity as an indication of the upcoming action was seen in both SII and hippocampus. According to these findings, both SII and hippocampus were involved in the sensory-motor integration in this prototype working memory task.

Keywords : extracellular recording, working memory, rat, hippocampus, secondary somatosensory cortex



Count: 544

Abstract ID: 115

Presentation Type: Oral

Clinical and metabolic response to probiotic supplementation in patients with multiple sclerosis: a randomized, double-blind, placebo-controlled trial

Submission Author: Omid Reza Tamtaji

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Background and Aim : Multiple sclerosis (MS) is an autoimmune inflammatory and neurodegenerative disease of the central nervous system that involves several not yet fully elucidated pathophysiologic mechanisms. Using probiotic supplements is recommended for improving nervous system diseases. This trial was performed to evaluate the effects of probiotic intake on disability, mental health and metabolic condition in subjects with multiple sclerosis (MS).

Methods : This randomized double-blind placebo-controlled clinical trial was conducted among 60 MS patients. Participants were randomly allocated into two groups to receive either a probiotic capsule (n=30) or placebo containing starch (n=30) for 12 weeks. Expanded disability status scale (EDSS) scoring and parameters of mental health were recorded at the baseline and 12 weeks after the intervention. Also, in this study we evaluated metabolic condition with laboratory routine kits.



Results : Compared with the placebo, probiotic intake improved EDSS (-0.3 ± 0.6 vs. $+0.1 \pm 0.3$, $P=0.001$), beck depression inventory (-5.6 ± 4.9 vs. -1.1 ± 3.4 , $P<0.001$), general health questionnaire (-9.1 ± 6.2 vs. -2.6 ± 6.4 , $P<0.001$) and depression anxiety and stress scale (-16.5 ± 12.9 vs. -6.2 ± 11.0 , $P=0.001$). In addition, changes in high-sensitivity C-reactive protein (-1.3 ± 3.5 vs. $+0.4 \pm 1.4$ $\mu\text{g/mL}$, $P=0.01$), plasma nitric oxide metabolites ($+1.0 \pm 7.9$ vs. -6.0 ± 8.3 $\mu\text{mol/L}$, $P=0.002$) and malondialdehyde (MDA) ($+0.009 \pm 0.4$ vs. $+0.3 \pm 0.5$ $\mu\text{mol/L}$, $P=0.04$) in the probiotic group were significantly different from the changes in these parameters in the placebo group. Additionally, the consumption of probiotic capsule significantly decreased serum insulin (-2.9 ± 3.7 vs. $+1.1 \pm 4.8$ $\mu\text{IU/mL}$, $P<0.001$), homeostasis model of assessment-estimated insulin resistance (-0.6 ± 0.8 vs. $+0.2 \pm 1.0$, $P=0.001$), Beta cell function (-12.1 ± 15.5 vs. $+4.4 \pm 17.5$, $P<0.001$) and total-/HDL-cholesterol (-0.1 ± 0.3 vs. 0.1 ± 0.3 , $P=0.02$), and significantly increased quantitative insulin sensitivity check index ($+0.01 \pm 0.02$ vs. -0.005 ± 0.01 , $P<0.001$) and HDL-cholesterol levels (2.7 ± 3.4 vs. 0.9 ± 2.9 mg/dL , $P=0.02$) compared with the placebo.

Conclusion : Our study demonstrated that the use of probiotic capsule for 12 weeks among subjects with MS had favorable effects on EDSS, parameters of mental health, inflammatory factors, markers of insulin resistance, HDL-, total-/HDL-cholesterol and MDA levels.

Keywords : Probiotic; Multiple sclerosis; Disability; Inflammation; Oxidative stress



Count: 545

Abstract ID: 281

Presentation Type: Poster

Effects of chronic restraint stress, physical stress, on reinstatement of methamphetamine-induced condition place preference in the rats

Submission Author: Zahra Taslimi

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Background and Aim : Drug addiction specific methamphetamine should be considered a complex disease of the central nervous system, characterized by compulsive, uncontrolled craving for a drug, and stress has an important role in drug addiction and relapse. Previous researches confirm the important role of stress on the different aspects of reward-related behaviors. The effect of stress on reinstatement of methamphetamine-induced conditioned place preference (CPP) in adult male rats is investigated in this study.

Methods : Conditioning was established in adult male Wistar rats (weighing 200-250 g) using an unbiased procedure. In the CPP paradigm, conditioning score and locomotion activity were recorded by Ethovision software. CPP score represents by the differences in time spent in drug- and saline-paired compartment. During methamphetamine CPP extinction phase, rats were put in the CPP box for 30 min a day for 8 days. The next day following the last extinction session (when rats lose their preference to the assigned compartment for two continues days), methamphetamine CPP reinstatement was induced. Restraint stress was used to induction of stress; animals treated with restraint stress for 1 h during extinction phase. Subcutaneous injection of methamphetamine (0.5 mg/kg), during three conditioning days. One-way analysis of variance (ANOVA) and randomized blocks model followed by post hoc analysis (Dunnett's or Newman-Keuls's test) were used, as appropriated.

Results : Data analysis showed that the stress could attenuate the conditioning score on the acquisition. Also our data demonstrated that restraint stress could significantly induce methamphetamine reinstatement ($P < 0.01$), therefore, our obtained data is not due to the changes in locomotor activity.

Conclusion : It seems that the attenuation of methamphetamine CPP with stress in reinstatement related to interference of stress in reward circuit. It is supposed that since the level of glucocorticoids goes up step by step during restraint stress, it is able to induce the methamphetamine reinstatement.

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Keywords : Stress, Conditioned place preference, Reinstatement, Methamphetamine



Count: 546

Abstract ID: 287

Presentation Type: Oral

Gender differences in attitude toward uncertainty and ambiguity tolerance

Submission Author: AmirHossein Tehranisafa

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Background and Aim : Effective decision making depends on the quality of information. In typical scenarios of decision making the probability of possible outcomes is known (risk). For example when tossing a coin we can assign a definite probability to each event. In contrast, in 'ambiguous' situations the probabilities of different outcomes cannot be expressed precisely. Previous works showed that humans are mostly ambiguity averse e.g. Ellsberg paradox (Ellsberg,1961). Ambiguity attitude is constrained and shaped by demographic and emotional traits of agents. Recently Levy et al. (2012) showed that adolescents are more tolerant to ambiguity than adults. We asked if there is a gender difference in resolving ambiguity.

Methods : We employed a gambling task with different types of partially ambiguous urns. In partial ambiguity urn, the exact probability for a given outcome is not known but a range of possible probabilities are accessible. A total of 77 subjects (mean age=27.4, SD=4.3) participated in the study consisting of 36 females (19-37 y old) and 41 males (20-35 y old). We assessed individual attitudes toward ambiguity using staircase technique. The procedure consisted of 270 2-Alternative Forced Choice trials that presented a choice between two gambles with the same payoff. Outcome probability of one gamble was precisely specified (technical risk). In the other gamble, it was partially hidden (technical ambiguity). The staircase converged to find the point of subjective indifference between the risky and ambiguous gamble. We measured the ambiguity attitudes by estimating subjective winning probability in each ambiguous urn. In a separate session we assessed the subjective optimism/pessimism attitude using the LOT-R questionnaire. Each participant was paid 3\$ for attendance and an additional 9\$ bonus for three randomly selected trials.

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We ran a group of statistical tests (i.e. ANOVA, paired t-test) to assess the gender discriminations of attitude toward ambiguity.

Results : All three main types of attitudes toward ambiguity (aversion, seeking and neutrality) were found in our statistical sample. However most of males are neutral facing ambiguity but most of females are ambiguity averse. A Two -Way ANOVA confirmed that ambiguity attitudes were significantly different between two genders in our sample ($F[1,76]=11.41, p=7.7E-04$). This result was independent of ambiguity size ($F[2,76]=0.09, p=0.91$).

Conclusion : In this study we designed a novel adaptive method to measure ambiguity attitude without forcing a pre-defined reference point in risky gambles and also with a fixed payoff for each trial. For the first time, we took advantage of presenting non-symmetric ambiguous urns. Considering our new design we also proposed a new measure for ambiguity attitude, this new measure can be applied in both symmetric and asymmetric cases of ambiguity. Our analysis of ambiguity attitude showed strong differences in resolving ambiguity between males and females, most males were neutral and females were ambiguity averse.

Keywords : gender ; decision making ; uncertainty ; ambiguity attitude ; subjective probability



Count: 547

Abstract ID: 493

Presentation Type: Oral

30 Hz electromagnetic field changes working memory, attention and stress-related hormones of Rhesus monkey

Submission Author: Elaheh Tekieh

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Background and Aim : Humans in modern society are exposed to various kinds of electromagnetic fields (EMF). The extremely low frequency (ELF) region of the electromagnetic spectrum encompasses frequencies from 1 to 300 Hz. power lines, household appliances and medical devices, have been reported repeatedly to produce a variety of biological effects, which may induce a number of changes in the behavior of different living species. In this study was examined the effects of electromagnetic field exposure (30 Hz) on Performance on the visible and invisible delayed response task and serum levels of hormones involved in stress responses, especially cortisol, ACTH release from the adrenal cortex.

Methods : Two young male rhesus macaques (*Macaca mulatta*), were housed individually in cages (80 × 80 × 100cm) made from Teflon. The monkeys were radiated by 0.7 millitesla (mT) EMF at 30 Hz , 4 h daily (8–12 AM) for 30 days using an ELF-EMF generator. Each animal received a fairly homogenous radiation of EMF in the entire cage at the desired intensity while they moved freely in the cage. Visual working memory and protracted attention were measured using a modification of classic delayed response task, for five weeks before and five weeks after EMF irradiation course. Blood samples were drawn from a femoral vein in unanesthetized fasting monkeys one day before, one day after, and one month after the EMF irradiation course. Serum Cortisol and adrenocorticotrophic hormone (ACTH) concentrations were measured using monkey standard enzyme-linked immunosorbent assay (ELISA) kit.

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Results : The result of this study appears that the percent of correct responses decreased on both the visible and invisible tasks in monkeys irradiated by EMF at 30 Hz. Also, Cortisol and ACTH levels increased following EMF irradiation at 30 Hz. At the end of the one-month recovery period, both hormones were still elevated, although they returned relatively toward the basal levels.

Conclusion : The present study revealed that 0.7 mT EMF irradiation at 30 Hz decreased sustained attention and working memory; and increased serum ACTH and cortisol. The increased cortisol levels that observed in our study probably occurred as a consequence of an action by EMF on the central nervous system, for it was concomitant with an increase in ACTH. Our results also showed that cortisol levels tended to return toward the baseline over the recovery period, which paralleled a growing trend in performance on working memory and attention tasks. Taken together, it appears that the parallel increases in serum cortisol and ACTH is needed for impairing both working memory and sustained attention.

Keywords : ELF, Rhesus monkey, working memory, sustained attention, stress hormones



Count: 548

Abstract ID: 214

Presentation Type: Poster

Integration of direction cues is faster in the weak-strong than the strong-weak sequences.

