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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 1
Abstract ID: 16
subject: Cognition: Learning and Memory
Presentation Type: Poster

Arachidonylcyclopropylamide (ACPA) state-dependent memory: Involvement of dorsal hippocampal 5-HT1A receptors

Submission Author: Majid JafariSabet

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Background and Aim : The crucial role of cannabinoidergic and serotonergic systems of the hippocampus in modulation of memory has already been raised. The present study purposed to investigate the possible role of the dorsal hippocampal 5-HT1A serotonergic system upon arachidonylcyclopropylamide (ACPA) state-dependent memory (SDM).

Methods : The dorsal hippocampal CA1 regions of adult male NMRI mice were bilaterally cannulated, and serotonergic agents were microinjected into the intended sites of injection. A single-trial step-down inhibitory avoidance task was used for the assessment of memory retrieval and state of memory in adult male NMRI mice.

Results : Post-training and/or pre-test administration of a selective cannabinoid CB1 receptor agonist, ACPA (0.1 and 0.2 mg/kg, i.p.) dose-dependently induced amnesia. Pre-test injection of the same doses of ACPA reversed the post-training ACPA-induced amnesia. This event has been named ACPA SDM. Pre-test microinjection of a 5-HT1A receptor agonist, 8-OH-DPAT (0.5 and 1 μg/mouse) impaired memory retention, although the low dose of the drug (0.25 μg/mouse) did not affect memory retention. Pre-test administration of a 5-HT1A receptor antagonist, (S)-WAY-100135 (1 and 2 μg/mouse) improved memory retention, although the low dose of the drug (0.5 μg/mouse) did not affect memory retention. Pre-test microinjection of 8-OH-DPAT (0.125 and 0.25 μg/mouse) reversed the memory impairment induced by post-training administration of ACPA (0.2 mg/kg, i.p.). Moreover, pre-test administration of 8-OH-DPAT (0.125 and 0.25 μg/mouse) with an ineffective dose of ACPA (0.05 mg/kg, i.p.) significantly restored the retrieval and induced ACPA SDM. Pre-test administration of 8-OH-DPAT (0.0625, 0.125 and 0.25 μg/mouse) by itself cannot affect memory retention. In other series of experiments, pre-test microinjection of (S)-WAY-100135 (0.25 and 0.5 μg/mouse) 5 min before the administration of ACPA (0.2 mg/kg, i.p.) dose dependently inhibited ACPA SDM. Pre-test administration of (S)-WAY-100135 (0.125, 0.25 and 0.5 μg/mouse) by itself cannot affect memory retention.

Conclusion : It may be proposed that the 5-HT1A receptors in the dorsal hippocampal region play a crucial role in ACPA SDM.

Keywords : ACPA; 8-OH-DPAT; (S)-WAY-100135; Dorsal hippocampus; State-dependent memory

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 2
Abstract ID: 26
subject: Cognition: Learning and Memory
Presentation Type: Poster

Cognitive Reserve in Female Patients with Multiple Sclerosis: Myth or Reality?

Submission Author: Sara Yazdani

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Background and Aim : Multiple sclerosis (MS) is a demyelinating disorder that, according to studies, specifically manifests in women, three times more than men. Along with physical and emotional problems, MS patients have to deal with cognitive difficulties. However, the question here is whether MS patients suffer from cognitive complications equally in different stages or some remain intact? Cognitive reserve shows that some patients have maintained their cognitive abilities in task processing allow them to deal better than others with the brain damage. On account of the importance of this matter and its impact on patients' quality of life, the purpose of the present study is to evaluate the cognitive non-verbal semantic task performance in individuals with MS to measure their cognitive reserve.

Methods : In this cross-sectional study, 68 female patients with definite relapsing-remitting multiple sclerosis and 68 age, gender, and educationally-matched healthy controls were selected using convenient sampling based on inclusion criteria. The patients aged from 20 to 50 years (M=29.14, SD=4.81), their years of education ranged from 12 to 18 (M=14.83, SD=1.69). The patients were divided into two groups according to their Expanded Disability Status Scale (EDSS), their Montreal Cognitive Assessment (MoCA), and their total disease duration. The EDSS of the first group of patients (N=34) ranged from 0-4 (M=2.01, SD=0.98) showed they were fully ambulatory, less cognitively impaired (M=22.61, SD=1.77) with their total disease duration ranged within 10 years of expected symptom onset (M=5.39, SD=1.83). Whereas the EDSS scores of the second group (N=34) ranged from 4.5-6.5 (M=5.45, SD= 0.65) illustrated they had more physical disabilities, higher cognitive dysfunction (M=17.17, SD=16.96) and with their total disease duration ranged more than 10 years of expected symptom onset (M=12.85, SD= 1.23). The participants had no history of neurological disorders other than MS, drug and/or alcohol abuse, brain surgery, psychiatric disorder, and uncorrected visual or auditory problems. The picture version of The Camel and Cactus Test (CCT) was selected and administered to evaluate MS patients' ability to figure out the semantic associations. This test is an improved and difficult form of the Palm and Pyramid Trees test (PPT).

Results : The results of the study showed there were statistically significant differences between groups in MoCA, and significant differences in EDSS and disease duration between patient groups ($p < 0.05$). Nevertheless, the results of the one-way ANOVA test showed that there was no statistically difference between groups ($F (2,133) = 2.055$, $p = 0.132$).

Conclusion : The findings of this study showed disregarding the degree of neuropathology seen in MS patients (such as high EDSS scores, low cognitive function, and longer disease duration), they might be able to reserve their cognitive performance in tasks such as nonverbal semantic test.

Keywords : cognitive reserve; non-verbal semantic task; multiple sclerosis; relapsing-remitting; females

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 3
Abstract ID: 177
subject: Cognition: Learning and Memory
Presentation Type: Poster

Evaluation of the effects of epidermal neural crest stem cells transplantation on impairment of learning & memory in a rat model of vascular dementia

Submission Author: Somayeh Akbari

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Background and Aim : Vascular dementia (VaD) is regarded as the loss of cognitive function and impairments of memory resulting from cerebral blood vessels disease. It is known that a moderate but chronic reduction in regional cerebral blood flow leads to the development of dementia and neurodegeneration by increasing the free radical formation and proinflammatory cytokines. These in turn impair the function of neuronal cells and contribute to brain lesions and cognitive decline.The stem cell therapy is an alternative strategy in the treatment of neurological disorders. Furthermore, the epidermal neural crest stem cells (EPI-NCSCs) have attracted great attention for cell-based therapies. EPI-NCSCs are characterized by high degree of plasticity, easy access sources, good self-renewal capacity and high expandation speed, which makes them a good option for transplantation. However, there have been no reports on the effect of the EPI-NCSC VaD rat's model. In the present study, we tested the hypothesis that EPI-NCSCs administered intravenously reverse 2VO-induced cognitive impairments.

Methods : The 40 adult male Sprague-Dawly rats weighing 250-300 g were used in this study. The rats were randomly divided into 4 groups: intact control, sham-operated, 2VO + V (bilateral carotid vessel occlusion + vehicle) and 2VO + EPI-NCSC transplanted groups. In this study, we occluded the bilateral carotid arteries of rats surgically to induce chronic cerebral hypoperfusion. Approximately 2×106cells in 300 µl medium as a 3-course infusion (on days 4, 14, 21 after the surgery) were transplanted into 2VO+EPI-NCSC group via the tail vein. The open field and passive avoidance tests were used for evaluating the anexiety-like behavior and learning & memory, respectively.

Results : Although all groups learned the avoidance test with the same number of foot shocks but the passive avoidance memory was significantly impaired in 2VO group (37.7 ± 13.5; $P < 0.001$) compared to the sham (279 ± 21) , control (290 ± 7.23) and 2VO+ EPI-NCSC (269.42 ± 27.08) groups. However, the epidermal neural crest stem cells transplantation in 2VO+EPI-NCSC group restores the memory to the comparable value of sham and control groups. The open field test results indicate that in the 2VO+V group the number of grooming increased (15.65± 2.13; $P < 0.001$), which was significantly higher respect to the control (6 ± 2.13), sham (8.7 ± 2.76) and 2VO + EPI-NCSC (6 ± 2.07) groups. However, our data indicated that there has been a marked improvement in the number of grooming in 2VO+EPI-NCSC rats. In addition, there was no significant difference observed between groups in the time spent in border and center regions of open field test.

Conclusion : Our findings demonstrated that EPI-NCSC could reverse 2VO-induced cognitive impairments and may provide an important basis for the application of stem cell transplantation to treatment of VD.

Keywords : Vascular dementia, EPI-NCSC, PRP, memory, learning.

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Iran University of Medical Sciences

BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 4
Abstract ID: 105
subject: Cognition: Learning and Memory
Presentation Type: Poster

Effect of Fish oil treatment during lactation period on Novel Object Recognition task in the offspring of male rats affected by neonatal hypoxia

Submission Author: Nima Badripour

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Background and Aim : Neonatal hypoxia impairs blood brain circulation, metabolism and leads to cognitive impairment that might persist throughout the life. Studies in the recent years shows that supplementation with omega-3 (n-3) fatty acids can improve memory and cognitive performance, so we aimed to investigate the effect of fish oil treatment during lactation period on novel object recognition task in the offspring of male rats affected by neonatal hypoxia.
Methods : Neonatal Wistar rats (with 10-12 day-old) were randomly assigned to four experimental groups: Sham, Hypoxia, Fish oil and Fish oil/ hypoxia groups. Hypoxia was induced by keeping neonatal rats in a hypoxic box (7% oxygen and 93% nitrogen intensity) for 15 minutes. In the fish oil group, rats received fish oil (1ml / day) in the breastfeeding period by gavage methods. Other groups received saline at the same time by gavage administration. Novel Object Recognition Test (NORT) was used for memory assessment in all experimental groups (in 30 day old offspring of male rat). A difference score (novel object interaction – familiar object interaction) and a discrimination ratio (novel object interaction/ total interaction with both objects) were assessed as two criteria for memory evaluation in NORT.
Results : Hypoxia impaired memory performance in a significant manner on NORT ($p<0.05$). Difference score and discrimination ratio were significantly improved in the offspring of male rats after fish oil treatment during lactation period ($p<0.05$). The difference between Fish oil/hypoxia and sham groups in NORT were not significant.
Conclusion : Therefore, neonatal hypoxia impaired recognition of novel object in the NORT and fish oil consumption during lactation period improved cognition task in offspring male rats.
Keywords : Cognitive task; Fish oil; Lactation period; Neonatal hypoxia; Rat

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Iran University of Medical Sciences

BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 5
Abstract ID: 88
subject: Cognition: Learning and Memory
Presentation Type: Poster

Preventive effect of Japanese sake yeast supplement on cognitive deficits in a rat model of global cerebral ischemia

Submission Author: Maryam Vaghari tazeabadi

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Background and Aim : Brain ischemia is one of significant health disability conditions that is one of the most common cerebrovascular diseases. The oxidative stress is a basic mechanism of cerebral ischemia/reperfusion damage. Thus, antioxidants can be neuroprotection products by eliminating free radicals. On the search for property non-pharmacological compounds, Sake yeast, Japanese rice wine is considered as a novel natural agent with potent antioxidant properties. This study for first time, investigated the effects of Japanese sake yeast supplement on cognitive deficits in a rat model of global cerebral ischemia/reperfusion.