Submission Author: Maryam Tohidi-Moghaddam

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Background and Aim : Decision-making is a deliberative process that results in a categorical choice. In order to choose one alternative among others, the evidence for any alternatives is investigated, as soon as the integrated evidence in favor of one alternative reaches to the defined threshold then this alternative is chosen. In most complex decision-making process the brain needs to combine different sources of evidence to increase the probability of achieving a correct choice or other related goals. Recent studies demonstrated that the brain can combine a sequence of discrete evidence to reach a proper decision. Shadlen et al. showed that in a sequence of discrete information with different interval time between them subjects gather discrete evidence and the latest evidence has more effect on the decisions. According to these results, we hypothesized that making a decision takes more time when the latest information is less informative compared to the earlier information.

Methods : To investigate this issue a perceptual decision-making task has been implemented. Subjects, during a reaction time task, were trained to report the direction of motion in a noisy random dot stimulus. In the main experiment, the stimulus was randomly displayed in the single-pulse (continuous) or double-pulse (discrete) trials. The net direction, the motion strength and the interval time (for double-pulse trials) were randomly changed across trials. Four subjects participated in this experiment, and 3300 trials were done by each subject.

Results : As we expected and it was demonstrated in another study, on double-pulse trials the second pulse was more effective in the decision-making process. We also have shown that the reaction time was shorter when the strong pulse is presented later than the weaker pulse (weak-strong sequence) in comparison to the reverse sequence (strong-weak sequence).

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Conclusion : This key finding approves other studies especially a key factor in the decision-making process that information integrated during the time to reach a defined threshold.

Keywords : Decision-making; psychophysics; choice accuracy; reaction time; evidence



Count: 549

Abstract ID: 614

Presentation Type: Poster

The gene expression of hippocampal synaptophysin downregulates in the offspring rats following maternal injection of frankincense

Submission Author: Sahar Tohidloo

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Background and Aim : Frankincense improve memory in different experimental models of learning. Nevertheless, the causal molecular mechanisms have less been investigated. It is argued that frankincense induces various structural changes in the volume of the neurons as well as number of dendritic spines. It is probable that some of the synaptic proteins might also change following consumption of frankincense. Here, we have investigated the effect of maternal injection of frankincense during pregnancy and gestation periods on the gene expression of synaptophysin in the hippocampus of offspring rats.

Methods : Female rats were received two doses (50 and 100 mg/kg; Gavage) of aqueous extract of frankincense during pregnancy and gestation periods. The control group received water. The hippocampi of male juvenile rats were removed and frozen in liquid nitrogen, immediately. Then, tissues were pulverized and homogenized in 200 μ l phosphate buffer saline and aliquoted into four distinct tubes. 250 μ l of the RNX plus solution was added to one of these tubes and the RNA was extracted according to the protocol of the manufacturer. A Nano drop spectrophotometer was used to measure the RNA concentration. A real-time quantitative PCR was used to measure mRNA expression levels.

Results : One-way ANOVA followed by post-hoc comparison indicated that frankincense decrease the expression of hippocampal synaptophysin mRNA levels in a dose-dependent manner.

Conclusion : The results indicate that consumption of frankincense during both pregnancy and gestation periods have a negative impact on the expression of hippocampal synaptophysin mRNA. Further studies are required to clarify the consequences of this downregulation.

Keywords : Frankincense; Hippocampus; Synaptophysin



Count: 550

Abstract ID: 617

Presentation Type: Poster

Injection of frankincense during pregnancy and gestation periods does not change mRNA expression of hippocampal syntaxin in the offspring male rats

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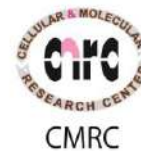
Background and Aim : It is claimed that frankincense induces developmental changes in brain such as increase in the volume of the neurons, as well as number of dendritic spines and consequently improves memory formation. It is probable that some of the synaptic proteins might also change. Here, we have investigated the effect of maternal injection of frankincense during pregnancy and gestation periods on the mRNA expression of syntaxin in the hippocampus of offspring rats.

Methods : Female rats were received two doses (50 and 100 mg/kg; Gavage) of aqueous extract of frankincense during pregnancy and gestation periods. The control group received water. The hippocampi of male juvenile rats were removed and frozen in liquid nitrogen, immediately. Then, tissues were pulverized and homogenized in 200µl phosphate buffer saline and aliquoted into four distinct tubes. 250µl of the RNX plus solution was added to one of these tubes and the RNA was extracted according to the protocol of the manufacturer. A real-time quantitative PCR was used to measure mRNA expression levels.

Results : One-way ANOVA indicated that frankincense does not change the expression of hippocampal syntaxin mRNA levels in offspring rats.

Conclusion : The results indicate that consumption of frankincense during both pregnancy and gestation periods does not change the expression of hippocampal syntaxin mRNA. It can be concluded that the putative beneficial effects of consumption of frankincense on memory might not be mediated through changes in the expression of hippocampal syntaxin.

Keywords : Frankincense; Hippocampus; Syntaxin



Count: 551

Abstract ID: 655

Presentation Type: Oral

The effect of repeated exposure of adolescent rats to nicotine on morphine tolerance in adulthood

Submission Author: Mona Torabi anari

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Background and Aim : Nicotine is one of the first and most commonly abused drugs in adolescence. Studies of adolescent drug use show (1) a pattern in which the use of tobacco precedes the use of other drugs and (2) a positive relationship between adolescent tobacco use and later drug use. These observations have led to the hypothesis that a causal relationship exists between early exposure to nicotine and the later use of hard drugs such as morphine.

Methods : To test this hypothesis, male Wistar rats were treated with nicotine (0.6mg/kg) for 15 days (s.c. injections once daily) or saline during adolescence (postnatal days 28-43), and their tolerance to morphine analgesia was examined using the tailflick test in adulthood. Analgesic responses were reported as the percentage of maximum possible effect (% of MPE).

Results : Our findings indicated that chronic nicotine administration during adolescence resulted in development of analgesic tolerance in 3 days and produced a significant decrease in % of MPE in compare with control group.

Conclusion : It is concluded that smoking during adolescence facilitates morphine tolerance and enhances acquisition of morphine in later life.

Keywords : adolescent- nicotin- morphine-



Count: 552

Abstract ID: 309

Presentation Type: Poster

Investigation the effectiveness of QEEG-based neurofeedback on sleep problems: A case study

Submission Author: Majid Torabi nikjeh

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Background and Aim : Sleep problems is one of the main problems that is convolved with every kinds of psychiatric symptoms such as depression, OCD problems and anxiety. Medical approach are the first choice for treating sleep disorders, but there are some cases that are drug resistance. For these kinds of cases, based on investigations, we can use non-medical treatments such as neurofeedback treatment. Neurofeedback training (NFT) is a neurophysiological training method for altering brain activity. It is thought to be based on the principle of operant conditioning. Operant conditioning is a key ability of neural systems to link the contingency of the reward signal to the probability of a future reward. Using of neurofeedback is based on different modalities. One of this modalities is the QEEG-based neurofeedback training. QEEG or quantitative electroencephalography is a kind of EEG that quantize digitalized parameters that extracted from EEG and compare them with normalized Z-score database. For this kind of NFT, we need to have a QEEG recording prior to start the training and set the training protocols based on the features that extracted from QEEG data.

Methods : The case is 35 years old man that suffers from sleep problems combined with anxiety and depression. His problems starts 7 years ago, before he came to our clinic. He tested different modalities of medication and there are not good improvement about his problems, specially his sleep problems. Also there are some bad complications, such as problems about memory, so he decided to test another approach instead of medication. So we start NFT procedure for his treatment without stop his medications, because of some problems that may produced because of his historical problems. His treatment schedule designed based on his QEEG for about 3 times a week. It lasted for about 60 sessions. After 10 sessions, we cut down his medication, and continue his treatment medication free.

Results : After 20 sessions he expressed that he can sleep for about 4 hours during a night. After about 60 sessions, he could sleep for about 7 hours a day without any disturbance during the sleep, while before NFT

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he couldn't sleep more than 4 hours with different types of medications. He is now medication free and he doesn't have any anxiety and depression problems, after about 1 year of treatment finishing.

Conclusion : NFT can be used as an alternative or adjunctive treatment for treating of sleep problems, but it need some more analyzing and supportive studies.

Keywords : Neurofeedback, QEEG, sleep disorders



Count: 553

Abstract ID: 727

Presentation Type: Poster

Study the expression of BCL2 and BAX genes subsequent effect of cholestasis and treatment by neuroaid in striatum of male rats

Submission Author: Sepehr Torabinejad

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Background and Aim : Cholestasis which is a consequence of disordered bile secretion causes an accumulation of poisonous bile in the body. This illness will seriously damage some organs such as liver and brain, provided not be cured. Cholestasis may change the level of apoptosis through affecting the expression of responsible genes. The present study was planned to investigate the effects of cholestasis and neuroaid (a drug which protects and repairs neurons) on the expression of Bax and Bcl2 genes in the striatum region of rat brain. Bax and Bcl2 have roles in apoptosis.

Methods : A total number of 16 rats were divided into four groups as follows: 1- BDL group, the rats which were just operated for bile duct ligation. 2- BDL-neuroaid group, the rats which received both operation and neuroaid. 3- Sham-neuroaid group, the rats which were not operated, but received the operation stress and neuroaid. 4- Control group, the rats which were not treated at all. Following the treatments, the rats were killed and their striatum were removed from their brain. RNA was extracted from the striatum cells, cDNA was synthesized, and Real time PCR was performed to measure the genes expression.

Results : According To the results, cholestasis causes a reduction in Bcl2 and an increase in the Bax expression genes. Neuroaid neutralizes the excess Bax transcription which occurs as a result of BDL. However, it cannot reverse the changes observed in bcl2 transcription due to BDL.

Conclusion : Cholestasis alters the expression of Bax and Bcl2 in rat striatum. This alteration is of benefit to internal apoptosis pathway; however, neuroaid can approximately decrease this effect.

Keywords : Cholestasis, Apoptosis, Gene Expression Changes, Neuroaid, Striatum



Count: 554
Abstract ID: 92
Presentation Type: Poster

Lateral habenula nucleus and substantiate nigra as a source reward signals for synchronizing EEG oscillations

Submission Author: Mohammad Toushieh

Mohammad Toushieh¹, Seyed Shahabedin Sadr²

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2. Electrophysiology Research Center, Tehran University of Medical Sciences, Tehran, Iran

Background and Aim : Dopamine neurons are main components of the brain's reward system which is thought to guide reward-seeking behaviors. Although recent studies have shown how dopamine neurons respond to rewards and sensory stimuli predicting reward. The primate lateral habenula, part of the structure called the epithalamus, is a major candidate for a source of negative reward-related signals in dopamine neurons. Many habenula neurons were excited by a no-reward-predicting target and inhibited by a reward-predicting target. In contrast, dopamine neurons were excited by reward-predicting and inhibited by no-reward-predicting. Each time the rewarded and unrewarded positions were reversed, both habenula and dopamine neurons reversed their responses as the bias in saccade latency reversed.

Methods : The LHb is part of a dorsal diencephalic conduction system, which conveys information from basal forebrain structures to regulatory midbrain areas and act in parallel with a more ventral hypothalamic pathway formed largely by descending components of the medial forebrain bundle. The main afferents of the LHb originate in the ventral pallidum, lateral preoptic area, lateral hypothalamus, and globus pallidus internus or its rodent homologue, the entopeduncular nucleus. It receives inputs from the dorsal striatum, globus pallidus externus and subthalamic nucleus and projects to the LHb, pedunculo-pontine tegmental nucleus and the ventral anterior/lateral thalamic motor nuclei, which, in turn, innervate the premotor and supplemental motor cortex and, thus, complete a basal ganglia-thalamocortical loop.

Results : In unrewarded trials, the excitation of habenula neurons started earlier than the inhibition of dopamine neurons. Furthermore, weak electrical stimulation of the lateral habenula elicited strong inhibitions in dopamine neurons. These results suggest that the inhibitory input from the lateral habenula plays an important role in determining the reward-related activity of dopamine neurons and synchronizing oscillations in the brain waves.

Conclusion : Substantiate nigra and lateral habenula nucleus as a source reward signals for synchronizing EEG oscillations. Electrical stimulation of the LHb results in an almost complete and long-lasting

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suppression of the activity of dopamine neurons in the ventral tegmental area and substantia nigra. Most likely via activation of inhibitory interneurons located in the ventral tegmental area and substantia nigra. Firing of midbrain dopamine neuron which is crucial for reward learning increases when an expected reward occurs and decreases when the reward is omitted. On the other hand, firing of lateral habenular neurons increased in unrewarded trials and decreased in rewarded trials.

Keywords : Substantiate nigra, Lateral habenular nucleus, Synchronizing EEG

Count: 555

Abstract ID: 93

Presentation Type: Poster

The role of habenular nucleus and limbic system signaling in brain gamma waves production

Submission Author: Mohammad Toushah

Mohammad Toushah¹, Seyed Shahabedin Sadr²

1. Electrophysiology Research Center, Tehran University of Medical Sciences, Tehran, Iran
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Background and Aim : The habenula is a pair of small nuclei located above the thalamus at its posterior end close to the midline. It is regarded as part of the epithalamus, which includes the pineal body and the habenula. In many vertebrates, the habenula is divided into the medial habenula and the lateral habenula. The habenula is a phylogenetically well preserved structure that was thought to have evolved in close relation to the pineal body. The habenular nuclei comprise a small group of nuclei that are part of the epithalamus of the diencephalon, situated at the posterior end of the thalamus, on its upper surface. The habenular nuclei are typically divided into lateral habenular nucleus and medial habenular nucleus.

Methods : The habenula has been historically linked in vague ways with limbic system function. The LHB is received input from multiple parts of the limbic system by retroflexus fiber. It is also received signaling from interpeduncularis nucleus. The stria medullaris brings input to LHB from limbic system, basal ganglia structures and several brainstem nuclei. The efferent of the LHB primarily descend to brainstem structures and forebrain regions such as ventral tegmental area, substantia nigra compacta and raphe nuclei. Gamma brain waves is the highest frequency brain waves that related with learning, memory and cognitive. This wave is recorded by special electroencephalograph. Gamma waves created wakeful state.

Results : The outputs of the lateral habenula are dopaminergic, serotonergic and cholinergic. This output inhibits dopamine neurons in substantia nigra pars compacta and the ventral tegmental area, with activation in the lateral habenula linking to deactivation in them, and vice versa, deactivation in the lateral habenula with their activation. Medial habenula input to the medial habenula comes from a variety of regions and carries a number of different chemicals. Input regions include septal nuclei, dopaminergic inputs from the interfascicular nucleus of the ventral tegmental area, NEergic inputs from the locus ceruleus, and GABAergic inputs from the diagonal band of Broca and sends outputs of substance P and Ach to the pineal gland. The electric potential generated by single neuron is far too small to be picked up by electroencephalography.

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Conclusion : Because lateral habenula neurons have similar spatial orientation and their ions line up therefore create brain waves. These oscillations have frequency ranges, spatial distributions and are associated with different states of brain functioning. These oscillations represent synchronized activity over a network of neurons. Lateral subnuclei neurons of the habenula produce the brain waves EEG signal because they are well-aligned and they play an important role in gamma waves.

Keywords : Lateral habenular nucleus, Limbic system signaling, Brain waves



Count: 556

Abstract ID: 337

Presentation Type: Poster

Evaluation of the association between the polymorphism of the BACE1-AS gene (rs147542312) with Alzheimer's disease

Submission Author: Maliheh Vafadoost

Maliheh Vafadoost¹, Mohammad Khalaj-kondori², Mohammad Ali Hosseipour Feizi³, Mehdi Farhoudi⁴, Mahnaz Talebi⁵

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5. Neuroscience Research Center, Imam Reza Hospital, Tabriz University of medical Sciences, Tabriz, Iran.

Background and Aim : Alzheimer's disease (AD) is the most common neurodegenerative disorder which affects people mostly at elderly. Neuritic plaques in the AD brain, one of the most critical hallmarks in the pathology of AD, are formed via accumulation of Amyloid Beta peptide which is proteolytically cleaved from APP by BACE1. BACE1-AS is a lncRNA that regulates translation of BACE1 mRNA. It pairs with the mRNA of BACE1 and stabilizes it which leads to elevation of BACE1 and amyloid beta level. The aim of present study was to evaluate the association of rs147542312 C/T polymorphism of BACE1-AS with AD.

Methods : The whole blood samples were collected from 100 patients and controls and DNA was purified with salting out method. The genotype of the samples was identified using ARMS-PCR and verified with sequencing.

Results : The obtained results revealed no T allele in the patients and controls and all cases and controls were CC homozygotes.

Conclusion : There was no T allele in the studied population. This might be reflecting the importance of rs147542312 C/T polymorphism in the function of BACE1-AS.

Keywords : Alzheimer's disease; BACE; BACE1-AS; Polymorphism



Count: 557

Abstract ID: 164

Presentation Type: Oral

Evaluating the association of the polymorphism of the BACE1-AS gene (rs147542312) with Alzheimer's disease

Submission Author: Maliheh Vafadoost

Maliheh Vafadoost¹, Mohammad Khalaj-kondori,² Mohammad Ali Hosseipour Feizi,³ Mehdi Farhoudi,⁴ Mahnaz Talebi,⁵

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5. Neuroscience Research Center, Imam Reza Hospital, Tabriz University of medical Sciences, Tabriz, Iran.

Background and Aim : Alzheimer's disease (AD) is the most common neurodegenerative disorder which affects people mostly at elderly. Neuritic plaques in the AD brain, one of the most critical hallmarks in the pathology of AD, are formed via accumulation of Amyloid Beta peptide which is proteolytically cleaved from APP by BACE1. BACE1-AS is a lncRNA that regulates translation of BACE1 mRNA. It pairs with the mRNA of BACE1 and stabilizes it which leads to elevation of BACE1 and amyloid beta level. The aim of present study was to evaluate the association of rs147542312 C/T polymorphism of BACE1-AS with AD.

Methods : The whole blood samples were collected from 100 patients and controls and DNA was purified with salting out method. The genotype of the samples was identified using ARMS-PCR and verified with sequencing.

Results : The obtained results revealed no T allele in the patients and controls and all cases and controls were CC homozygotes.

Conclusion : There was no T allele in the studied population. This might be reflecting the importance of rs147542312 C/T polymorphism in the function of BACE1-AS.

Keywords : Alzheimer's disease; BACE; BACE1-AS; Polymorphism

Count: 558

Abstract ID: 573

Presentation Type: Poster

The Effects of Nigella Sativa Hydro-alcoholic Extract on Memory and Brain Tissues Oxidative Damage after Repeated Seizures in Rats

Submission Author: Farzaneh Vafaee

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Background and Aim : Regarding the therapeutic properties of Nigella sativa (NS), the effects of the plant hydro-alcoholic extract on learning, memory and brain tissues oxidative damage were investigated in pentylenetetrazole (PTZ) - induced repeated seizures.

Methods : There were 4 experimental groups including: 1- control group; received saline, 2- PTZ group; received saline and PTZ (50 mg/Kg, i.p) , 3-PTZ- NS 200 and 4- PTZ- NS 400; received 200 and 400 mg/Kg of NS extract respectively, before PTZ injection in 5 consecutive days.

Results : Seizure scores were lower in PTZ – NS 200 and 400, furthermore the seizure onset latencies were higher in these groups than PTZ group ($P < 0.05$ and $P < 0.01$). In Morris water maze, the time spent in target quadrant by PTZ group was lower than control group ($P < 0.05$); while, 400 mg/Kg of the extract increased

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it ($P < 0.01$). In the passive avoidance test, delay time to enter the dark by PTZ group was lower than control at 1 and 24 hours after training ($P < 0.01$ - $P < 0.001$); while, 400 mg/Kg of the extract increased it ($P < 0.05$). The total thiol concentration in hippocampal and cortical tissues of PTZ group was reduced while, MDA concentration was higher than control ($p < 0.05$ - $p < 0.001$). Administration of the extract increased the total thiol and decreased the MDA concentrations ($p < 0.01$ - $p < 0.001$).

Conclusion : It is concluded that the hydro-alcoholic extract of NS possess beneficial effects on learning and memory impairments in repeated seizures model which is accompanied by antioxidant effects in the brain.

Keywords : Nigella sativa, Pentylentetrazole, Repeated seizures, Oxidative stress, Memory.



Count: 559

Abstract ID: 289

Presentation Type: Oral

The impacts of diabetes during pregnancy on the localization of synaptophysin in developing cerebellum of rat neonates

Submission Author: Saeed Vafaei nezhad

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Background and Aim : There is sufficient evidence that diabetes during pregnancy is associated with a higher risk of neurodevelopmental anomalies including learning deficits, behavioral problems and motor dysfunctions in the offspring. Synaptophysin (SYP) is an integral membrane protein of synaptic vesicles that is considered as a marker for synaptogenesis and synaptic density. This study aimed to examine the effects of maternal diabetes in pregnancy on the localization of SYP in the developing rat cerebellum during the first two postnatal weeks.

Methods : Wistar female rats were maintained diabetic from a week before pregnancy through parturition. Diabetes was induced by intraperitoneal injection of streptozotocin (55 mg/kg; STZ-D group). The treatment of animals was conducted after the verification of diabetes. Therefore, the insulin treated diabetic group animals (STZ-INS Group) were daily administrated four to six units of protamine zinc insulin throughout the gestation period. At the end of pregnancy, neonates pups from different mothers in each group were randomly chosen and euthanized on postnatal days (P) 0, 7, and 14 (n = 7 each). The neonates' cerebelli were rapidly removed and carefully dissected. The localization of SYP in the cerebellum was evaluated using immunohistochemistry technique.

Results : Except P0, there was a significant reduction in the localization of SYP expression in the external granular (EGL) and in the molecular (ML) layers of neonates born to diabetic animals at P7 (P < 0.05 each). Two weeks after birth, we found a marked decrease in the expression of SYP in all of the cerebellar cortical

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layers of STZ-D group pups ($P < 0.05$ each). Moreover, our results revealed no significant changes in localization of SYP in insulin-treated group pups when compared with the controls ($P \geq 0.05$ each).