Methods : In this study, rats were randomly divided into 4 groups (7 rats per group): control group; was not exposed to bilateral common carotid artery occlusion (BCCAO) and don't received sake yeast supplement. Ischemia group; was induced by ischemic stroke for 10 min followed by reperfusion (I/R) without sake yeast supplement. Ischemia + sake (25mg/kg) group and Ischemia + sake (50mg/kg) groups; sake was orally administrated to the rats for 30 days before I/R induction. Following 24 h of I/R induction, the novel object test applied to study all the animals in terms of cognitive deficits.

Results : Our findings showed that a significant decrease in the discrimination index in I/R damage group compared with the control group ($p<0.01$) while the treated groups with the sake yeast 50mg/kg ($p<0.01$) reversed cognitive disorder compared to control group.

Conclusion : The findings of the present study demonstrate that sake yeast supplement may be ameliorated cognitive deficits induced by global ischemia in the rat model.

Keywords : Ischemia; BCCAO; cognitive deficits; Sake yeast.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 6
Abstract ID: 61
subject: Cognition: Learning and Memory
Presentation Type: Poster

Investigating the role of Atenolol in the basolateral amygdala in memory function in response to foot-shock stress

Submission Author: Gholam Hossein Meftahi

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Background and Aim : Introduction: The basolateral amygdala (BLA) adrenergic system affects memory function in the hippocampus under stress conditions; however, there is a lack of information about how norepinephrine affects the BLA through the β1-adrenergic receptor on spatial memory and long-term potentiation (LTP) in the CA1 region of hippocampus in the repeated stress. Hence, the present study was conducted to examine the effects of infusion of Atenolol (β1-adrenergic receptor antagonist) in the BLA with and without repeated stress on spatial memory and LTP in the CA1 region of the hippocampus.

Methods : Methods: Male Wistar rats were randomly divided into five groups (n=8/per group); control, sham, stress, Atenolol+control and Atenolol+stress. Bilateral cannulation was performed in the BLA, by using Stereotaxic apparatus. After that, the animals were transferred to the communication box (consisting of nine separate parts; 16 × 16 × 50 cm), and received six uncontrollable and inescapable foot-shock stress (10 mV voltage, 10 Hz frequency, and 60 s long) continued for four consecutive days. Atenolol (0.25µl/side) bilaterally infused into the BLA five minutes before foot-shock stress. Spatial memory was assessed by using Barnes maze and the field potential recording was also used to investigate the LTP in the CA1 region of the hippocampus 24 h after four consecutive day's stress.

Results : Results: The results exhibited that the latency time to achieving the target hole during the five-day (probe day) training sessions of the Barnes maze test in the stress, Atenolol+control and Atenolol+stress groups significantly ($P<0.05$) longer when compared to the control and sham-treated groups. The rats that received the Atenolol in the both sides of the BLA five minutes before induction of stress showed significantly ($P<0.05$) decreased the number of errors to find the target hole on day five compared to the stress group. Also, the

Atenolol+control and Atenolol+stress groups showed significantly increased the distance traveling to achieve the target hole on day five compared to the control, sham and stress groups. Finding of the field potential recording showed that the intra-BLA infusion of Atenolol increased LTP damages in the hippocampal CA1 neurons induced by stress via decreased mean-field excitatory postsynaptic potentials (fEPSP) slope and population spike amplitude.

Conclusion : Conclusion: The results of the present study provide evidence that inactivation of β1-adrenergic receptors in the BLA enhanced spatial learning and memory and LTP damage in the hippocampal CA1 region induced by stress.

Keywords : Atenolol; Basolateral Amygdala; Foot-shock Stress; Long-term potentiation; Hippocampus

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 7
Abstract ID: 74
subject: Cognition: Learning and Memory
Presentation Type: Poster

Vitamin D Improves Short-term Spatial Memory in Alzheimer Model Rats

Submission Author: Nastaran Zamani

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Background and Aim : Introduction: Vitamin D is a fat-soluble steroid hormone that seemscrucial for brain health in humans. Evidence shows that the receptors for vitamin D in the central nervous system (CNS) are widely distributed and that the enzyme responsible for the synthesis of the active form of vitamin D is ubiquitous in the brain. The present study aimed to examine the effect of Vitamin D on the short-term spatial memory in electrical leisions model of nucleus basalis magnocellularis (NBM) of Alzheimer's disease.

Methods : Methods: In this experimental study, male Wistar rats were randomly divided into 5 groups (n=7): control, lesion NBM (which received bilateral electric lesions of the NBM), sham (the electrode was entered into the NBM with no lesion), lesion NBM+Vehicle Vitamin D (Sesame Oil), lesion NBM+Vitamin D. The groups treated with Vitamin D received this vitamin for 10 days (starting 3 days before lesion) through the intraperitoneal injection. In all groups, alternation percentage was determined using the Y maze as a spatial memory index.

Results : Results: Using the TUKEY test, a significant difference was observed in alternation percentage between the control and lesion groups ($P<0.001$). Moreover, the comparison of the results did not show a significant difference ($P> 0.05$) between sham and control groups indicating that the surgical steps and the introduction of the electrode into the NBM without induction of electric current do not affect the short-term spatial memory. On the other hand short-term spatial memory in group lesion NBM+Vitamin D compared to group lesion was significantly improved ($P<0.01$).. There was no significant difference between the results of lesion+Vehicle and lesion groups ($P> 0.05$).

Conclusion : Conclusion: The results showed that the intraperitoneal injection of Vitamin D improves short-term spatial memory in Alzheimer's disease model rats.

Keywords : Keywords: Vitamin D, Spatial Memory, Nucleus basalis of magnocellularis, Alzheimer’s disease

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 8
Abstract ID: 91
subject: Cognition: Learning and Memory
Presentation Type: Poster

Effects of Pre-pregnancy Chronic Valproate Administration on Rats Offspring avoidance memory and Hippocampal Gene Expression

Submission Author: Masoumeh Gholami

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2. Department of Physiology, Faculty of Medicine, Arak University of Medical Sciences, Arak, Iran

Background and Aim : Valproic acid and its derivatives have the broadest spectrum of anti-convulsant action compared to all currently available antiepileptic drugs. Valproic acid derivatives are histone deacetylases (HDACs) inhibitors which are important in epigenetic processes. .This study aimed at investigating the intergenerational effects of pre-pregnancy chronic valproate consumption on rat's offspring

Methods : Twelve female Wistar rats were randomly divided into two groups of control and valproate. For 30 days, the control group received saline and the valproate group received sodium valproate (300 mg/kg) intraperitoneally (i.p.). After mating, pregnancy, and nursing, two males and two females pup were randomly selected from the mothers and placed in the following groups: 1) male offspring of the control group, 2) female offspring of the control group, 3) male offspring of the valproate group, and 4) female offspring of the valproate group. Future experiments were followed using these groups. Avoidance memory was assessed using the shuttle box. Offspring's hippocampus were extracted and used for MECP2, HDAC2, and BDNF genes expression study by qRT-PCR

Results : No significant differences were detected in avoidance memory between male and female offspring of the mothers in valproate group and that of the controls ($P>0.05$). There were no significant differences in MECP2, HDAC2, and BDNF genes expression between male offspring of the mothers in control and valproate groups ($P>0.05$). But, expression levels of these genes significantly decreased in female offspring of valproate mothers compared with those of the female offspring of the controls ($P<0.05$)

Conclusion : Pre-pregnancy chronic valproate consumption did not affect avoidance memory in offspring. But, it seems to affect hippocampus gene expression sex-dependently

Keywords : avoidance memory, BDNF, HDAC2, MeCP2, valproate

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 9
Abstract ID: 92
subject: Cognition: Learning and Memory
Presentation Type: Poster

MicroRNA alterations in neuropathologic cognitive disorders with an emphasis on dementia: Lessons from animal models

Submission Author: Tahereh Ghadiri

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Background and Aim : Cognitive dysfunction is a state of losing or having difficulties in remembering, learning, focusing, or making decisions that impact individual healthy life. Small single-stranded and nonprotein coding RNAs, microRNAs (miRNAs) participate actively in regulatory processes, incorporate cognitive signaling pathways, and intensely affect cognitive evolution. miRNAs exert their modification activities through translational or transcriptional processes. Reportedly, cognitive impairment and dementia are rising, especially in developing countries

Methods : Herein we provided a brief review of original studies addressing miRNA changes in the most common neurological diseases with a focus on dementia and Alzheimer's disease.

Results : It must be noted that an increase in the level of certain miRNAs but a decrease in other ones deteriorate cognitive performance. The current review revealed that induction of miR-214-3p, miR-302, miR-21, miR- 200b/c, miR-207, miR-132, miR-188-3p and 5p, and miR-873 improved cognitive impairment in various cognitive tasks. On the other hand, intentionally lowering the level of miR-34a, miR-124, miR-574, and miR-191a enhanced cognitive function and memory. Synaptic dysfunction is a core cause of cognitive dysfunction; miRNA-34, miRNA-34-c, miRNA-124, miRNA-188-5p, miRNA-210-5p, miRNA-335-3p, and miRNA-134 strongly influence synaptic- related mechanisms. The downregulation of miRNA-132 aggregates both amyloid and tau in tauopathy.

Conclusion : Concerning the massive burden of neurological diseases worldwide, the future challenge is the translation of animal model knowledge into the detection of pathophysiological stages of neurocognitive disorders and designing efficient therapeutic strategies. While the delivery procedure of agomir or antagomir miRNAs into the brain is invasive and only applied in animal studies, finding a safe and specific delivery route is a priority.

Keywords : amyloid β, cognition, dementia, memory, miRNA, tau

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 10
Abstract ID: 113
subject: Cognition: Learning and Memory
Presentation Type: Poster

Deferoxamine regulates neuroinflammation and oxidative stress in rats with diabetes-induced cognitive dysfunction

Submission Author: Motahareh Zeinivand

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Background and Aim : Diabetic encephalopathy is a major complication related to diabetes, which is characterized by cognitive impairment in addition to structural and neurochemical abnormalities. The iron has a fundamental effect on the complications of diabetes. Neuroinflammation beside the homeostasis of iron are remarkable features of a number of neurological disorders.

Methods : In current study, we investigated the role of deferoxamine (DFO), as a clinical iron chelator, in type 1 diabetes-induced cognitive dysfunction and its neuroprotective outcomes in the neuroinflammation development, oxidative stress process, and the function of memory. Streptozotocin (STZ) was used to induce type 1 diabetic rat model. Animals were categorized into four groups: control, diabetic, diabetic+Iron, and diabetic+DFO. Hence, DFO was administered at a dose of 100 mg/kg S.C and iron was administered at a dose of 6 mg/kg P.O for eight weeks. At the end of the experiment, Y maze, passive avoidance paradigm and animals were randomly perfused and their hippocampus tissue was prepared for measurement of IL-6, ferritin using ELISA, and BDNF expression genes.

Results : Type 1 diabetes-related changes in hippocampal iron homeostasis included increased ferritin and oxidative stress. Brain-derived neurotropic factor deficits, inflammatory cytokines, and cognitive dysfunction were evident 8 weeks after the induction of diabetes

Conclusion : DFO treatment significantly subsided neuroinflammation and improved cognitive dysfunction caused by releasing of reactive oxygen species (ROS) and pro-inflammatory cytokines. Iron imbalance reveals a novel involvement in neuroinflammation caused by diabetes and cognitive decline. DFO treatment may regulate neuroinflammation process and oxidative stress initiation after type 1 diabetes induction.