Conclusion : In the present study using SYP, a marker of synaptic density and synaptic vesicle formation, it was shown that maternal hyperglycemia, in combination with neonatal hyperinsulinemia was able to decline synaptogenesis in the offspring's cerebellar cortex. This alteration may result in a delay in normal cerebellar development, and could be a reason for the structural, behavioral, and cognitive abnormalities observed in the offspring of diabetic mothers.

Keywords : Maternal diabetes; Synaptophysin; Cerebellum; Rat



Count: 560

Abstract ID: 333

Presentation Type: Poster

The effect of repeated escalating methamphetamine regimen on tyrosine hydroxylase, alpha synuclein and neuroinflammation in substantia nigra and striatum

Submission Author: Neda Valian

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3. Neurobiology Research Center, Shahid Beheshti University of Medical Sciences

Background and Aim : Methamphetamine (MA) produces long-lasting deficits in dopaminergic neurons in the long-term use via several neurotoxic mechanisms such as neuroinflammation and proteasomal degradation dysfunction. So, we evaluated the effects of repeated MA administration on glial activation and α -synuclein, as well as tyrosine hydroxylase expression in substantia nigra (SN) and striatum of rat.

Methods : In male wistar rats, escalating doses of MA (1-14 mg/kg) were administrated twice a day for 14 days. At the 1st, 14th, 28th, and 60th days after MA discontinuation. We evaluated the levels of tyrosine hydroxylase (TH) and α -synuclein (α -syn) in the SN and striatum using immunohistochemistry and real-time PCR. We also measured the GFAP and Iba1 mRNA levels in SN and striatum.

Results : Data analysis revealed that the number of TH⁺ and α -syn⁺ cells in the SN didn't change in any time points, while increases in TH levels was seen on day 1 after MA discontinuation in SN. We observed increases in GFAP and Iba1 mRNA in SN on day 1 and increases in Iba1 mRNA on day 1 and 14 in striatum, but these increases were reversible.

Conclusion : These data have shown that reduction in TH and α -syn protein and mRNA was not observed following MA treatment. Moreover, repeated escalating MA can induce reversible neuroinflammation in SN and striatum. These responses maybe a result of compensatory mechanisms which activated following increasing MA doses.

Keywords : Methamphetamine, Neuroinflammation, Nigrostriatal pathway



Count: 561

Abstract ID: 326

Presentation Type: Poster

Prevalence, severity of pain in patients with Multiple Sclerosis (MS)

Submission Author: Mahboubeh Valiani

Mahboubeh Valiani¹, Fereshteh Ashtari²

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2. Isfahan neuroscience research center. Professor of neurology

Background and Aim : Introduction: The importance of background information in several studies has been emphasized and since controlling and early treatment of the disease, prevention and finding ways to control the intensity of the disease and thus faster rehabilitation of patients are necessary, in this paper, symptoms, severity and type of pain will be discussed.

Methods : Material and methods: This descriptive-analytic study was conducted on 200 patients with MS who referred to Ayatollah-Kashani Hospital in Isfahan 2015. Data gathering tool was a questionnaire 3section including of personal / disease characteristics, McGill Pain Questionnaire, Visual Analog Scale (VAS) and Pain Rating Index(PRI). Pearson and Spearman statistical tests, independent t-test, and Chi-square were carried out using SPSS version16 to analyze the data.

Results : Results: 57.5% of the subjects have experienced pain and 42.5% did not report pain. Based on VAS and PPI, mean of pain severity were 5.5 (2.9) and 2.3 (1.5), respectively. The lowest prevalence of different types of pain belonged to sharp pain (95.7%) and also deadly pain and pain similar to tissue rupture (93.9%).

Conclusion : Conclusion: the prevalence of pain is high and severity is moderate in MS patients. So attention to treatment and psychological consult may be effective this patient by health care personnel.

Keywords : Prevalence, pain, Multiple Sclerosis



Count: 562

Abstract ID: 539

Presentation Type: Oral

Inhibition of PI3k by ly 294002 potentiated the amnesia induced by streptozotocin (STZ).

Submission Author: Zahra Yaminifar

Zahra Yaminifar¹, Mohammad Reza Zarrin dast², Mohammad Nasehi³, Kambiz Roham poor⁴

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4. University of Medical Sciences, Qom, Iran

Background and Aim : Insulin has neuroprotective function in brain and exerts some beneficial effects on cognition. Brain insulin receptors (IRs) have been suggested as an important regulatory factor for cognitive functions but the involvement of IR signaling in memory deficit associated with neurodegenerative conditions is not yet explored. Hippocampal IR system might be playing an important role in regulation of memory functions. Insulin receptors (IRs) are distributed in the brain regions and the presence of IR in the hippocampus suggests its functional involvement in cognition. The molecular cascades downstream from IR are composed of a large number of signaling molecules. Among the diverse signaling pathways of IR, PI-3 kinase and MAP kinase pathways in brain have been suggested for learning and memory functions and inhibitory avoidance learning. Taken together, studies suggest that IR signaling has a role in the regulation of memory. PI3K is crucial for hippocampal plasticity .The PI3K inhibitor LY294002 inhibits phosphorylation of the p85 regulatory subunit of PI3K. Intracerebroventricular (ICV) injection of STZ in rats is followed by long-term and progressive deficits in learning, memory, and cognitive performance in rats which is somewhat similar to sporadic Alzheimer's disease (SAD) and characterized by progressive deterioration of memory, cerebral glucose and energy metabolism. The present study was planned to investigate the involvement of IR and its signaling pathways of hippocampus in memory deficit model of rat induced by STZ (ICV). Further, we have also study on the signaling pathways in STZ (ICV) induced memory impairment. In this study effect of Ly294002 a PI3Kinase inhibitor was investigated on ICV STZ-induced learning, memory, and cognitive impairment in male rats.

Methods : For this purpose, rats were injected bilaterally with ICV STZ(3 mg/kg) , ICV saline, ICV Ly294002(1ng dose), ICV Ly294002 and ICV Ly294002(1ng)+STZ(3mg/kg), on days 1 and 3 after surgery. The learning and memory performance was assessed two weeks after the first dose of drugs by using step-through passive avoidance paradigm (0.3 mA,3seconds) and open field test. Adult male Wistar rats (Pasteur's Institute, Tehran), weighing 200-220 g at the start of the experiment were housed three to

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four per cage in a temperature-controlled colony room under light/dark cycle and at an ambient temperature of $25\pm 2^{\circ}\text{C}$, with free access to food and water. All behavioral experiments were carried out between 9 a.m. and 3 p.m. The streptozotocin (STZ), LY294002, dimethylsulphoxide(DMSO), were purchased from Sigma-Aldrich, USA. STZ(3mg/kg) was solved in saline in a volume of 2 μl . LY294002 was dissolved in 3% DMSO in physiological saline for infusion of dose(1ng) and a volume of 2 μl . The vehicle control for LY294002 was 3% DMSO in saline. The control for STZ was saline. Intracerebroventricular (ICV) infusions were conducted at the same speed for 2 $\mu\text{l}/\text{min}$.

Results : The results show that STZ in dose (3mg/kg) induced amnesia. LY294002 in doses (1ng) has no effect on memory but, surprisingly in this dose potentiated STZ-induced amnesia

Conclusion : . In result STZ shows its effect on memory via the PI3K pathway.

Keywords : amnesia; STZ; Intracerebroventricular (ICV); LY294002; PI3K; learning and memory.



Count: 563
Abstract ID: 55
Presentation Type: Oral

Connectivity Informed Brain Decoding Using Bayesian Networks

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Background and Aim : Brain decoding assigns brain states to the measured patterns of brain activities. Classification, identification and reconstruction of stimuli are three general approaches in brain decoding. Many recent researches show that the activity of different brain regions has important correlations. Therefore, we employed the connectivity information from human brain fMRI activity to improve the decoding accuracy.

Methods : We employed the brain connectivity information in brain decoding and developed a novel approach using Bayesian Networks. These models use connectivity to describe probabilistic distributions. To measure the accuracy of the proposed method, we performed decoding-classification and decoding-reconstruction, using probabilistic graphical models and functional connectivity in fMRI data. First, the proposed method was applied to reconstruct images of hand written digits 6 and 9. Another contribution of this research is to apply augmented naïve Bayes classifier for classification of fMRI measurement to take advantage of the brain connectivity information in decoding-classification of hand written digits 0-9. Moreover, data driven methods were applied to investigate the similarity of brain areas in responding to stimuli. This revealed both similarly active areas and active mechanisms during this experiment.

Results : Bayesian networks (with\without brain connectivities) gained an average city-block distance of 0.1017 in decoding-reconstruction of hand written digits 6 and 9 which is on average 5% lower than errors reported in previous reports. The results of different brain lobes (frontal, occipital, parietal and temporal) show that the connectivity information significantly improves decoding-classification of hand written digits 0-9. Also, the capability of different brain lobes in decoding-classification of hand written digits were compared to each other. In each lobe, the most contributing areas and the brain connectivities were determined. Connectivities with short distances between endpoints were recognized to be more efficient. This short connectivities configure local networks. Similarity analysis revealed an important point; during the experiment of watching hand written digits, there were some active networks (visual, working memory,

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motor and language processing), while the most relevant one to the task was language processing network according to the voxel selection.

Conclusion : In the task of brain decoding, the models including brain connectivity appear significantly superior to other existing models. Local brain networks are responsible for decoding hand written digits 0-9 and language processing networks are the most relevant ones.

Keywords : Brain decoding; connectivity informed decoding; object representation in the brain; Bayesian network; similarity analysis



Count: 564

Abstract ID: 543

Presentation Type: Poster

Imitation, Mirror Neurons and Speech Development of Autistic Children

Submission Author: Hanieh Yarmand

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2. Dr, MD of Neuro-Psychiatry, Faculty of Rehabilitation Sciences, Iran University of Medical Sciences, Tehran, Iran

Background and Aim : Recent advances in neuroscience have given rise to the discovery of new neurons in the brain of macaque monkey called mirror neurons. Studies of people with autism show a lack of mirror neuron activity compared to normal people. Discovery of mirror neurons and their relationship with autism has provided the specialists with new ways to diagnose and treat this disorder. The current study aims to investigate the association between mirror neurons stimulation through purposeful movement imitation with speech development of autistic children.

Methods : The current research is non-invasive and used an experimental, applied and available sampling design, selecting the samples from Tehran Autism Center. Accordingly, first, the researchers designed an applied and easy model for autistic children rehabilitation based on mirror neurons stimulation using purposeful movement imitation. Then, based on TPR technique, an 8-year-old autistic girl underwent a pilot study for 12 sessions lasting 4 weeks in Iran University of Medical Sciences, Faculty of Rehabilitation Sciences, whereby positive and effective results were observed; then, other samples, i.e. five monolingual, Farsi-speaking autistic girls aged 5-8, were selected by available sampling and underwent 42 sessions during 14 weeks (three 20/30-minute session in each week), then the development of their speech was evaluated using Newsha Developmental Scale. Each sample, as a control sample, was evaluated before and after speech therapy courses based on mirror neurons stimulation. In addition, after a two-month suspension of the 14-week course, all samples were again evaluated with scoring Table; finally, the results stability was evaluated. SPSS (version 16) was used to do statistical data analysis.