Keywords : Cognitive dysfunction, Neuroinflammation, Iron, Type 1 diabetes

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 11
Abstract ID: 128
subject: Cognition: Learning and Memory
Presentation Type: Poster

Investigating the effect of internet as an external memory on the human brain

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2. Master of Isfahan university, Isfahan, Iran
3. PhD in Cognitive Neuroscience ,Institute for Cognitive Science Studies,Tehran,Iran

Background and Aim : Internet changes the lifestyle of human beings and effects on every moment of our lives. Emerging of Internet and technology alters saving data and information from papers to hardware devices and virtual clouds. It seems to be affected on external memory of human, therefore, in this research, participants are requested to answer the fundamental question: How important is using internet as external memory

Methods : 140 individuals participated (78 percent) in this research to be asked about using internet as external memory to enhance their functions, abilities, understanding, better feeling and their trust on memory

Results : . A large majority of participants reported that they confirm the Internet they use for memory purposes is changing their lives and impact on their external memories

Conclusion : The internet changes human's external memory by expanding data and information in virtual clouds and enhances their brain's functions, abilities, understanding and feelings.

Keywords : External Memory; Internet; Human brain; Neuroscience

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 12
Abstract ID: 118
subject: Cognition: Learning and Memory
Presentation Type: Oral

Maternal separation impacts on long-term synaptic potentiation

Submission Author: Khadijeh Esmaeilpour

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Background and Aim : Mother-infant interactions influence the development of physiology and behavior during the first weeks after birth. As an adverse early life experience, maternal separation (MS) produces behavioral and neuroendocrine functions disorders associated with the hippocampus. Considering the critical role of long-term potentiation (LTP) in learning and memory, we investigated whether MS affects LTP in adolescent rats.

Methods : In this study, rat pups were exposed to daily 3-h (MS180) or 15-min (MS15) periods of maternal separation on postnatal days (PND) 1–14 and control offspring remained with the dams all the time before weaning. Extracellular evoked field excitatory postsynaptic potentials (fEPSPs) were recorded in the stratum radiatum of the CA1 area of the slice at 28–35 days of age.

Results : Our results indicate that a significant difference existed in the magnitude of LTP between the control group and MS180 group, but the MS15 group was not different from control.

Conclusion : In conclusion, these findings suggest that MS may impair LTP induction in the CA1 area of the hippocampus in adolescent rats.

Keywords : Maternal separation, Learning and memory, Hippocampus, LTP

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 13
Abstract ID: 175
subject: Cognition: Learning and Memory
Presentation Type: Poster

Comparison of the effectiveness of sensory integration exercises and selected Spark Motor Program on students with dyscalculia

Submission Author: Leila Rastgar farajzadeh

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Background and Aim : Math learning disability refers to the disability of students who, despite having normal intelligence and natural conditions, have difficulty understanding math-related concepts and topics and are unable to perform well. The purpose of the current research was to compare the effectiveness of sensory integration exercises and selected Spark Motor Program on students with dyscalculia.

Methods : The research method was quasi-experimental with pretest, post-test and the control group. The statistical population included all students with dyscalculia referred to learning disability centers in Tabriz. A total of 45 students with dyscalculia in the age range of 7 to 11 years were selected by convenience sampling method and randomly assigned to two experimental groups and one control group (15 people in each group). The research instrument was the keymath Iran Mathematical Test. One experimental group was treated with sensory integration exercises and the other experimental group was treated with a selected Spark Motor Program, but the control group did not receive any intervention. The results were analyzed using SPSS software version 24 by analysis of covariance.

Results : The finding showed that in the experimental group with sensory integration exercises, students' scores in the post-test significantly increased compared to the pretest in the components of basic concepts and applications ($P < 0.05$). The difference between pretest and post-test scores in the operation component was not significant. The difference between pretest and post-test scores in the experimental group with the selected Spark Motor Program was not significant in any of the components.

Conclusion : It can be concluded that only the effectiveness of sensory integration training in the treatment of students with dyscalculia is confirmed.

Keywords : developmental dyscalculia, motor skills, students

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 14
Abstract ID: 172
subject: Cognition: Learning and Memory
Presentation Type: Oral

Effectiveness of Coronavirus Pandemic on Cognitive Ability Training Related to Fundamental Math Skills in Daily Mental Rehabilitation Centers Under 14

Submission Author: Abbas Ebrahimi kalan

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Background and Aim : With the worldwide prevalence of the Covid-19 pandemic and the resulting widespread changes in lifestyle and daily activities, the education of children, especially children with intellectual disabilities, has been affected by changes from face-to-face to virtual education courses. This study aimed to evaluate the effectiveness of coronavirus pandemic on cognitive ability training related to fundamental math skills in daily mental rehabilitation centers under 14.

Methods : The method of the present study is longitudinal studies of the trend and has been done quantitatively. The statistical population of this study was all rehabilitation centers in Tabriz. Of this number, 30 children in the age range of 5 to 14 years old were randomly selected and the scores of these children in the field of related cognitive abilities examined with fundamental math skills. The instrument used in this study was a mathematical assessment checklist available in rehabilitation centers across the country. The collected data were analyzed by SPSS software version 26 by analysis of variance with repeated measures.

Results : The findings showed that since the training of educational and rehabilitation services to these children in the summer and autumn of 2019 and winter of 2020 in a face-to-face course, with the prevalence of coronavirus and due to limited attendance at the center, in the spring and the summer of 2020, training is continued virtually. The scores obtained by these children after receiving rehabilitation services in the first three season and face-to-face training had a growing and ascending trend ($P<0.000$), but with the global outbreak of coronavirus, this trend has declined and, the scores are significant despite virtual education decreased ($P <0.000$).

Conclusion : Face-to-face training compared to virtual training is more effective in improving cognitive abilities related to children's fundamental math skills and, obviously with the continued spread and prevalence of coronavirus and the need to use virtual training should be reformed to increase the capabilities of teachers and parents in the field of virtual education and production of electronic content compatible to the specific needs of these children.

Keywords : Coronavirus, Mathematics, Cognition

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 15
Abstract ID: 180
subject: Cognition: Learning and Memory
Presentation Type: Poster

Intergenerational effects of maternal separation on cognitive abilities

Submission Author: Sara Joushi

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Background and Aim : Early life adversity (ELA) is a predisposing factor for the development of behavioral and emotional disorders later in life. In humans, primates and rodents, interruption in the mother–infant relationships, and disorganized maternal care negatively influence appropriate behavioral responses and may cause cognitive deficits. Epidemiological studies suggest that ELA-induced behavioral alterations can be transmitted across generations.

Methods : cognitive abilities of male and female rats in the second filial (F2) generations whose mother, father, or both of their parents were undergoing a 180 min/day maternal separation (MS) paradigm during infancy (postnatal day (PND) 1-21). Cognitive abilities (in the open field, Morris water maze, and social interaction task) of F2 pups were tested during adolescence.

Results : Although the mother-MS group of both sexes showed normal cognitive behavior, father-MS female pups showed more anxiety in the open field, and social interaction and spatial memory impaired in this group. These impairments were not pronounced in every detail in father-MS male pups. Moreover, rat pups that both parents experienced MS during infancy, showed normal cognitive behavior.

Conclusion : Our data support the idea that MS-induced cognitive impairments could be transmitted across generations. Considerably, the experiences of one's parents could be inherited in the following generation in a sex-dependent manner.

Keywords : adolescence, cognition, maternal separation, second generation

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 16
Abstract ID: 192
subject: Cognition: Learning and Memory
Presentation Type: Poster

Chrysin improves spatial cognitive and hippocampal long-term potentiation deficits in rat with traumatic brain injury

Submission Author: Masome Rashno

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Background and Aim : Subjects who suffer traumatic brain injuries (TBI) often develop learning and memory deficits. The present study was aimed to elucidate the putative effects of flavonoid chrysin against TBI-induced impairments in the cognitive and hippocampal synaptic plasticity of rats with TBI.
Methods : Diffuse TBI was induced in male Wistar rats by Marmarou's weight-drop technique. Chrysin (25, 50, or 100 mg/kg/day) was orally administered to animals immediately following TBI, and it was continued for 14 days.
Results : The animals subjected to TBI exhibited cognitive dysfunction in the Morris water maze (MWM) and hippocampal synaptic plasticity deficit in long-term potentiation (LTP) 14 days after TBI. Design-based histology displayed that the total number of neurons was decreased in the hippocampal rats with TBI at the 14th day. Additionally, blood–brain barrier (BBB) disruption was observed 3 days post TBI. Interestingly treatment with chrysin alleviated all the mentioned deficits related to TBI.
Conclusion : Together, the findings suggest that chrysin shows potential benefit for treatment of TBI patients.
Keywords : Traumatic brain injury, Chrysin, Cognition, Long term potentiation, Blood–brain barrier disruption.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 17
Abstract ID: 223
subject: Cognition: Learning and Memory
Presentation Type: Poster

Resveratrol Attenuates cognitive impairment of rats exposed to Arsenic

Submission Author: Zahra Taherizade

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Background and Aim : Arsenic (As) toxicity has deleterious effects on the human brain and health conditions that result in neurological impairment. The purpose of this study was to explore the possible neuroprotective effect of resveratrol (RSV) on Arsenic-induced neurotoxicity in rats.

Methods : arsenic neurotoxicity in rats was induced by treating 10 mg/kg/day dose for 21 days orally. Animals were divided into seven groups control, vehicle, As, As + RSV10, As + RSV20 mg/kg, RSV 10 and RSV 20 mg/kg. Behavioral factors such as social interaction test, novel object recognition test, elevated plus maze, open field, and Morris water maze were used to evaluate the effects of RSV on cognitive impairment induced by As.

Results : The results have suggested that cognitive impairment in As rats. RSV 20mg/kg significantly could attenuate behavioral changes like spatial learning, recognition learning and memory, disabilities in motor coordination, increased anxiety, and social interaction deficit induced by As.

Conclusion : Our data through behavioral tests have shown that RSV has neuroprotective effects against AS toxicity

Keywords : Key words: Arsenic, Resveratrol, learning and memory, anxiety, social interaction

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 18
Abstract ID: 224
subject: Cognition: Learning and Memory
Presentation Type: Poster

Ameliorative Effects of Different Transcranial Electrical Stimulation Paradigms on the Novel Object Recognition Task in a Rat Model of Alzheimer Disease

Submission Author: Amir Hossein Zarifkar

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Background and Aim : Treatment of Alzheimer as a disease that is associated with cognitive impairment has been associated with some restrictions. Recently, researchers have focused on non-pharmacological treatments, including non-invasive stimulation of the brain by transcranial electrical stimulation (tES). Four main paradigms of transcranial electrical current include transcranial direct current stimulation (tDCS), transcranial alternative current stimulation (tACS), transcranial random noise stimulation (tRNS), transcranial pulse current stimulation (tPCS). The tDCS is a possible new therapeutic option for patients with cognitive impairment, including Alzheimer disease.

Methods : The study was done on Sprague-Dawley male rats weighing 250-270 g. to develop Alzheimer's model, the cannula was implanted bilaterally into the hippocampus. Aβ 25-35 (5µg/ 2.5µl/day) was microinjected bilaterally for 4 days. Then, an electrical stimulation paradigm was applied to the animal for 6 days. Animal cognitive capacity was evaluated on day 11 and 12 by novel object recognition (NOR) test.

Results : Our results showed that application of tDCS; tACS; tRNS and tPCS reversed beta-amyloid-induced impairment ($P<0.05$). The tRNS Group spent total exploration time around the objects compared to other groups ($P<0.05$). There was no significant difference between the four different paradigms in discrimination ratio and the percentage of total exploration time.

Conclusion : The results of this study showed that the use of multiple sessions of different tES paradigms could improve Aβ-induced memory impairment in the NOR test. Therefore, based on evidence, it can be expected that in addition to using tDCS, other stimulatory paradigms may also be considered in the treatment of AD.