Results : The obtained results suggest that there is a significant difference between pre-test and post-test scores of speech skill ($p < 0.049$) of the samples (supposing $p < 0.05$). Therefore, the samples showed a significant improvement in speech skill development.

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Conclusion : Mirror neurons stimulation through purposeful movement imitation in autistic children positively affects development of speech skill. Therefore, this method can be used as a complementary technique in speech therapy of autistic children.

Keywords : autism, mirror neurons system, purposeful movement imitation, speech



Count: 565
Abstract ID: 361
Presentation Type: Poster

Up regulation of MMP9 gene expression in female patients with multiple sclerosis

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Background and Aim : Multiple sclerosis (MS) is an inflammatory, immune-mediated, demyelinating disease of the central nervous system which disturbs cerebral vascular permeability. Matrix metalloproteinase can increase capillary permeability and are involved in neurological diseases.

Methods : The study compared the expression level of MMP9 gene in RRMS samples with normal individuals in Iran. RNA from the buffy coat of 50 RRMS patients and 50 normal controls were extracted. All patients were HLA-DRB1*15 negative and were responders to interferon-beta with a normal vitamin D level. The level of MMP9 gene expression was measured using quantitative RT-PCR.

Results : The RRMS patients manifested a higher expression level of MMP9 than their normal counterparts ($P=0.02$). Age-wise, there was no correlation between different age groups (>30 , $30-40$, $40<$). In terms of sex, only the female patients manifested a statistically significant increase in MMP9 (p value= 0.037). Besides, there was no linear correlation between MMP9 expression level and risk of Expanded Disability Status Scale of Kurtzke (EDSS); nor were there any significant correlation between expression status of MMP9 and duration of the disease.

Conclusion : Up regulation of MMP9 gene expression would happen in RRMS IFN-B responders, but the level of increase in female patients is significantly more than males.

Keywords : MMP9, Multiple Sclerosis, Expression, IFN-B



Count: 566

Abstract ID: 366

Presentation Type: Poster

Ras-like without CAAX 2 (RIT2): as a susceptibility gene for autism

Submission Author: Shima Yazdandoost Hamedani

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Background and Aim : The recent Autism genome-wide association studies have identified variants of the novel susceptibility loci, RIT2, as being associated with disease risk. Whenever proteins encoded by the gene may involve in Autism pathogenesis, the association of rs16976358 and rs4130047 variants with Autism remains to be further clarified.

Methods : We had enrolled total of 1004 participants, comprising 532 patients with Autism and 472 control subjects in an Iranian population, determined the genotypes of rs16976358 and rs4130047, and analyzed these variants in relation to risk of Autism.

Results : The allele and genotype distribution of the rs16976358 variant were significantly different between ASD patients and controls (allele $p < 0.0001$, genotype $p < 0.0001$). Logistic regression analysis showed that the C-carrying genotype (CT or CC) individuals exhibited a nearly 2.17-fold increased risk for ASD compared with the TT genotype carriers (95% confidence interval; OR = 1.69-2.86; $p < 0.0001$). The frequency of CT/CC genotype was slightly higher in ASD patients compared with controls, but was not statistically significance (odds ratio = 1.04, 95% confidence interval= 0.80-1.35, $p = 0.1$). In addition, we also assessed these SNPs and haplotypes using the transmission disequilibrium test ($p < 0.0001$).

Conclusion : our findings provide additional confirmation to known Autism candidate genes and highlight a number of novel variants as a genetic risk factor to be further investigated in other population in an effort to improve our understanding of the genetic basis of disease.

Keywords : Autism, RIT2, susceptibility, Neurodevelopmental disorder



Count: 567

Abstract ID: 265

Presentation Type: Poster

Influence of exercise and sleep restriction on body weight, depressive-like behavior and blood metabolites of rat

Submission Author: Mitra Yousefpour

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Background and Aim : Modern life has shortened sleep time, and there is growing awareness that healthy sleep needs to be integral to quality of life in all societies. Sleep research is a relatively new scientific field to clinical management of sleep disorders to reduce their effects. The aim of this study was to examine the influence of an exercise training protocol and sleep restriction (SR) on depressive-like behavior in male rats. We have also assessed the thyroxine (T4) and norepinephrine (NE) hormones following SR.

Methods : Male Wistar rats were included in this study and they were randomly housed into 4 groups (6 rats per cage): without exercise and without SR (No-Ex-No-SR); without exercise and with SR (No-Ex-SR); with exercise and without SR (Ex-No-SR) and with exercise and with SR (Ex-SR) groups. The rats in the exercise groups ran as forced exercise on treadmill for five days per week during 4 weeks. The columns-in-water model was applied to induce SR for 16 hours per day for a week. After SR period, the depressive-like behavior was assessed with the forced swimming test (FST), and the total duration of immobility, climbing and swimming were measured. Then, blood samples were collected from hearts of rats and their serum levels of T4 and NE hormones were measured by ELISA test. All statistical analyses were conducted using SAS software.

Results : Body weight gain was significantly ($P < 0.05$) lower for groups with exercise, and the sleep restricted rats in No-Ex-SR and Ex-SR groups, during SR period, revealed -24.83 and -15.50 g weight losses, respectively. The lowest climbing and swimming duration, as depressive-like behavior, observed for No-Ex-SR group. For sleep restricted rats, the plasma concentration of T4 was significantly ($P < 0.05$) lower and NE level was higher, though not statistically significant.

Conclusion : Taken together, our findings indicated that exercise can reduce the negative effects of depressive-like behavior. Knowing the negative effects of sleep restriction, we propose that the basic studies in this area should be replicated.

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Keywords : Exercise; Forced Swimming Test; Norepinephrine; Sleep Restriction



Count: 568
Abstract ID: 130
Presentation Type: Oral

Abstract for normal brain aging symposium

Submission Author: Maryam Zahmatkesh

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Background and Aim : Aging can be defined as the progressive functional decline of brain function. It is a highly complex process influenced by a large number of factors that vary from individual to individual. Normal aging is associated with a shift in the timing or level of transmission through neural structures.

Methods : The articles were identified and gathered using PubMed data bank in the past 5 years. Our search results were limited to the English articles, both animals and human, in vitro and in vivo studies.

Results : Understanding the cellular mechanisms that characterize the functional changes of the aged brain is a formidable challenge in neuroscience. Evidence now links changes in Ca²⁺ influx and perturbations of homeostasis induced by the endoplasmic reticulum and mitochondria.

Conclusion : Brain aging is a process that is multifactorial in nature and influenced by neurohormones and neuromodulators.

Keywords : Brain aging, Neurons, Glia



Count: 569

Abstract ID: 24

Presentation Type: Poster

Comparison effect of essential oil of ferula with Cumin on seizure induced by strychnine in mice.

Submission Author: Raha Zalkhani

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Background and Aim : Regarding to resistance to drug intreatment of epilepsy and finding with more effect and less side effect, medicinal plants are one of potential source for anti epilepsy evaluation.However Ferula and Cuminum are used in traditional medicine and treatment for some diseases, in present study the effect of their essential oil was evaluated in seizure induced by strychnine in mouse.

Methods : In present experimental and animal modeling study, strychnine(1mg/kg subcutaneously) was used for seizure induction in 8 groups of male mice(5 - 6 mice in each group). Seizure delay and time of death was determined for 30 minutes. Ethanole,phenobarbital(20mg/kg),ferulla(2.5,5mg/kg), Cuminum (50,500 mg/kg), olive oil and saline was intrapritoealy administrated 30 minute before strychnine administration.

Results : : Mean of seizure delay and time of death was 3.34 , 4.13 minutes respectively in saline group.These means was significantly increased by phenobarbital and reached to 10.32 and 24.7 minutes. This change by phenobarbital was significant to comparison to all groups($p < 0.0001$).While ferulla and cuminum essential oil administration did not has significant effect on seizure control induced by strychnine.

Conclusion : Thus it is seems that central effect of Ferulla and Cuminum couldn't modulate in mechanism of seizure-induced by strychnine.

Keywords : Strychnine, Ferulla, cuminum, Seizure, mouse.



Count: 570

Abstract ID: 453

Presentation Type: Poster

Evaluation the effect of auraptene against pentylenetetrazole-induced chemical kindling and oxidative stress in male mice

Submission Author: Mahdiah Zamani

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Background and Aim : Epilepsy is a chronic disease that human society has suffered from it for centuries. Fortunately, drugs have been developed for controlling the symptoms of this disease. However, there are some pitfalls in the treatment of seizure disorder such as low efficacy of existing drugs, serious side effects of medications, drug interactions and high drug resistance. Auraptene is a kind of natural coumarines that has considerable effects in the treatment of various diseases. Due to its antioxidant effects, glutamic acid reducer and its effect on the PPAR α and PPAR γ , it was hypothesized that auraptene have anticonvulsant properties

Methods : In this study, the effects of auraptene at three doses of 12.5 mg/kg, 25 mg/kg and 50 mg/kg and also diazepam (as positive control), vitamin E (150 mg/kg) and auraptene vehicle (as negative control), were evaluated in pentylenetetrazol-induced (35 mg/kg) chemical kindling. Moreover, malondialdehyde and reduced glutathione as oxidative stress parameters were measured.

Results : The results of this study indicated that auraptene at the doses of 12.5mg/kg, 25mg/kg and 50mg/kg reduced the mean of seizure score induced by PTZ in comparison with the vehicle significantly. In addition, auraptene at two doses of 25 mg/kg and 50 mg/kg similar to diazepam prolonged latency to stage 4 and reduced stage 5 duration of seizure. However, both auraptene at the dose of 12.5 mg/kg and vitamin E significantly prolonged the latency to stage 2 of seizure. All tested material in this study did not affect on MDA levels in the brain in compare with PTZ-treated mice. On the other hand, auraptene at the dose of 50 mg/kg and vitamin E increased GSH levels in the brain in comparison to PTZ-treated mice.

Conclusion : The results suggest that auraptene has anticonvulsants effects in PTZ-induced chemical kindling. So, it may be suggested that auraptene has antiepileptic effects in human partial complex seizures. As current antiepileptic drugs have numerous and serious side effects and interact with many other medications, it may be suggested that auraptene with antioxidant effects, low effects on CYP450 and

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anticancer properties is an interesting natural compound that can be implicated in future antiepileptic drug regimens.

Keywords : Pentylenetetrazole (PTZ), Auraptene, chemical kindling, oxidative stress, Seizure, ROS



Count: 571

Abstract ID: 429

Presentation Type: Poster

Enhancement of spatial memory by memantine after a Lesion of the Nucleus Basalis Magnocellularis in an Experimental Model of Alzheimer's Disease in Adult Male Rats

Submission Author: Nastaran Zamani

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Background and Aim : Memantine is an uncompetitive, low-affinity NMDA receptor antagonist clinically used for the treatment of cognitive deficits in moderate to severe Alzheimer's disease. Both neurophysiological and behavioral studies in rodents have suggested a beneficial effect of memantine on synaptic plasticity and learning performances. In this study, we evaluated effects of treatment with memantine on memory process.