Keywords : Alzheimer Disease; Memory; Cognitive Impairment; Novel Object Recognition Test; tES

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 19
Abstract ID: 229
subject: Cognition: Learning and Memory
Presentation Type: Oral

Phospholipase Cβ3 in the hippocampus may mediate impairment of memory by long-term blockade of orexin 1 receptors assessed by the Morris water maze

Submission Author: Masoumeh Kourosh Arami

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Background and Aim : Orexin-A is an endogenous peptide with receptors throughout the brain. According to some recent research, learning and memory are affected by the central administration of orexin; however, no study so far has investigated the long-term inhibition of the orexinergic system.

Methods : The present study has evaluated the effect of pretraining administration of orexin 1 receptor (OXR1) antagonist, SB-334867, on the acquisition of memory. The Morris water maze (MWM) task was used for training and trial purposes in all groups. Memory performance was analyzed by measuring escape latency, traveled distance, and time spent in the target quadrant. Moreover, the effect of SB-334867 on phospholipase Cβ3 (PLCβ3) levels in the CA1 region of hippocampus slices was examined. Hippocampus slices were prepared using an immunohistochemistry (IHC) approach.

Results : SB-334867 (20 mg/kg) increased escape latency in SB-treated rats compared to SB-vehicle group ($P < 0.01$). SB-treated rats spent less time in the target quadrant compared to the SB-vehicle group ($P < 0.001$). Distance traveled in the target quadrant was significantly more in SB-treated rats compared to the SB-vehicle group ($P < 0.001$). Furthermore, SB-334867 decreased PLCβ3 levels in the CA1 of the hippocampus ($P < 0.01$ and $P < 0.05$, respectively).

Conclusion : Put together, our results suggest that the long-term inhibition of OXR1 plays a prominent role in spatial learning and memory, probably by attenuating PLCβ3 in CA1 neurons.

Keywords : CA1, Orexin, Phospholipase C, Spatial learning and memory

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 20
Abstract ID: 230
subject: Cognition: Learning and Memory
Presentation Type: Poster

Effects of prenatal and breastfeeding exposure to low dose of diethylhexyl phthalate (DEHP) on behavioral parameters and histopathology of hippocampus in rats.

Submission Author: Soheila Safarpour

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Background and Aim : DEHP is one of the most important metabolites of phthalate, which disrupts the endocrine glands and has devastating effects on the brain function of people who have been in contact with this substance. Since no study has been reported on the relationship between the possible neurotoxicity effects of DEHP at low doses and hippocampal changes; in this study, the effects of exposure with low doses of DEHP during pregnancy and infancy have been evaluated in rat's puppies.
Methods : DEHP was administered to mothers by gavage during pregnancy and lactation. Rats were divided into 6 groups which included the control group, solvent (corn oil), and DEHP receiving groups with doses of 5, 40 and 400 µg/kg and 300 mg/kg. Adult rats were then evaluated for some behavioral parameters using MWM and Y maze tests. The rat's puppies were then evaluated for assessing spatial and working memories using Morris water maze and Y maze tests, respectively. The histopathology of hippocampal tissue was assessed using hematoxylin-eosin and nissl staining. The level of oxidative stress and antioxidant activity were measured by TBARS and FRAP methods, respectively.
Results : Behavioral data showed that administration of DEHP at low doses during pregnancy and lactation reduces the spatial and working memories of male puppies. An increased level of MDA and reduced levels of TAC were also found in rats receiving low dose of DEHP. The inflammation levels and cell death increased in the CA1 region of hippocampus following administration of DEHP.
Conclusion : The result of present study suggest that exposure of mothers with low doses of DEHP during pregnancy and lactation could induce the behavioral deficits, especially in the male puppies. It seems the above-mentioned effects of DEHP are partly mediated by increasing oxidative stress and inflammatory process in the brain.
Keywords : Diethylhexyl phthalate; Behavioral impairments; Hippocampus; Oxidative stress; Inflammation

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 21
Abstract ID: 231
subject: Cognition: Learning and Memory
Presentation Type: Poster

Effect of Rosuvastatin sandwiching with chitosan nanoparticles in induced Alzheimer's Rat model

Submission Author: Armita Modiri

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Background and Aim : Alzheimer's disease is a progressive neurodegenerative disease characterized by several cognitive disorders. Studies showed that high levels of blood cholesterol is a risk factor for Alzheimer's disease. Clinical and bio molecular researches suggest that statins such as Rosuvastatin are cholesterol-lowering drugs which can reduce the symptoms of Alzheimer's disease. Since a large part of the global drug research is dedicated to the nanoparticles drug delivery system and the extent of drug penetration into the CNS, and furthermore estimation of drug efficacy in the CNS, consequently chitosan nanoparticles were utilized to evaluate drug access to the brain. The main purpose of this study was to investigate the effect of rosuvastatin coated with chitosan nanoparticles and uncoated on neuronal survival, improvement or lack of improvement of behavioral indexes following drug administration and the role of these treatments in the treatment groups on DCX, Calbindin-D and NeuroD1 gene expression as neuronal markers differentiating primary neuronal cells from hippocampus neurons in Alzheimer's induced models in rats.

Methods : After induction of Alzheimer's by beta amyloid injection in the CA1 zone of hippocampus with the dosage of 2µ L and confirming the induction of models with Morris Water maze behavioral test, the rats were divided into 5 groups: Healthy control group, Untreated Alzheimer's induced group, Alzheimer's induced group treated with chitosan nanoparticles with the dosage of 200mg/kg , Alzheimer's induced group treated with rosuvastatin with the dosage of 20 mg/kg and Alzheimer's induced group treated with rosuvastatin combined with chitosan nanoparticles. The administration of the drugs was continued for 30 days orally, then the models were euthanized in order to perform pathohistological test with H&E staining, neuron survival evaluation with Chrysel-Violet staining and molecular analysis of gene expression by RT-PCR.

Results : The results showed that administration of rosuvastatin alone and in combination with chitosan nanoparticles has led to an increase in cognitive functions in behavioral studies. Histopathological analysis showed that the accumulation of microglia was decreased in the groups which received rosuvastatin alone and in combination with chitosan nanoparticles,

tissue cohesion was also increased. Chrysel-Violet staining results showed that the number of apoptotic neurons in the hippocampal sections in the rosuvastatin-chitosan nanoparticle treated group was significantly reduced ($p < 0.05$). Also, the expression of Calbindin and NeuroD1 genes showed an increase in the group treated with rosuvastatin-chitosan nanoparticles compared to the Alzheimer's induced group, but was not significant ($p > 0.05$), whereas DCX gene expression was significantly increased ($p < 0.05$).

Conclusion : This study showed that this combination, if successful in preclinical tests and clinical trials, can be a suitable candidate along with other effective drugs in the treatment or prevention of Alzheimer's.

Keywords : Alzheimer’s disease; β- Amyloid Protein; Rosuvastatin; Nanoparticles; Chitosan

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 22
Abstract ID: 235
subject: Cognition: Learning and Memory
Presentation Type: Poster

Validity and reliability of word pairs task for declarative memory assessment

Submission Author: Maryam Malekian

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Background and Aim : According to the declarative/procedural model, the semantic aspect of language depends on the brain structures responsible for declarative memory. The word pairs task is a common tool for evaluating declarative memory. The current study aimed to design a valid and reliable task for evaluating declarative memory in Persian children at learning and retention stages and to investigate its relationship with the semantic aspect of language.

Methods : A panel of experts agreed on the content validity of the proposed task. The reliability of the task was determined using internal consistency and test-retest reliability. A total of 31 typically developing children aged 7-9 years of age participated in this study.

Results : The content validity of all the 42 word pairs calculated as one. The test-retest reliability showed a correlation coefficient of .825 ($P < 0.001$). The task showed acceptable internal consistency (Cronbach's alpha 0.880). The results of correlation analysis showed no significant relationship between declarative memory and semantic aspect. The regression analysis, however, showed that the retention stage could explain 24.2% of the variation of semantic aspect.

Conclusion : It seems that the word pairs task has good validity and reliability for evaluating declarative memory. The task applied to evaluate the semantic aspect can be one of the potential causes for the lack of a relationship between semantic aspect and declarative memory. The participant score in the retention stage can be predicted concerning his/her performance at the semantic aspect.

Keywords : Keywords: Declarative memory, Word pairs task, Semantic, Content validity

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 23
Abstract ID: 247
subject: Cognition: Learning and Memory
Presentation Type: Poster

The Effects of mental exercise and Nepeta menthoides on hippocampal neuron loss associated with reserpine induced depression in male rats

Submission Author: Maryam Malakian

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Background and Aim : Many studies demonstrate that cognitive empowerment reduces the risk of neurodegeneration associated with various mental disorders including depression. Anti-depressant properties of Nepeta menthoides have also been reported. This study aims to determine and compare the effects of mental exercise and Nepeta menthoides on hippocampal neuron loss associated with reserpine induced depression in male rats.

Methods : Male rats were divided into 8 groups: 1-Saline, 2-Reserpine, 3-Reserpine + Fluoxetine, 4-Nepeta, 5-Nepeta +Reserpine, 6-Mental exercise, 7-Mental exercise+ Reserpine, 8-Mental exercise + Nepeta + Reserpine. Reserpine was administered at a dose of 0.2 mg/kg, i.p for 14 days. At the same time, the animals received Nepeta at the dose of 200 mg/kg and radial maze training. After the trial, their brains were fixated to go through nissl staining and then the neurons were counted in the CA1 region of the hippocampus.

Results : Obtained data demonstrated that reserpine significantly reduced the number of neurons in the CA1 region of hippocampus compared to the healthy rats who received either Nepeta or radial maze training. Nepeta or mental exercise were not able to recover the lost number of neurons in depressed rats , however, the combined treatment of Nepeta and mental exercise was successful in significantly increasing the number of neurons in depressed rats.

Conclusion : Nepeta or mental exercise alone were not enough to completely make up for the damage induced by reserpine, but a combination of them proved statistically efficient in recovering the lost number of neurons in depressed rats.

Keywords : Neurodegeneration; depression; mental exercise; Nepeta Menthoides; reserpine

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 24
Abstract ID: 283
subject: Cognition: Learning and Memory
Presentation Type: Poster

Effect of postnatal environmental enrichment on LTP induction in the CA1 area of hiEffect of postnatal environmental enrichment on LTP inductioppocampus of prenatally traffic noise-stressed female rat

Submission Author: Fatemeh Aghighi

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Background and Aim : Early-life stress negatively alters mammalian brain programming. Environmental enrichment has beneficial effects on brain structure and function. This study aimed to evaluate effect of postnatal environmental enrichment on LTP induction in the CA1 area of hippocampus of prenatally stressed female rats

Methods : The pregnant Wistar rats were housed in standard animal room or exposed to traffic noise stress 2 hours/day during the third trimester of pregnancy. Their female offspring raised either normally (CO and ST groups) or introduced to environmental enrichment (EE) postweaning for one month (CE and SE groups). Basic field excitatory post-synaptic potentials (fEPSPs) were recorded in the CA1 area of hippocampus and, then, long-term potentiation (LTP) was induced by high-frequency stimulation. The serum levels of corticosterone were measured finally

Results : Our results showed that while the prenatal noise stress decreased the baseline responses of the ST rats in comparison to the control ones ($P<0.001$), the postnatal EE increased fEPSPs of both the CO and ST animals. Also, HFS induced LTP in the fEPSPs of the CO rats ($P<0.001$) and failed to induce LTP in the fEPSPs of the ST animals. The enriched condition caused more potentiation of post-HFS responses in the controls ($P<0.001$) and restored disrupted synaptic plasticity in the CA1 area of the prenatally stressed rats. Besides, the postnatal EE decreased elevated serum corticosterone of prenatally stressed offspring ($P<0.001$).

Conclusion : In conclusion, the postnatal environmental enrichment restores prenatal stress-induced ameliorated basic synaptic transmission and LTP induction in the CA1 area circuits of rats' female offspring

Keywords : Environmental enrichment, Prenatal stress, Synaptic plasticity, Rats

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 25
Abstract ID: 308
subject: Cognition: Learning and Memory
Presentation Type: Poster

Effects of exposure to extremely low frequency electromagnetic fields on spatial and passive avoidance learning and memory, anxiety-like behavior and oxidative stress in male rats

Submission Author: Seyed Asaad Karimi

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Background and Aim : There are many controversies about the safety of extremely low-frequency electromagnetic field (ELF-EMF) on body health and cognitive performance. In the present study, we explored the effects of ELF-EMF on oxidative stress and behaviors of rats.

Methods : Seventy-two adult male Wistar rats were randomly divided into following groups, control, sham exposure group and the ELF-EMF exposure groups (1 µT, 100 µT, 500 µT, and 2000 µT). After 60 days exposure (2 h/day), elevated plus maze (EPM), Morris water maze (MWM) and Passive avoidance learning (PAL) tasks were used to evaluate the anxiety-like behavior, spatial and passive learning and memory, respectively. Some days after behavioral examination, oxidative stress markers were measured.

Results : During spatial reference memory test, animals in ELF-EMF exposure groups (100, and 2000 µT) spent more time in target zone ($F(4, 55) = 5.699$, $P = 0.0007$, One-way ANOVA). In PAL retention, the step through latency in the retention test (STLr) in ELF-EMF exposure groups (100,500, and 2000 µT) was significantly greater than control group ($F(4, 55) = 29.13$, $P<0.0001$, One-way ANOVA). In EPM test, ELF-EMF exposure (500 and 2000 µT) decreased the percentage of the entries into the open arms ($F(4, 55) = 26.31$, $P < 0.0001$, one-way ANOVA). ELF-EMF exposure (100, and 500 µT) increased Malondialdehyde (MDA) concentration ($F(4, 25) = 79.83$, $P < 0.0001$, One-way ANOVA).

Conclusion : Our results may allow the conclusion that exposure to ELF-EMFs can improve memory retention (but not acquisition) in the adult male rats. Although exposure to ELF-EMFs could be a factor in the development of anxious state or oxidative stress.

Keywords : Electromagnetic field, learning and memory, Oxidative stress, Wistar rats

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 26
Abstract ID: 333
subject: Cognition: Learning and Memory
Presentation Type: Poster

Effects of adolescent morphine exposure on short- and long-term memory in adult rats

Submission Author: Fatemeh Khani

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Background and Aim : Adolescence is an important period for shaping learning and memory acquisition that could be particularly sensitive to the detrimental effects of drug abuse. Converging clinical and epidemiological studies report a peak of drug use during adolescence, leading to the hypothesis that the developing adolescent brain is at risk to lose control over drug intake. In the current study, we utilized an animal model to examine the consequences of morphine exposure during this period on short- and long-term memory in adult rats.
Methods : Male Wistar rats were exposed to increasing doses of morphine or its vehicle twice daily during adolescent development for 10 consecutive days (postnatal days 30–40), after which they remained drug free. At 60 days of age, all rats were tested for locomotor responses in an open field, long-term memory by passive avoidance test and working memory by Y-maze.
Results : The results showed that chronic administration of morphine during adolescence had no effect on the time the rats spent in the center of open field and distance the rats covered. In the passive avoidance test, morphine treated animals had a decreased step-through latency (SLT) compared to the saline-treated ones. In the Y-maze test, morphine-treated animals showed a decrease in spontaneous alternation (%) compared to the saline-treated group but this decrease was not statistically significant.
Conclusion : The results of the study show that adolescent morphine exposure can impair learning and memory in the passive avoidance test. The findings indicate that prior opiate exposure during adolescence produces alterations in both emotionality and cognitive performance. It could be concluded that morphine challenge during adolescence may induce long-term changes in the cognitive function through persistent neuroadaptations in the brain.
Keywords : Adolescence; Morphine; Short- and long-term memory; Rat

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 27
Abstract ID: 276
subject: Cognition: Working Memory
Presentation Type: Poster

Cognitive Computer Games and Working memory of the students with Learning Problems in Mathematics Abstract

Submission Author: Khadijeh Hosseinkhani

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Background and Aim : Intro: Numerous studies show that the students with learning problems have difficulty in the working memory, which might be one of contributing reasons for the low performance of the students in mathematics.

Methods : The aim of this study was to investigate the effectiveness of computer cognitive games (Maghzineh) on working memory of students with math learning difficulties. The research method was quasi-experimental and the sample was chosen among fourth grade elementary school students, who were referred to the center for their math learning problems in the city of Tehran. 30 participants were randomly assigned to two groups of experimental and control. The experiment group had 10 sessions of playing with cognitive game sessions and both groups answered to the fourth version of Wechsler memory subscale. The obtained data was analyzed using Multiple Analysis of Covariance (MANCOVA).

Results : Findings showed that cognitive computer games (Maghzineh) had a significant effect on working memory of students with math learning problems (P<0/05).

Conclusion : As the result, these cognitive games can be used to improve the working memory of students with mathematic learning problems.

Keywords : computer cognitive games, working memory, mathematics learning problems.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 28
Abstract ID: 51
subject: Cognition: Working Memory
Presentation Type: Poster

Correlation between stuttering severity and working memory in preschool children who stutter

Submission Author: Banafshe Mansuri

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Background and Aim : In the field of stuttering, recent attention has focused on the role of working memory involvement in this disorder. Previous research has suggested that children who stutter may have less working memory ability than fluent children. However the result of various studies is different. Nonword repetition has emerged as a more sensitive measure of working memory ability in almost previous studies. The purpose of this study was to explore possible relationships between measures of working memory and stuttering severity.

Methods : This is a cross-sectional analytic study. 20 children between the ages of 4 and 5 with various stuttering severity (without stuttering, mild, moderate, severe) participated in this study. The nonword repetition test was used to assess working memory and reaction time (RT), correct nonwords and fluent nonwords was collecting from it. Statistical analysis was performed by using SPSS software.

Results : The results of data analysis showed that there is a positive relationship between stuttering severity and reaction times of nonwords, furthermore between stuttering severity and fluency aspect, phonological aspects of nonwords there is a negative relationship. Children without stuttering in almost all tasks perform better than those children, also, children with severe stuttering severity showed weaker performance than others.

Conclusion : The results of the present study suggested that working memory ability of children who stutter in various severities may be different. Furthermore children with higher stuttering severity have less ability in working memory tasks.

Keywords : Stuttering; working memory; stuttering severity.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 29
Abstract ID: 280
subject: Cognition: Working Memory
Presentation Type: Poster

Working memory in patients with Parkinson: a review study

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Background and Aim : One of the cognitive executive functions in Parkinson's disease that researchers are considering is working memory. Given the role that working memory can play in people's lives, it is important to pay attention to it. Therefore, the present study provides an overview of studies that have been done in the field of working memory and Parkinson's.

Methods : The present study reviewed studies on working memory and Parkinson's.

Results : Various topics that have been researched and discussed in this field so far, including: Neuroanatomical defects in Parkinson's and its relationship with working memory, Linguistic defects observed in Parkinson's and related to working memory The relationship between dopaminergic status and working memory is the relationship between patients' motor status and working memory function and therapies used to improve working memory in patients with Parkinson's disease.

Conclusion : Given that cognitive impairments such as working memory along with motor problems have a negative impact on the lives of patients with Parkinson's and affect their daily functioning, it seems that a more detailed study of these problems and efforts to rehabilitate them can Play an important role in the treatment management of patients with Parkinson's.

Keywords : Parkinson's disease, working memory, cognition

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 30
Abstract ID: 244
subject: Cognition: Working Memory
Presentation Type: Poster

Acute sleep deprivation improves working memory in rat model of myocardial infarction

Submission Author: Hoda Parsa

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Background and Aim : Sleep is highly conserved across evolution, suggesting vital biological functions. Sleep deprivation is an ordinary aspect in the global society and its prevalence is increasing. Chronic and acute sleep deprivation (ASD) have been linked to heart diseases as well as cognition. AS GABAergic system of central nucleus of amygdala (CeA) play roles in sleep regulation as well as cardiovascular function, in this study the role of this system in post-infarct acute sleep deprivation effect on working memory was evaluated.

Methods : In this study twenty-eight male wistar rats were cannulated in the CeA of the amygdala and after one-week recovery, they underwent myocardial infarction by permanent ligation of left anterior descending coronary artery (LAD). 72 hours after surgery, saline or bicuculline a GABA-A antagonist (0.1 nmol/0.5 µl in volume of 0.5 µl same at each side) was injected bilaterally, then rats were divided into four groups (n=7): Control (MI+ASD+saline), BIC (MI+Bicuculline), Sham (MI+saline), Sleep deprived (MI+ASD+Bicuculline). Acute sleep deprivation was induced using flower plot for 24 hours (for sham and BIC plots were replaced by bigger ones). Then, the Y-maze was used to assess working memory calculating as number of correct alterations/number of total arm entries.

Results : The percentage of correct alternations in BIC group was decreased in compared with Sham group ($p<0.01$) and in control group was increased in compare with sleep deprived group ($p<0.05$).

Conclusion : GABAergic system modulate sleep. Working memory -refers to a brain system that provides temporary storage and manipulation of the information necessary for such complex cognitive tasks as language comprehension and learning- is impaired after Bicuculline injection.

Keywords : Acute sleep deprivation; Amygdala; Bicuculline; Myocardial infarction; Working memory

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Iran University of Medical Sciences

BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 31
Abstract ID: 267
subject: Cognition: Working Memory
Presentation Type: Poster

Effects of extremely low frequency magnetic field on spatial memory of adult male rats

Submission Author: Farzaneh Zarrin

Farzaneh Zarrin

Background and Aim : As the widespread use of electric devices in modern life, human are exposed to extremely low frequency magnetic fields (ELF-MF) much more frequently than ever. Extremely low frequency electromagnetic field (ELF-EMF) is generated mostly by electric equipment, such as high voltage transmission lines, transformer substations, motors, and household appliances, with a frequency ranging from 0 to 300 Hz. These magnetic fields can induce several bioeffects. These present study aimed to evaluated the effects of extremely low frequency magnetic field (10 Hz) on spatial memory of adult rats. Based on EEG knowledge, in range of alpha brain waves (8-12 Hz) memory formed and attention is in high level.

Methods : 32 wistar male rats weighing 200-250 g were used in this study. All animals were kept in a 12 hours:12 hours day-night schedule (lights on at 7:00 am) under standard laboratory conditions (temperature: 23ºC; relative humidity: 40%–50%). Rats were devided in 4 groups (8 animals/group) based on exposure duration days: long exposure (30 days, 1 hour/day) and short exposure (7 days, 1 hour/day): group 1 (sham-exposed 7 days), group 2 (exposed for 7 days), group 3 (sham-exposed 30 days), group 4 (exposed for 30 days). All the rats were training and examined after 1 hour/day exposure with Morris Water Maze (MWM). MWM protocol was 4 days training and in 5th day was the probe test. MWM process were in the same time with exposure days

Results : Results showed significant impairment in cognitive function and spatial memory for group in short exposure, and in the other side spatial memory improved in long exposure

Conclusion : On the base of past studies in effects of ELF-MF on blood levels of growth factors and followed by increased the level of cytokines, then neuroplasticity appeared, we can claim that ELF-MF (10Hz) had accelerate neuroplasticity and the connections of neurons with each other for memory formed.