Methods : Thirty-five male rats were randomly allocated into five groups: Control group, Lesion group that received bilaterally lesion of Nucleus Basalis Magnocellularis (NBM) with electrically-induced: 0.5mA, 3s to create Alzheimer's model, Sham group that entering the electrode in the NBM without lesion, memantine group (lesion NBM + 5 mg/kg memantine) and saline group (lesion NBM + 0.2 ml saline). One week after, the rats were training with Y-maze task within five days. Memantine and saline injected every day for 5 days 30 min before training-sessions.

Results : One way ANOVA test showed that time, group and the mutual effect of time and group had a significant effect on learning ($P < 0.001$). the results showed that there was a significant difference between the Control and Lesion groups ($P < 0.001$), Also comparison between control and sham groups indicated that there were no significant differences ($P > 0.05$) between these groups that suggested different stages of surgery including anesthesia and entering electrode without inducing any current, had no effect on spatial learning. Also comparison between Lesion and saline groups indicated that there were no significant differences ($P > 0.05$) between these groups that suggested saline had no effect on spatial learning. Also comparison between Lesion and memantine groups ($P < 0.001$) suggesting that the injection of memantine (5mg/kg) increased the spatial learning.

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Conclusion : present findings showed that the mutual lesion of NBM has reduced the spatial learning and memantine (5 mg/kg) has a positive effect on spatial learning in Alzheimer's rats and enhanced the learning in these animals.

Keywords : Memantine; NMDA receptor; Alzheimer disease; NBM



Count: 572

Abstract ID: 365

Presentation Type: Poster

Evaluation of the presence and levels of BC200 lncRNA in the blood of patients with Alzheimer's disease

Submission Author: Fatemeh Zarei

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Background and Aim : Alzheimers disease as a age-dependent neurodegenerative disorder is the most prevelant dementia among senalities, resulting in memory loss and cognitive decline. Considering a strong relationship between genetics and the disease, lncRNAs play an important role in Alzheimer and some of them bearing mutations cause problem. BC200, a sytoplasmic RNA, exists in somatodendritics and misregulation of this lncRNA which is caused by mislocation and overexpresion is invovled in long term potentiation.

Methods : 30 control and 30 case, plasma isolation, RNA extraction, cDNA synthesis, quantitative real0time PCR, statistical analysis

Results : BC200 lncRNA can be in human blood plasma

Conclusion : BC200 lncRNA can be a biomarker of Alzheimer's disease

Keywords : Alzheimer's disease, Bio-marker, BC200 lncRNA



Count: 573

Abstract ID: 631

Presentation Type: Poster

Direct conversion of rat astrocyte to neural progenitor cells by single factor, ZFP521 .

Submission Author: Masoomeh Zarei kheyrabadi

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Background and Aim : Generating neural stem cells and neurons from reprogrammed astrocytes is a potential strategy for neurological repair. Astrocytes are very abundant in central nerve system (CNS). Recently, several studies showed dedifferentiation of astrocytes into the neural stem/progenitor phenotype. Then, these cells can be suitable starting cells for conversion to neuron progenitor cells/ neurons. Ectopic expression of the reprogramming factors into astrocytes in specific cytokine/culture conditions can activate the neural stem gene program and induced generation of cells expressing neural stem/precursor markers. Conversion of astrocyte by single gene, SOX2, was reported in 2013. ZFP521 is a key gene in neural development and can activate genes that are important for neural fate. It has been shown that ZFP521 can convert fibroblast to neural progenitor cells. The purpose of this study is reprogramming of rat astrocytes by single gene, ZFP521, to neural progenitor cells.

Methods : Primary tissue was removed from the cerebral cortex of 1 month rats. Neocortex was segregated from brain, digested mechanically and enzymatically. Then cells were shaken in 240 rpm for 3h after 7 days and in 180 rpm for overnight after 14 days. Astrocytes were characterized by immunofluorescence staining and flowcytometry. These cells were transduced by lentiviruses that including ZFP521. Medium of the cells was shifted to induction medium in day 4 after transduction. Expression of ZFP521 was induced 1 week by DOX. Analyses was performed by immunofluorescence staining and real time-PCR in 2 and 4 week after transduction.

Results : Rat extraction protocol used in this study can extract GFAP positive cells (astrocyte) to 86%. Induced cells expressed markers of neuroblast (such as DCX) and neural progenitor cells (NESTIN) in 2 and 4 week after transduction. Expression of astrocyte markers (GFAP) decrease in induced cells.

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Conclusion : ZFP521 can convert rat astrocytes to neural progenitor cells.

Keywords : astrocytes, ZFP521, neural progenitor cells, neuroblast, reprogramming.



Count: 574

Abstract ID: 388

Presentation Type: Oral

FMRI Phase Information Reveals Altered Dynamism in the Functional Interactions of Paranoid Type Schizophrenic Brain

Submission Author: Tahereh Sadat Zarghami

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Background and Aim : Resting state networks (RSNs) emerge from functional connectivity (FC) patterns of the human brain during task-free periods. FMRI has been extensively used for exploring these RSNs. Until recently, it was implied that RSNs are static through the scanning session (5-30 minutes). However, this assumption has been seriously challenged since 2010. Thereafter, numerous groups have tried to characterize the temporal aspect of spontaneous functional arrangements using fMRI. Most of the devised strategies are based on sliding-window analyses performed on amplitude-dependent FC metrics. Consequently, the length of the window (30-240 seconds) is restrictive and poses a trade-off between the estimation reliability and temporal resolution of the FC measures. Here, we propose a connectivity metric that exploits the information in the instantaneous phases extracted from fMRI signals. fMRI phase information has been little explored to date. The effectiveness of this metric for characterizing the dynamic functional interactions of the brain is demonstrated in a discriminative study on schizophrenia (SZ).

Methods : The resting state fMRI data was acquired from the COBRE database. Five right-handed male patients (19-22 years) diagnosed with paranoid-type schizophrenia (DSM-IV-TR code 295.3) were selected. These patients suffered from delusions and hallucinations. Five healthy subjects were matched in gender, age and handed-ness to the patient group. The fMRI signals were pre-processed in SPM12 and the signals of 90 regions were extracted using the AAL structural atlas after coregistration of all subjects to MNI space. For each region, the signals were temporally concatenated across the corresponding group and band-pass filtered (0.04-0.07 Hz). Spontaneous phases were extracted using the Hilbert transform. The global order parameter (OP) of the brain was computed to quantify the momentary global phase coherence across the brain. Furthermore, the bivariate OP captured the instantaneous alignment of phases in two bilateral temporal areas. The mean and variance of these metrics were compared between the two groups using parametric and nonparametric statistical tests.

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Results : Two-sample t-test on the global OPs showed that the SZ group manifests 6% lower mean global synchrony ($p=0.001$). Conversely, a permutation test on the F-statistic of global OPs revealed that the SZ brain is 1.8 times more unstable when it comes to overall interactions across the brain ($p=0.003$). As for the two bilateral temporal areas, about 6% lower synchrony in the SZ group was inferred from two-sample t-test and permutation tests ($p<0.0001$). Moreover, a permutation test on the F-statistic of the bivariate OPs revealed that the functional interaction between the bilateral temporal areas is 3.4 times more dynamic in the SZ group ($p<0.0001$).

Conclusion : We used the phase information extracted from resting state fMRI signals to characterize the dynamic functional connectivity in SZ patients. Our large-scale analysis shows that the SZ brain is less globally integrated, but more globally unstable compared to the healthy brain. Specifically, the bilateral temporal connection in the paranoid-type SZ is weaker on average, but substantially more dynamic in nature. Considering that these patients suffer from auditory hallucinations, abnormal connectivity in the temporal lobe is a genuine possibility. A traditional static FC study cannot capture these variations.

Keywords : Dynamic Functional Connectivity, Resting State Functional Magnetic Resonance Imaging, Phase, Schizophrenia



Count: 575

Abstract ID: 752

Presentation Type: Poster

The effect of berberine in kainite_induced experimental model of epilepsy in rat

Submission Author: Arefeh Zavari

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Background and Aim : Temporal Lobe Epilepsy(TLE) is a chronic neurological disorder that characterized by spontaneous recurrent seizures.TLE could be result in hippocampal sclerosis and cell death. Among involved pathological mechanism,oxidative stress and glutamate have a key role in occurrence of TLE. Therefore,it seems antioxidant agent could prevent from some deficiency related to TLE

Methods : while berberine is an efficient antioxidant and neuroprotective agent but its action has not been investigated in rat model of kainic acid_induced TLE.In the present study,effects of berberine was evaluated in experimental model of temporal lobe epilepsy.In this study,wistar male rats (n=70) were randomly allocated into five groups:sham_operated (intrahippocampally administrated with 0.9% saline),berberine treated_sham_operated, kainic acid(intrahippocampally administrated with 4 micro gram kainic acid),berberine treated_kainic acid(administrated rats with 4 micro gram kainic acid and 50 and 100 mg/kg berberine).

Results : We performed behavior monitoring , intracarinal electroencephology (iEEG) recording,histological analysis to evaluate the anti_epilepsy effect of berberine in kainate_induced epileptic rats.The result showed that the kainate rats exhibit spontaneous seizures,increased iEEG amplitude(p<0.01). In addition ,kainic acid caused to increase the mossy fiber sprouting,hippocampal cell death,GFAP positive cells and oxidative stress indices(lipid peroxidation and nitrite levels).

Conclusion : Administration of berberine,significantly decreased the number of spontaneous seizure,iEEG amplitude and mossy fiber sprouting.On the other hand,in kainate rats berberine attenuated hippocampal cell death by decreasing of DNA fragmentation and improved oxidative stress.Collectively,this study indicates that berberine pretreatment attenuates some impairments induced by kainic acid in rats. It seems that these effects are due to antioxidant effects of berberine.

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Keywords : Kainic acid, Berberine, Oxidative stress, Mossy fiber, iEEG, TLE



Count: 576

Abstract ID: 209

Presentation Type: Oral

Control of Pro-inflammatory Cytokines Can Modulate Neurogenesis.

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Background and Aim : Opioids are some of the most effective pain-relieving drugs in the clinical management of pain, such as those associated with cancer. Some drugs include morphine can bind to mu opioid receptors (MOR). Mu receptor agonists modulated apoptosis, proliferation, and cell growth of mature or immature neural and glia cells. Morphine have degenerative effects on brain, molecular mechanisms of unwanted opioid responses are varied but recent studies have been focused on elevations in pro-inflammatory cytokines releasing and stimulated glia following chronic administration. In this study we investigated the neurodegenerative effects of morphine through its effects on Toll-Like Receptor 4 (TLR4) in male rat hippocampus and their dentate gyrus and evaluated level of Interleukin-1 beta (IL-1 β) as pro-inflammatory cytokine. This cytokine can disrupt their neurological environment situation and neurological degenerative process. This study was undertaken to determine whether chronic administration of morphine stimulates neuronal degeneration and whether that action dependent on TLR4 receptors. Then we compared the difference between inhibitory effects on mu opioid receptors (by β -Funaltrexamine, β -FNA) and TLR4 (by Ibudilast). Subsequently, we assessed the amount of IL-1 β in male rat hippocampus.