Keywords : memory; spatial memory; hippocampus; electromagnetic waves; ELF; MWM

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 32
Abstract ID: 271
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Comparison of executive functions in adolescents with non-suicidal self-injury (NSSI) and normal counterparts

Submission Author: Nazir Mozafari

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Background and Aim : Non-suicidal self-injury (NSSI) is one of the serious public concerns. There are several hypotheses and reasons for NSSI. The aim of this study was to investigate the differences between two groups of adolescents with NSSI and normal counterparts in executive functions.

Methods : In this cross-sectional comparative causal study, 47 adolescents (girls and boys) having NSSI and 72 normal adolescents were compared. They performed Bart balloon computer tasks (to measure high-risk decision-making), Wisconsin cards (to measure cognitive flexibility).

Results : Participants who reported NSSI, had higher scores on risky decision making and lower scores on cognitive flexibility than participants without a history of NSSI.

Conclusion : The results support the concept that there is a significant difference between two groups of adolescents with NSSI and normal counterparts in executive functions. The data can also be used to educate, prevent and treat adolescents with NSSI and to promote public health policies.

Keywords : Adolescence, executive functions, non-suicidal self-injury.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 33
Abstract ID: 30
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

The Effect of Rehacom Cognitive Rehabilitation Software on Problem Solving Skills in Adolescent Boys with Low Life Skills

Submission Author: Behnam Ghabel Damirchi

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Background and Aim : The present study aimed at investigating the effect of Rehacom Cognitive Rehabilitation Software on problem-solving skills in adolescent boys with low life skills.

Methods : The current study was quasi-experimental with pretest-posttest design with a control group. Using available sampling, 40 adolescent boys with low life skills referred to support centers with an average age of 17.86 (14 to 20 years) were selected and randomly divided into two equal groups of experimental and control one. The duration of the cognitive rehabilitation sessions was 12 weeks (two sessions per week for an hour). To measure life skills, the ten life skills questionnaire has been applied, and the London Tower test has been used to measure problem-solving skills. The collected data has been analyzed by means of a covariance test.

Results : The results of the study revealed Rehacom Cognitive Rehabilitation Software has improved the problem-solving performance and its 3 components (problem-solving time, trial time, and problem error) in adolescent boys in the experimental group compared to the control group so that it improves problem-solving performance and reduces test time and the number of problem-solving errors. However, cognitive rehabilitation did not affect the time delay component ($p<0.05$).

Conclusion : Overall, these results indicate that cognitive rehabilitation has an effect on all problem-solving components except the problem-solving time delay. Also, comparing the size of the calculated effects of the components represents that cognitive rehabilitation had a greater effect on the components of the number of errors and time than the time of problem-solving.

Keywords : Cognitive Rehabilitation, Rehacom, Problem Solving, Life Skills.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 34
Abstract ID: 31
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Brain areas involved in the processing and perception of time in humans

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Background and Aim : Time perception is how someone perceives time, which is not necessarily the same as what clocks show. It can be either the ability of someone to estimate time intervals between two consecutive events, recognizing a stimulus duration, or even learning a rhythmic movement. It plays a crucial role in our daily activities, like moving, word spelling, natural body rhythms, and sensory information processing. Due to the alteration of time perception in neurological diseases, understanding the mechanisms and structures of the brain involved in this process can be of great help to analyze disease pathologies. This study aims to investigate the brain areas involved in the processing and perception of time in humans.

Methods : A comprehensive search on PubMed, Google Scholar, and Science direct was performed by keywords including perception, time, time perception, time estimation, neural basis, fMRI, and brain structure. Articles through 2000-2020 were extracted in order to consider in the current study.

Results : Various studies show the activity of different parts of the brain in the processing of time, which mainly includes the basal ganglia, cerebellum, and cerebral cortex. Impaired time perception in patients with Parkinson's disease supports the idea about the involvement of the basal ganglia and dopaminergic system in this process. This relation is demonstrated in increases of BOLD-contrast functional magnetic resonance (fMRI) in basal ganglia signals during individual's time processing . In some studies, the cerebellum is suggested to be involved in time perception due to its role in learning rhythmic movement, like finger tapping with a constant time interval. Injuries of the medial part of the cerebellum increase errors in the timing of rhythmic movements. Studies of stroke patients have indicated the role of the right parietal cortex in time perception. Positron emission tomography (PET) imaging research showed increased activity in the frontoparietal network and prefrontal cortex in time perception tasks.

Conclusion : It has been the subject of debate whether time perception results from the activation of an area solely or the cooperation of different parts of individuals' brains. Evaluation of brain function during complex and multimodal stimuli is suggested for future studies to provide more information about each brain part activation in the time estimation process.

Keywords : Time perception; time processing; neural basis; fMRI; time estimation

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 35
Abstract ID: 62
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Investigating The role of cognitive systems in moral judgments according to social intuitionism and dual process theory

Submission Author: Laaya Rezaeian

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Background and Aim : Emotionally demanding decision-making situations, with conflicting utilitarian and deontological consideration, would make moral dilemmas the most challenging decision-making scenarios. According to dual-process theory, the fast intuitive and slow rational systems contribute to decision makings. But the extent that each system imparts in making judgments remains unknown. As social intuitionism theory considers the role of deliberation just in post-hoc justifications. In the present study, we hypothesized that usually slow thinking is preceded by fast intuitive thinking unless the individuals are asked to provide reasons when making judgments.

Methods : sample of 57 (female= 30, age (19-27), undergraduate students at Fasa University of Medical Sciences) participates voluntarily in the study. Participants were randomly assigned to two groups. and were presented with six classic scenarios representing moral and reasoning dilemmas and were ask to judge the righteous of the action. Groups were different in concurrency of judgment and providing explanations, as group one, were asked to simultaneously judge actions and provide explanations; but group two weren't informed the need for explaining. Then participants in either group were asked about their subjective inference of the judgments. Next, they had the chance to revise decisions. After this, all participants were asked to provide demographic data, and answers to Beck's Depression Inventory, and Yale-Brown Obsessive-Compulsive Scale.

Results : The results indicate that the initial judgments were not affected by the grouping, and insufficient (p=0.06) to show group one tends more to revise their judgments. Also, revisions mostly happen in those scenarios subjects regards themselves emotional. Subjective inferences of judgments show a positive association of confident with being rational, and satisfaction, challenging with being annoyed and emotional. Female individuals tend more to revise but other variables such as obsession, and depression didn't affect the judgments.

Conclusion : The study had limitations due to small sample size and lack of normalization. We didn't significantly show that the need for writing explanation would effectively induce the utilization of system two.

Keywords : Dual process theory; moral judgment; intuitive decision making; behavioral task

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 36
Abstract ID: 109
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Comparison of the Effectiveness of Unilateral and Bilateral Dorsolateral Prefrontal Cortex repetitive Transcranial Magnetic Stimulation on Cognitive Flexibility of Female Patients with Depression

Submission Author: Fatemeh Asgharian asl

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Background and Aim : Although repetitive Transcranial Magnetic Stimulation (rTMS) is a novel, safe and non-invasive therapeutic tool for neuropsychiatric disorders such as depression, the efficiency of different protocols of the mentioned intervention on cognitive functions like cognitive flexibility is not completely clear. Neuroimaging studies have described the correlation of low function of the left dorsolateral prefrontal cortex (l-DLPFC) and high function of right DLPFC(r-DLPFC) with depression. Thus, the purpose of the present study was to compare the effectiveness of unilateral and bilateral DLPFC stimulation on cognitive flexibility in depressive disorder.
Methods : Forty-five female patients were recruited (25 to 45 years old) and they were randomly divided into 3 groups: unilateral, bilateral, and sham. The unilateral group received stimulation of l-DLPFC and the bilateral group received stimulation of l-DLPFC, followed by r-DLPFC inhibition. To measure cognitive flexibility Wisconsin task has been applied, which was performed before and after 15 sessions of intervention. The collected data has been analyzed by means of MANOVA.
Results : The results of the study revealed a significant increment in percent of categories completed/experienced and correct responses and a significant reduction of total errors and non-perseverative errors of Wisconsin task after 15 sessions of unilateral and bilateral stimulation compared to the sham group($p<0.05$).
Conclusion : To sum up, unilateral and bilateral rTMS on DLPFC was effectively associated with improvement in cognitive flexibility, considering that a significant difference was not observed between the mentioned groups. Nevertheless, more controlled studies will be necessary to specify the long-lasting effects of rTMS.
Keywords : repetitive Transcranial Magnetic Stimulation (rTMS); DLPFC; Cognitive Flexibility; Depressive Disorder

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 37
Abstract ID: 349
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Investigation of the effect of NRG1 and Neuroligin on executive functions of Autism spectrum disorder

Submission Author: Rojina Aliabadian

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Background and Aim : Autism spectrum disorder (ASD) is a complex psychiatric disorder which characterized by social and communication deficits, language chromosome 8 are candidate genes in neuropsychiatric disorders. Although autism can be diagnosed at any age, it is said to be a “developmental disorder” because symptoms generally appear in the first two years of life. people with ASD have: • Difficulty with communication and interaction with other people Autism is known as a “spectrum” disorder because there is wide variation in the type and severity of symptoms Although ASD can be a lifelong disorder, treatments and services can improve a person’s symptoms and ability to function ASD can usually be reliably diagnosed by the age of two. • This paper reports the findings of working on autistic children and their improvements in executive functions with using Delis Kaplan executive function system (DKEFS). • Delis Kaplan executive function system (DKEFS) is a neuropsychological test for executive functions and consists of nine kinds of tests with scoring. • The NRG1 gene has at least 31 isoforms in mammal, which can be grouped into six types of proteins with different structures and distinct functional characteristics. NRG1 types are involved in modulation of neuronal migration, synaptogenesis, glycogenesis, dendritic growth, neuron-glia communication, myelination and neurotransmission. Types I, II and III of NRG1 express in human peripheral blood and types IV and V are brain specific • Neuroligin (NLGN) is a type of membrane protein. Neuroligin is a kind of ligand for B-Neurexin . The importance of neuroligin is for synaptic functions and plays a role in adhesion molecule.

Methods : In this study we used around 1000 autistic patients and 1000 normal case to compare these two groups and understand the differences between expressions of their genes. • At first step we used psychological test and for next step we used Electroencephalography (EEG) then we got blood test of them then we extract RNA and after that we made CDNA and we used real time PCR to study of Neuroligin (NLGN). • After these steps we used DKEFS as a treatment for autistic children for 6 month. • After six month we repeated the blood test and other steps again and we compared the results with normal cases.

Results : Significant deficiencies in executive functions (ef) were found in ASD patients. ef deficiencies were significantly correlated to NLGN and NRG1

Conclusion : This is the study of NLGN and NRXN role in ASD. We studied NRG1 and NlGN expressions as a biomarker for ASD which also play role in executive function deficiencies. we guess that DKEFS can improve executive functions in ASD patients and The different expression in these genes between pretest and posttest can show that our treatment can affect on improving executive functions in autistic children

Keywords : Autism spectrum disorder, NLGN, NRG1, DKEFS, executive functions

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 38
Abstract ID: 344
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

FOXP2 down regulation is associated with executive dysfunctions and electrophysiological abnormalities of brain in Autism spectrum disorder; a neuroimaging genetic study

Submission Author: Arvin Haghighatfard

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Background and Aim : Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by communication and language problem, and repetitive/ritualistic behaviors. Although genetic is known as the primary cause of ASD, exact genes and molecular mechanisms involved in pathogenesis of the disorder are not completely clarify. Executive and cognitive dysfunctions are common in ASDs. FOXP2 gene is encodes a transcription factor which is known by its main role in language development and sever speech problems.
Methods : In the present study 450 unrelated ASD children and 490 unrelated non-psychiatric children were recruited. Three domains of executive functions (working memory, response inhibition and vigilance) assessed. Also five minute eyes closed electroencephalography obtained from some of ASDs and normal children. DNA sequence and expression level of FOXP2 were assessed in blood samples of ASDs and normal subjects by using sequencing and Real time PCR respectively.
Results : The results showed no mutations but significant down expression of FOXP2 genes in ASDs vs. normal children. Several cognitive and executive functions deficiency detected in ASDs. Low alpha and gamma band in frontal lobe and high theta band in occipital lobe were found in ASDs. Number of correlations between FOXP2 expression level and clinical assessments were found.
Conclusion : Findings, revealed down expression of FOXP2 could be considered as biomarker for ASD etiology as well as cognitive and executive dysfunction of ASD children. Also brain mapping showed the FOXP2 could be related to theta wave abnormality of ASDs. Novel treatment to improve the memory and executive functions may consider the FOXP2 as target.
Keywords : Autism, Executive Function, Electroencephalography, FOXP2, sequencing, gene expression

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 39
Abstract ID: 341
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Optimization of the tDCS induced electric field for targeting executive control network

Submission Author: Sasan Keshavarz

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Background and Aim : Transcranial direct current stimulation (tDCS) is a non-invasive method for neuromodulation. In recent tDCS studies, researchers have focused on the stimulation of a single target area of the brain, and few studies have been performed on the stimulation of brain networks. This study specifically aims to find an optimal arrangement of electrodes that can specifically target the executive control network (ECN) and minimize the intensity of the electric field (EF) in non-targeted brain regions. Computational head models (CHMs) can help us to simulate EF distribution patterns for a given electrode montage and allow us to optimize induced EFs in targeted brain regions.

Methods : A high-resolution T1 weighted MR image was used for creating a realistic CHM in the SimNIBS 3.2 software. EFs in 5 segmented brain tissues were calculated using the finite element method. The topology of the ECN obtained from Yeo7 -2011 atlas was considered as a target for brain stimulation and optimal electrode arrangement was determined for targeting the ECN. The total (8 mA) and pair electrode (2 mA) current limits with 8 active electrodes were included. Active electrodes were selected from EEG 10-10 electrode positioning system. LASSO iterative optimization algorithm was used to optimize EF intensity inside the ECN. The output of this optimization was the location and current density of the active electrodes. We compared EF intensity in the ECN obtained from our suggested electrode arrangements with two commonly used electrode montages for targeting ECN; 1) conventional electrode montage with anode/cathode over F3/F4 location in EEG standard system, 2) high definition (HD) electrode montage with the anode (over F3) surrounded by 4 four circular electrodes.

Results : Our results showed that, compared to the HD and conventional montages, the optimal electrode arrangements for targeting ECN induced higher EF intensity in all of the 14 ECN sub-networks. All of the subnetworks were obtained from standard Schaefer atlas. EF intensity in the prefrontal parts (PFC) as the main node of the ECN, which is commonly targeted in brain stimulation studies, increased about three times. Compared to the HD montage that only stimulates the PFC, parietal parts of the ECN were also stimulated that can help to stimulate frontoparietal connectivity and hopefully enhance behavioral outcomes. Additionally, EF intensity in non-targets brain regions was decreased.

Conclusion : This study generally demonstrates a methodology for optimally targeting brain networks using large-scale brain network atlas and specifically provides evidence for comparing optimal montage with commonly used electrode arrangements to target ECN. The method presented in this study can be used to design electrode arrangements for a group of participants. Hopefully, it is expected that targeting brain networks, rather than a specific anatomical region, will help improve cognitive functions induced by tDCS.

Keywords : tDCS ; Computational head model ; Large scale brain networks ; Optimization of electrode arrangement

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 40
Abstract ID: 255
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Effectiveness of Cognitive Games on Risky Decision making in Children with Externalizing Behavioral Disorders

Submission Author: Mahshid Ojani

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Background and Aim : Children with behavioral disorders make risky decisions which sometimes result in abnormal or criminal behaviors and can cause vast costs to the family and the society.

Methods : For this purpose, a quasi-experimental research with pretest-posttest design with a control group was conducted. 20 children with externalizing disorders were selected and assigned randomly to experimental (10) and control (10) groups. These children were screened by Children's Behavioral Checklist and those who had high scores in externalizing disorders had been selected. The experimental group was trained with cognitive computer games (Maghzineh) for 20 sessions individually for a month. Risky decision making was analyzed using BAR, Balloon Analogue Risk Task (BART) Lejoez (2002). The obtained data was analyzed using Analysis of Covariance.

Results : The findings showed that there was a significant difference between the experimental and the control group in risky decision making in the participating students with externalizing disorders.

Conclusion : Finally, the study indicated that cognitive games can be used for improving risky decision making of the students with externalizing disorders.

Keywords : cognitive games, risky decision making, externalizing disorders.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 41
Abstract ID: 287
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Cognitive-emotional Training Program on the Inhibition of Adolescents with Behavioral Disorders in Tehran Correctional Center

Submission Author: Leila Kashani Vahid

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Background and Aim : Inhibition is one of the most important skills that every child and adolescent and every human being in general needs for a calm individual and social life, and this is even more important for children and adolescents with behavioral disorders, and especially Its importance is doubled for juvenile delinquency. The Aim of this study was to investigate the effect of cognitive-emotional education program on inhibition of adolescents with behavioral disorders in Tehran Correctional Center.

Methods : The Method of this quasi-experimental research design was performed with two experimental and control groups in pre-test and post-test Stages. The Rutter Behavioral Disorders Questionnaire was used to select the statistical population and those who had a score above 13 entered the group the statistical population of the study included adolescents who attended the Tehran Correctional Center, among whom thirty adolescents were selected and randomly assigned into two groups of 15 people (experimental group of 15 people and control group of 15 people). The experimental group underwent intervention of cognitive / emotional training in 8 stages out of 16 stages (steps) of the book Brain Gym(Rezapour and Ekhtiari) during 16 one-hour sessions and the control group received no training.The 30-item SRS Weinberger & Schwartz (1990), 30-item self-inhibition questionnaire with four sub-scales was used to assess inhibition.

Results : Data obtained from pre-test and post-test scores using SPSS and analysis of covariance showed that there is a significant difference in all sub-scales of inhibition in two groups of experimental (who were trained) and control (who had not received any training).

Conclusion : it is concluded that the cogntive-emotional rehabilitation can improve inhibition of adolescents with behavioral disorders in correctional center.

Keywords : Cognitive-Emotional regulation, Inhibition, Delinquent adolescents.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 42
Abstract ID: 168
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Metacognition: how the shifts in preference differ in people with different metacognition levels.

Submission Author: Elahe Oloumi

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Background and Aim : Social influence in decision making has attracted more attention to itself nowadays. Specifically, observational learning in modulating people's valuation of available choices has arisen many questions. People's preferences alter by observing and predicting other's decisions towards that person's preference according to previous studies. On the other hand, human beings are generally able to explicitly report on the reliability of their internal operations. This ability which is known as metacognition is usually studied by asking people to report their confidence in the correctness of some decision. In this study, we investigated the relation between participant's metacognition and how they react to observing other's preference in risky choices. We aim to answer the question of how confidence of one's prediction about other's decisions (metacognition) can relate to the change in their preference. Do people with low confidence show more preference contagion, or there is no difference in contagion of lowly or highly confident people?

Methods : Our experiment consisted of 3 parts. In the first part, participants (n=32, 16 females and 16 males) decided between 2 options in 32 trials; a sure and a risky option (we call these types of trials "self-trial"). Then the participants were asked to predict another person's decisions during 32 trials and select their confidence of their response between 1 to 5 point as the same time (named other-trial). After choosing an option, they received feedback of whether they had predicted the other person's correctly. The main purpose of showing feedbacks to participants is to execute learning process for them. The third part was consisted of 10 blocks;

5 blocks consisted of self-trials and the other 5 blocks consisted of other-trials which displayed periodic for participant.

Results : We calculated participant's risk preference parameter from trials of part 1 and 3. The difference between the risk preference of these 2 parts for each participant is defined as preference contagion. For checking our hypothesis, we grouped participants based on their confidence scores during the predicting other's decisions into 2 groups; low-confidence and high-confidence. Both groups showed a significant level of contagion. Also we observed a significant difference between these 2 groups, as the low-confidence group showed more contagion towards the other's preference.

Conclusion : Our experiment revealed that people with low confidence are more subject to preference contagion in social environments. Although both groups showed a shift toward the other's preference, our results highlight the role of metacognition factor in this contagion. Based on this, we can conduct further studies to find out how metacognition is influenced in interaction with other people, or which factors may effect the level of confidence, the results of which might be applicable in cognitive behavioral therapies or as a social nudge.

Keywords : Decision making; metacognition; preference contagion

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 43
Abstract ID: 138
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

The relationship between latency and decision evaluation: A behavioral study

Submission Author: Soroush Safari

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Background and Aim : Explaining the cognitive process of judging other's decisions is one of the fundamental challenges in social cognition, as it can perform a critical role in social biases in our daily lives. There is little information about the prime factors influencing the process of judging other's decisions. In this study, we seek how the response time of judging other's decisions is related to the positive or negative judgments of the participants.
Methods : We conducted a behavioral experiment to address this issue. In the first stage of the experiment, the participants (n = 31) choose between two economic options. Next, subjects judged the decisions of others in a task similar to what they did and declared their evaluation as a range from a completely rational response to a completely irrational response. Then the relationship between the response time and the subject's evaluation is investigated by comparing the participant's given scores with the time they spent evaluating.
Results : The results indicate that subjects' evaluation varies with their latency, as in a direct correlation between the higher response time and more negative scores existed. Also, lower response time was positively associated with more positive evaluations.
Conclusion : An implication of the results can be that increased response time allows participants to have more time for higher-order cognitive skills, hence they obtain more opportunity to discover the irrationality of the decisions and report a more negative judgment. These results provide considerable evidence that people may possess potentially positive judgments of other decisions when making social decisions, but passing of time can lead to negative biases in these evaluations and change their positive initial assumptions.
Keywords : Decision making, Judgment, Response time, Bias

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 44
Abstract ID: 160
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Preference modulation by evaluating and predicting others 'decisions in risk and temporal discounting

Submission Author: Hadis Jameei

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Background and Aim : Decision making is a major cognitive process in humans, affecting their daily life. The environment can affect individuals' decisions, and this effect may be subjective to how we perceive and interact with the environment. A major aspects of human life that demand their decisions is finance, where the notion of both risk and temporal discounting cannot be neglected. This study aims to measure how three types of interaction participants have with another person can influence their decision making, both in risk and temporal discounting. Thee interactions include evaluating and judging others' decisions, predicting others' behavior, and scoring others' choices after an initial prediction. The main questions prompting us are whether we imagine ourselves as the ones whose decision we judge and mimic their behavior, or we consider ourselves against them and show the opposite behavior? Are the effects of predicting others' behavior similar to or different from the effects of judging them?