Methods : 32 mature male rats (200-250 gr) were randomly divided in four (n=8) group. Those groups are; A) Control: These animals were received in their drinking water at a rate of 4% sucrose. B) Morphine dependent: These animals were received morphine in the form of solution in the drinking water (maximum concentration 0.4 mgr/ml) with 4% sucrose for elimination of bitter and nasty taste. C) Coadministration of morphine and non-specific phosphodiesterase inhibitor drug, (Ibudilast): These animals in addition get the same morphine such as group B , as well as Ibudilast drug as inhibitor of TLR4 receptor stimulation effects, twice a day and the 10 mgr/kg/day by Intraperitoneal injection. D) Coadministration of morphine and non-reversible antagonist of Mu opioid receptor, (β -Funaltrexamine, β -FNA): These animals in addition get the same morphine such as group B, β -FNA drug also 20 mgr/kg by intraperitoneal injection of once every four days. After 30 days, all animals under deep anesthesia were killed, and their brains were removed quickly. The right hemisphere was used for Western blotting and analysis.

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Results : Chronic morphine administration increased the level of IL-1 β as pro-inflammatory cytokine and it is so important factor in the neurodegeneration of dentate gyus. The highest level was evaluated in morphine depended (group B) and there was no significant difference between control and Ibudilast treated animals. Co administration of Ibudilast as an inhibitor of innate immune receptor TLR4 can reduce releasing of IL-1 β and this reduction in comparison with reductions due to blockage of MOR receptors was significantly stronger and more valuable ($p < 0.001$). Data showed that Ibudilast suppresses IL-1 β expression significantly more than β -FNA.

Conclusion : Our results suggested that Ibudilast can be used for controlling and treatment of morphine-induced CNS inflammations or traumatic conditions. Phosphodiesterase Inhibitor, Ibudilast, Can Suppress the Hippocampal Inflammation Caused by Chronic Morphine Addiction.

Keywords : Hippocampus; Morphine; Dentate gyrus; IL-1 β .



Count: 577

Abstract ID: 210

Presentation Type: Poster

Toll-Like Receptor4 Can Control The Fate of Neurogenesis.

Submission Author: Mohsen Zhaleh

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Background and Aim : Following long-term administration of morphine, neurogenesis can be impaired and specifically decrease. Many researchers believe this is due to suppression of endogenous opioid system and overstimulation of classical opioid receptors, especially opioid receptor type Mu (MORs) by the morphine agonist drug receptor. And more detailed studies found that morphine can act as a ligand for a Toll-like Receptor type 4 (TLR4) and after stimulation of this receptor cause increase stimulation of innate immune system and increased levels of pro-inflammatory cytokines. This cytokines can disrupt their neurological environment situation and neurological degenerative process. This study was undertaken to determine whether chronic administration of morphine stimulates neuronal degeneration and whether that action dependent on TLR4 receptors in male rat hippocampus.

Methods : 32 mature male rats (200-250 gr) were randomly divided in four (n=8) group. All animals in the first 7 days, to intercept the newly divided cell immunohistochemistry, the intraperitoneal administration of di-BromodeoxiUridin (BrdU) were used. The groups are; Control: These animals were received in their drinking water at a rate of 4% sucrose. Morphine dependent: These animals were received morphine in the form of solution in the drinking water (maximum concentration 0.4 mgr/ml) with 4% sucrose for elimination of bitter and nasty taste. Coadministration of morphine and non-specific phosphodiesterase inhibitor drug, (Ibudilast): These animals in addition get the same morphine such as group B , as well as Ibudilast drug as inhibitor of TLR4 receptor stimulation effects, twice a day and the 10 mgr/kg/day by Intraperitoneal injection. Coadministration of morphine and non-reversible antagonist of Mu opioid receptor, (β -Funaltroxamine, β -FNA): These animals in addition get the same morphine such as group B, β -FNA drug also 20 mgr/kg by intraperitoneal injection of once every four days. After 30 days, the left hemisphere freezed and stored at -20 °C. Then, on the basis of brain map Paksino, frozen serial sections were prepared for the immunohistochemistry experiments. Prepared slides were examined for presence and supply of specific protein and characteristics of each cell during neural differentiation (immature granular cells for the presence of Doublecortin protein, mature granular cells for the presence of NeuN protein, mature astrocyte cells for the presence of S100- β) and also BrdU marker to identify newly divided cells by



immunohistochemistry. After imaging, the number of positive cells were calculated from immunohistologic in three-dimensional and per unit volume specific in each of the groups under study.

Results : The results and statistical analysis showed that the greatest reduction in neurogenesis, including proliferation, differentiation and cell fate (to Gliosis) was in morphine-dependent group (Group B). This is a significant difference between the control group entirely ($p < 0.001$). Co administration Ibudilast as TLR4 receptor inhibitors has been able to maintain control over the conditions of mature nerve cell regeneration. Effects of Mu opioid receptor blockade (MOR) by β -FNA is always weaker than the effect of the Ibudilast and the difference is quite significant ($p < 0.04$).

Conclusion : Our results suggested that phosphodiesterase inhibitor drugs like as Ibudilast can be used for controlling and treatment of CNS degeneration. Phosphodiesterase inhibitor 4, Ibudilast, can control the hippocampal neurodegeneration caused by chronic morphine addiction.

Keywords : Hippocampus; Morphine; Neurodegeneration; TLR4.



Count: 578
Abstract ID: 635
Presentation Type: Oral

Expression of GRIN2B, BDNF and IL1 β mRNA in whole blood of patients with Epilepsy in comparison with healthy controls.

Submission Author: Anoushe Zhand

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Background and Aim : Epilepsy is a brain disorder which affects about 1% people all around the world. Epilepsy is defined by at least two unprovoked seizures occurring more than 24 hours apart. Epilepsy like most of complex diseases may result from genetic component or environmental factors or both. Despite many studies, molecular pathology of epilepsy is not well understood yet, but it is known what causes epilepsy at the molecular level is imbalance of excitation (eg. glutamate) and inhibition (e.g. γ -aminobutyric acid or GABA) of neural cells. Glutamate is the major excitatory neurotransmitter in the central nervous system (CNS) and one of its kinds of receptors are NMDA (N-methyl-D-aspartate) receptors. NMDARs are tetrameric structures made of seven subunits including NR2B (GRIN2B) which is glutamate-binding site. Therefore overstimulation of NMDARs can lead to epilepsy. BDNF is a member of the neurotrophin family of neurotrophic factors, it binds with high affinity to tyrosine kinase receptor B (TrkB) and with low affinity to p75 receptor. These bindings lead to activation of variety of intracellular cascades such as MAPK. Different studies have shown that BDNF increases neuronal excitability and is localized and upregulated in areas implicated in epileptogenesis. Cytokines were initially known to function in immune system and inflammatory responses but they have different actions in central and peripheral nervous systems. Interleukin-1 beta (IL-1 β) may play a role in epileptogenesis through various mechanisms, such as classical effects on neuronal survival and transcription pathways; novel rapid effects on receptor gated ion channels; and long-lasting effects on expression of selective gene families and well-known neurotoxic effects.

Methods : This study aimed to assess GRIN2B, BDNF and IL-1 β gene expression in the blood of 50 generalized epilepsy with tonic-clonic seizures patients and 50 healthy controls by Taqman Quantitative Real-Time PCR.

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Results : Based on statistical analysis, GRIN2B was significantly upregulated with 2.61 expression ration and p value of 0.01. There was no significant difference between case and control groups for BDNF gene (expression ratio=1.07 p value=0.1).IL-1 β was slightly downregulated with 0.57 expression ration and p value of 0.052, but these results are not significant.

Conclusion : These findings accompanied with other studies may lead to better understanding of epileptogenesis; therefore, can help early diagnosis, prevention and better treatment.

Keywords : Epilepsy;GRIN2B;BDNF;IL-1beta;Expression;Real Time PCR



Acupuncture decreases competitive anxiety and physiological responses prior to a competition in young athletes: a randomized controlled trial pilot study

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Abstract

Background: Although a certain level of competitive anxiety may increase performance, many athletes with anxiety experience uncontrolled negative feelings and cognition that in turn can have overwhelming effects on their performance.

Methods: We aimed to assess the effect of acupuncture on competitive anxiety of the adolescent football players prior to the competition using psychological and physiological markers. A total of 30 athletes were randomly and equally allocated to either acupuncture or sham control group.

Results: The results of t-test on posttest scores showed that acupuncture had a significant effect on cognitive anxiety ($p = 0.001$) and somatic anxiety ($p < 0.001$) but not self-confidence ($p > 0.05$). Furthermore, the results showed that acupuncture significantly decreased the skin conductance in acupuncture group compared to sham group ($p = 0.006$) ($p < 0.001$).

Conclusions: In conclusion the results suggested that acupuncture have the capacity to decrease cognitive and somatic anxiety prior to competition in adolescent athletes while this was accompanied by significant physiological changes.

Keywords: Anxiolytic effect; alternative medicine; skin conductance; heart rate; football



Prominent improvement in signs of paranoid personality disorder following dandelion treatment in acne management setting

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Background: *Taraxacum officinale* (dandelion), a member of the Asteraceae family, is commonly used as a food. Dandelion leaves and roots have been used for hundreds of years to treat liver, gallbladder, kidney, skin and joint problems. Dandelion's active ingredients are found in both the roots and leaves. The leaves contain bitter *sesquiterpene lactones* such as taraxinic acid and *triterpenoids* such as cycloartenol. The roots contain these compounds as well as phenolic acids and inulin.

Objective: We describe a case of paranoid personality disorder that was identified following treatment with *T. officinale* for acne of a man.

Design: case study

Methods: A 42 year old man with complaint of chronic acne vulgaris on his face, unresponsive to routine treatment, referred to medical school. He was otherwise normal and didn't take any medication. We empirically treated him with an infusion of roots of *Taraxacum officinale*, because of its traditional use in skin disorders and its liver tonic effects. The starting dose was 250 mg/day of root powder as infusion (with a small amount of a herbal polysaccharide as base), oral, twice a day; and when it was tolerated by patient, the dose was increased gradually up to 1 g/day, during one week. Moreover, because of his complaint of heat intolerance; we also designed a diet which consisted of lower proportions of "hot-foods" and higher proportions of "temperate- or cold-foods"; as it was traditionally described by Avicenna (The Canon of Medicine). Based on additional information on his psychological status (see below), we designed a daily questionnaire about his abnormal behaviors and insomnia, which were scored from +1 (mild sign) to +4 (severe sign) according to severity of signs, by a member of his family. The completed form was evaluated as weekly.



Results: After two weeks of treatment, his acne was significantly improved: previous rashes were improved and *T. officinale* helped their resolution to be faster, and development of new rashes was decreased. Unpredictably, his family individually reported that not only his acne was improved but also, his sleep and behavior changed significantly; this added new knowledge to us. He has been often a highly irritable and intolerant of others, anger, violent, and paranoid person; whose negative reactions couldn't subside easily, and sometimes these behaviors are being uncontrollable. Furthermore, he had grandiosity and he isn't interested in social communications, they said about the patient. Consequently, his abnormal behavior put them under an unpleasant condition and a psychological pressure, which profoundly affects their family communications. Nevertheless, when the patient was questioned, he refused to confirm; and he didn't believe going to a psychologist is necessarily needed. Although, according to his family report; frequency and duration of his signs such as violence, grandiosity and paranoia were decreased clearly. Also, his insomnia and social communications were bettered. Fortunately, because of its prominent effects on his acne, the man continued the use of *T. officinale* and following up the diet. Collectively, evaluation of completed questionnaire showed that prominent improvement in psychological status of the patient has continued up to 6 months of following up.

Discussion: Although cognitive effects of *T. officinale* has been reported, but its behavioral effects in human have never been reported. It is suggested that *T. officinale* may have behavioral effects in psychological conditions such as paranoid personality disorder, bipolar disorder, paranoid schizophrenia and etc. Though, the associated diet may also be responsible, in part. Nevertheless, elucidation of this finding needs a detailed investigation on effectiveness and safety of the herb in appropriate experimental settings.

Key words: *Taraxacum officinale*; behavioral effect; paranoia; acne; human

Modulatory effects of hypocretin-1/orexin-A with glutamate on the firing rate of neurones in the locus coeruleus of the morphine dependence rats.

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Abstract:

Various intrinsic and extrinsic factors can increase the spontaneous discharge rate of locus coeruleus (LC) neurons. Among the extrinsic ones, orexinergic neurons of the lateral hypothalamus (LH) send widespread projections to LC region. Accumulating evidence support the involvement of glutamate in mediating the excitatory effect of orexin-A (OXA) on LC neurons. In addition, both orexinergic and glutamatergic systems have been shown to play a role in molecular mechanisms underlying the development of morphine dependence. The present study was designed to investigate the interaction between OXA and glutamate in modulating the firing rate of LC neurons. Regarding the role of both orexinergic and glutamatergic systems in morphine dependence, this effect was also investigated in morphine dependent rats. For this purpose, spontaneous discharge rate of LC neurons were recorded using whole cell patch clamp recording method in presence of OXA, glutamate or OXA + glutamate in acutely prepared brain slices. Results indicate that superfusion of either OXA or glutamate enhance the firing frequency of LC neurons in both dependent and non-dependent rats. Interestingly, co-application of OXA and glutamate elicited a significant synergism in LC neurons of all both morphine dependent and non-dependent rats. However, this effect was stronger in morphine dependent animals. In conclusion, there seems to be an interaction between OXA and glutamate in modulating the firing rate of LC neurons during the development of morphine dependence.

Key words: Locus coeruleus, morphine, orexin-A, dependence, glutamate, synergism

Evaluating the effects of Low Frequency Electromagnetic waves (low intensity) and CoQ10 on male rats (Balb/c)hippocampus harmed by Tri Methylene Chloride(TMT)

Abstract

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Field and Objectives of the Study:

Considering the effects of low frequency Electromagnetic waves on neuro protective cell's level and the effects of CoQ10, which is known as a powerful antioxidant, this study is intended to investigate the role of using the combination of low frequency Electromagnetic waves (with low intensity) and CoQ10 in taking remedy for hippocampus harm caused by TMT.

Methodology:

36 male rats (Balb/c type) were used in this study. The study groups were as follows:

1. The Control group: the subjects of this group were examined without receiving any effective treatments.
2. The Model group: the subjects of this group received 2.5 milligrams of TMT Neurotoxin for each one kilogram of their weights.
3. Vehicle group: after receiving TMT Neurotoxin and sesame oil for a period of two weeks, the subjects of this group were put in an Electromagnetic vehicle which was turned off for 7 hours per day during a week.
4. Treatment group: three different groups as the following were regarded as the treatment groups.
 - a. **CoQ10:** After receiving TMT Neurotoxin for a period of two weeks, the subjects received 10mg/kg of CoQ10 co-enzyme daily (in the form of IP).
 - b. **EMF:** One week after receiving TMT Neurotoxin, the subjects were exposed to low frequency Electromagnetic waves (low intensity) in an Electromagnetic vehicle for a period of 7 hours.
 - c. **EMF + CoQ10:** This group received both CoQ10 and EMF therapies.

Findings:

The results of Nissel staining and the Tunnel test showed that the number of Necrotic and Apoptotic cells decreased in CoQ10 and CoQ10 + EMF groups. The results of Memory Test of showed the significant effect of both CoQ10 and CoQ10 + EMF therapies on recovering the

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subjects' harms in the treatment groups. The Western Blot Test's results demonstrated the increase of Anti-Apoptotic protein in CoQ10+EMF and CoQ10 groups; however, sole exposure to EFM did not affect the harms from TMT significantly.

Conclusion:

The findings of the study revealed that daily peritoneum internal injection of 10 mg/kg CoQ10, for a duration of two weeks, together with exposure to EMF for seven hours every day during a week has a significant effect on the recovery of Hippocampus harm Model. Although the efficacy of using the combination of COQ10 and EFM therapies is significantly greater than the sole exposure to EMF, it is not significantly better than that caused by only CoQ10 therapy. In addition, the results revealed that EMF therapy, solely, does not have any significant protective effects on recovering the Hypo-camp tissue harmed by TMT injection.

Key Terms: Hippocampus, CA1 Part, CoQ10, TMT•EMF

Transplantation of Adipose-derived stem cells; secreting NGF and seeded in chitosan based hydrogel, in contusion of spinal cord injury in Rats

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Introduction: A serious problem in nervous system is spinal cord injury that nowadays has increased. Nervous system has limited regeneration after injury so cell therapy is an important way for increasing repair after injury in spinal cord but cell therapy needs great numbers of appropriate cells and transplanted cells migrate from injury site to other sites and has other limitations therefore using combination therapies in spinal cord injury may improve it. Using some growth factors and tissue engineering scaffolds has increased success of cell therapy. Chitosan based hydrogels used in regeneration of some tissues as scaffolds successfully. In this study we evaluated transplantation of mesenchymal stem cells that secrete nerve growth factor (NGF) in Chitosan based hydrogel in repair of spinal cord injury.

Methods: This experimental study was performed on 40 male Wistar rats in five groups including: control (SCI), sham (laminectomy), vehicle (SCI+ hydrogel injection), treatment1 (SCI+ cell injection), treatment2 (SCI+ cell with hydrogel injection). Human adipose derived mesenchymal stem cells isolated and after characterization by flow cytometry transduced with lentiviral vector for secretion of NGF. Transduced ADSCs assayed for NGF secretion with RT-PCR and western blotting. Chitosan based hydrogel prepared and examined by rheometry and SEM. Seven days after SCI, the cultured cells seeded in hydrogel (5000 cells in 5 μ l) used for transplantation. The cell viability in hydrogel assessed by MTT assay. Eight weeks after transplantation spinal cord injury repair assayed with BBB test and tissue staining. Data analyzed by SPSS 16 and one-way ANOVA and Tukey test.

Results: After eight weeks treatment1's score on BBB test increased from 4 to 12 and in treatment2 increased from 4 to 15 which is significantly higher than other groups ($p < 0.05$). Histological examination of survival rate of transplanted cells showed that mean of GFP positive cells in injury site is significantly more in treatment2 ($p < 0.001$) and spinal injury cavity size has significantly decreased in treatment2 compared with treatment1 and control group ($p < 0.001$).

Conclusion: Co-transplantation of human adipose derived stem cells with Chitosan based hydrogel has a synergistic effect for repairing SCI, and can increase number of survived transplanted cells and partial functional recovery after SCI.

Key words: spinal cord injury, nerve growth factor, Chitosan based hydrogel, Adipose derived mesenchymal stem cells

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Congress 2016**

December 7-9, 2016 Razi Hall, Tehran, Iran



An investigation in the effect of bone marrow mesenchymal stem cells on male rat hippocampal damage of Trimethyltin chloride

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introduction: Today, with existent of neurogenesis in adult mammal's brain, using of stem cells is a suitable treatment method for improvement of nervous system disease. So that with transplantation of stem cells, neuron regeneration occurs in damaged regions.

The aim of present study is determining the effect of bone marrow mesenchymal stem cells on hippocampal damages.

Materials and methods: In this study, 28 wistar male rats were divided into four groups, includes: Control, Model, Vehicle and Treatment groups.

They received 8 mg/kg neurotoxin trimethyltin chloride by the intraperitoneal injection. About one week after receiving neurotoxin stem cells was injected by stereotaxy method. 6 weeks after cells injection, the spatial memory was assessed by Morris Water Maze and histological studies were done by Nissl staining and the expression of GFAP and NeuN proteins were assessed by western blotting.

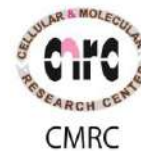
Finally data analyzed by SPSS software and ANOVA test.

Results: Bone marrow mesenchymal stem cells graft, increased the number of normal cells in Treatment groups. That in compare with Vehicle and Model groups was significant ($P < 0.05$). Also in Morris Water Maze test, traveled distance and escape latency decreased in Treatment group, but this decreasing was insignificant in compare with Vehicle and Model groups ($P > 0.05$). And the traveled distance in target quarter had significant increase in Treatment groups than Vehicle and Model groups ($P < 0.05$).

Also the molecular assessment by western blotting method showed increase of expression Astrogliosis and neuronal markers in Model, Vehicle and Treatment groups in compare with Control group.

Conclusion: This study showed that using of bone marrow mesenchymal stem cells leads to decrease hippocampal lesions by increase the number of pyramidal neurons and improving memory.

Keywords: Neurogenesis, Bone Marrow Mesenchymal Stem Cells, Hippocampus, Trimethyltin Chloride, Spatial Memory



Evaluation of Iran University Of Medical Science's psychiatry and pediatrics residents knowledge about signs and symptoms, pathophysiology, diagnosis and management of Autism Spectrum Disorder

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Abstract

Background: Autism spectrum disorder (ASD) is a set of complex neurodevelopmental disorders.

Increased prevalence of ASD and the role of early diagnosis and intervention in patients' quality of life, emphasizes the necessity of adequate knowledge of ASD among health care professionals.

Objectives: We aimed to examine knowledge of psychiatry and pediatrics residents of Iran University of Medical Sciences in 2015, about the signs and symptoms, pathophysiology, diagnosis and management of autism in children.

Method: This cross-sectional study was performed in Tehran, Iran in 2015. A final number of 60 psychiatry and pediatrics residents recruited using convenience sampling method completed a self-administered questionnaire to evaluate their knowledge. Validity of the questionnaire had been checked ($\alpha=0.67$).

Results: Mean \pm SD scores of respondents in "signs and symptoms" domain was 11.28 ± 1.7 (pediatrics: 10.89 ± 1.8 psychiatry: 11.64 ± 1.6 , (P value = 0.098)). They scored 6.35 ± 2.1 (pediatrics: 5.50 ± 2.08 , psychiatry: 7.19 ± 1.8 , (P = 0.002)) in "patho-physiology" and 5.11 ± 1.1 (pediatrics: 5.03 ± 1.3 , psychiatry: 5.22 ± 0.9 , (P = 0.537)) "diagnosis and management" domains.

Conclusion: The study suggests that psychiatry and pediatrics residents have good knowledge of signs and symptoms of ASD, while it seems that their knowledge regarding the pathophysiology, diagnosis and management of this disorder is insufficient.

Keywords: Autism Spectrum Disorders, Awareness, Health professionals