Methods : We designed three experiments accordingly, named as Judgment experiment, Prediction experiment, and Predict-then-Judge experiments for both risk and temporal discounting. All three of these experiments contained three types of repeating trials shown to the participants in the following order: self trials, social trials, self + social trials. Self trials included choosing between two options (deciding between a sure and a risky decision in the risk experiments, and choosing between a small reward being granted now and a larger one granted a few days later in the temporal discounting). Then participants where asked to give score or predict other's choices in Judgement and Prediction experiments respectively, and in

the Predict-then-Judge experiments they predicted other's choices and then scored the revealed other's choices. At last, participants were asked to complete self and social trials again.

Results : The preference towards risk and temporal discounting was recorded before the participants were shown others' decisions and after that, and the preference contagion was measured by calculating the change in the participant's preference. The results show that individuals did not act like the other person when judging their decision, while their preference shifts towards the other person in both Prediction the Predict-then-Judge experiments. This is an indication of despite not showing empathy towards the other person in Judgement experiment, evaluating other's decisions did not counter the effects of predicting others' decisions in terms of contagion in the Predict-then-Judge experiments. In all three experiments, we saw that the participants learned others' choices, so a lack of preference contagion in the Judgement experiment is not due to lack of learning.

Conclusion : Based on the result, we can argue that people tend to simulate other's behavior in predicting, while this does not happen in evaluating them, nor does evaluating others reverse the effect of predicting, that is, people still act like the others when they predict other's decision and state their opinion about the other person. This may be a groundwork for investigating the neural basis of these two cognitive processes in the brain, and whether evaluating other's decisions has the same neural pathway as predicting or learning them.

Keywords : decision making, judge, predict, risk

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 45
Abstract ID: 3
subject: Cognition: Cognitive Aging
Presentation Type: Poster

The Combination Effects of Resveratrol and Swimming HIIT Exercise on Novel Object Recognition and Open-field Tasks in Aged Rats

Submission Author: Mohammad Amin Rajizadeh

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Background and Aim : Resveratrol, a natural polyphenol abundant in grapes and red wine, has been reported to exert numerous beneficial health effects in the body. High-Intensity Interval Exercise (HIIT) is a form of interval training that provides improved athletic capacity and has a protective effect on health. The purpose of this study was to investigate the interactive effects of swimming HIIT and Resveratrol supplementation on behavioral function in Novel object recognition and open-field tests in aged rats.
Methods : Atotalof45agedmaleWistarratswithanageof20months wererandomlyassignedinto fivegroupsofcontrol(C),swimmingHIIT (SW-HIIT), swimming HIIT with Resveratrol supplementation (SW-HIIT -R), Resveratrol supplementation (R), and solvent of Resveratrol supplementation (SR). There was also another group that included young animals (2-month-old) and was used to compare with older animals. Swimming HIIT and Resveratrol supplementation groups performed the exercise and received Resveratrol (10 mg/kg/day, gavage) for six weeks. Novel object recognition and open-field tests were used for evaluating the behavioral functions in animals.
Results : The results showed that HIIT and Resveratrol significantly improved recognition memory compared to old animals. Moreover, it seems that HIIT and Resveratrol partly could modulate anxiety-like behaviors compared to old animals in the open-field test.
Conclusion : In general, the results of the present study showed that Resveratrol and HIIT exercise alone and in combination with together can have protective effects on recognition memory and anxiety-like behaviors in aged rats.
Keywords : aging cognition anxiety resveratrol

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 46
Abstract ID: 6
subject: Cognition: Consciousness
Presentation Type: Poster

What is the relationship between quantum mechanics and cognitive neuroscience?

Submission Author: Vahid Jafarnia

Vahid Jafarnia[1]

1. islamic azad university torbat jam

Background and Aim : The purpose of this research is to discuss whether cognitive science needs quantum mechanics to better understand the mind and consciousness.quantum physics scientists suggest that the laws of quantum mechanics may have influence on the consciousness.cognitive neuroscientists are fully aware about the ion exchange,action potential.of course, we still do not fully understand how thing like imagination or love are formed in the brain,MRI and PET give information about the brain as a whole.but here a gap up,comprising the spatiotemporal level below milliseconds and dendrite synapse dimensions.cognitive science has no method to examine this level.this scale of space is the domain of quantum mechanics. while techniques of cognitive may not open a direct road to our understanding of the consciousness.what we need is an approach that will bring the two theories together and the one to do this is the favorite of modern science quantum mechanics.the point of view of quantum physics an ion has an effect not only by passing through one ion channel.rather than passing through a single ion channel it also has an effect on neighboring ion channels while from the perspective of cognitive neuroscience an ion passes through only one ion channel.in addition the tunneling of quantum mechanics may become operative when neurotransmitter are released at chemical synapses or when ions cross the cell membrane this tunneling may be responsible for our continuous train of thought.

Methods : this article is based on searching reputable databases like science direct

Results : further research into the common issues of quantum mechanics and neuroscience and advances in quantum measurement methods can give valuable results in future

Conclusion : Quantum mechanics is not the final stage in the science of physics.this is how science works however ideal and strong and well accepted a theory may be it will in time give way to a better one

Keywords : mind,consciousness,quantum mechanics,cognitive neuroscience.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 47
Abstract ID: 238
subject: Cognition: Consciousness
Presentation Type: Poster

The promoting effect of vagus nerve stimulation on Lempel-Ziv complexity index of consciousness

Submission Author: Paria Salemi Mokri Boukani

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Background and Aim : Recent studies suggest that vagus nerve stimulation (VNS) promotes behavioral and cognitive recovery after traumatic brain injury. As vagus nerve has wide effects over the brain and visceral organs, stimulation of the sensory/visceral afferents might have a therapeutic potential to modulate the level of consciousness. One of the most important challenges in studying consciousness is objective assessment of the level of consciousness. Brain complexity that can be measured through Lempel-Ziv complexity (LZC) index is a novel mathematical approach for objective measurement of consciousness.The primary goal of this study was to determine the effects of VNS on LZC index of consciousness.

Methods : In this study we did VNS on the anesthetized rats, and simultaneously LFPs recording was performed in two different cortical areas of primary somatosensory (S1) or visual (V1) cortex. LZC and the amplitude of slow waves were computed during different periods of VNS.

Results : We found that LZC index during VNS period was significantly higher in both of the cortical areas of S1 and V1. Slow wave activity decreased during VNS in S1, while there was no significant change in V1.

Conclusion : These results suggest that VNS can augment the level of consciousness and LZC index is a more sensitive parameter for detecting the level of consciousness.

Keywords : vagus nerve stimulation;consciousness;complexity;

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 48
Abstract ID: 319
subject: Cognition: Attention
Presentation Type: Oral

Dual-task interference disturbs information in superior parietal lobe in a simulated driving task

Submission Author: Mojtaba AbbasZadeh

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Background and Aim : Due to the capacity limitation of cognitive system, performing a secondary task while driving causes a decline in driving performance. In the current study, we aimed to investigate the neural correlates of the dual-task performance in a simulated driving environment.

Methods : For this purpose, participants performed a lane change task simultaneously with tone discrimination task with either short or long time onset difference (Stimulus Onset Asynchrony, SOA) between the two tasks in an fMRI experiment.

Results : Behavioral results showed a notable dual-task interference, such that the lane change reaction time increased in the short compared to the long SOA condition. FMRI results indicated an increase in the mean brain activity in sensory, decision-related, and motor regions during dual task interference. We next used muti-voxel pattern analysis (MVPA) to probe the change in the information content for the lane change direction during dual-task interference. Using MVPA, we could decode the direction of the lane change above chance level in visual, motor regions as well as central part of superior parietal lobe (SPL). A significant drop in decoding accuracy in short compared to long SOA was observed in the SPL region, while such drop was not observed in the visual and motor regions. Further investigations revealed that the drop of accuracy in the SPL negatively correlated with the reaction times in the lane change task.

Conclusion : These results suggest a direct link between the information content of the central region SPL and dual-task interference in a naturalistic simulated driving task.

Keywords : Dual-task interference, Driving, Time-resolved fMRI, Multi-voxel Pattern Analysis

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 49
Abstract ID: 13
subject: Cognition: Attention
Presentation Type: Poster

The effect of high level of anxiety on postural control and balance in Parkinson's disease: a role of cognitive strategy

Submission Author: Seyede zohreh Jazaeri

Seyede zohreh Jazaeri[1], ghorban taghizade[2], seyed amir hassan habibi[3], saeid behzadipoor[4], hajar mehdizade[5]

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Background and Aim : Although anxiety is a common non-motor outcome of Parkinson's disease (PD) affecting 40% of patients, little attention has been paid so far to its effects on balance impairment and postural control. Improvement of postural control through focusing on the environment (i.e. external focus of attention) has been reported, but the role of anxiety, as a confounding variable, remains unclear.This study aimed to investigate the influence of anxiety and attentional focus instruction on the standing postural control of PD patients.
Methods : Thirty-four patients with PD (17 with high anxiety (HA-PD) and 17 with low anxiety (LA-PD)), as well as 17 gender- and age-matched healthy control subjects (HC) participated in the study. Postural control was evaluated using a combination of two levels of postural difficulty (standing on a rigid force plate surface with open eyes (RO) and standing on a foam surface with open eyes (FO)), as well as three attentional focus instructions (internal, external and no focus).
Results : Only the HA-PD group demonstrated significant postural control impairment as compared to the control, as indicated by significantly greater postural sway measures. Moreover, external focus significantly reduced postural sway in all participants especially during the FO condition.
Conclusion : The results of the current study provide evidence that anxiety influences balance control and postural stability in patients with PD, particularly those with high levels of anxiety. The results also confirmed that external focus is a potential strategy that significantly improves the postural control of these patients. Further investigation of clinical applicability is warranted towards developing effective therapeutic and rehabilitative treatment plans.
Keywords : balance, external focus of attention, Parkinson, anxiety

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 50
Abstract ID: 57
subject: Cognition: Attention
Presentation Type: Poster

The Effect of Neurofeedback Training on The Attention and Performance of Archery Skills in Semi-Skilled Male Archers

Submission Author: Behnam Ghabel Damirchi

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Background and Aim : The present study aimed at investigating the effect of neurofeedback training on the attention and performance of archery skills in semi-skilled male archers.

Methods : The current study was quasi-experimental with pretest-posttest design with a control group. The participants of the study were the total number of physical education male students age 18 to 30 years who are studying at the University of Tehran in 1399. Using available sampling, 30 male archers with an average age of 21.20 ± 1.619 were selected and randomly divided into two equal groups of neurofeedback (n=15) and control one (n=15). The duration of neurofeedback training was 10 sessions of 30 minutes (3 sessions per week). To measure the performance of archery skills, the scores for archers' arrow has summed, and the screening module of RehaCom software has been applied to measure attention. The collected data has been analyzed by means of the Paired Sample T-Test and Wilcoxon test.

Results : The results of the study revealed that there was a significant difference between archers who received neurofeedback and archers who did not receive any intervention in terms of shooting performance, divided attention (visual and auditory), and focused attention so that archers who received neurofeedback training received a higher score than the archers in the control group in terms of performance, also the subscales of the correct number of their attention increased and the both of the number of mistakes and reaction time decreased ($p<0.05$).

Conclusion : Overall, these results indicate that neurofeedback training affects the 3 components (correct number, mistakes and, reaction time) of divided attention (auditory and visual), and focused attention of archers and improve their performance and skills in archery.

Keywords : Attention, Archery, Neurofeedback, Semi-Skilled Archers.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 51
Abstract ID: 70
subject: Cognition: Attention
Presentation Type: Oral

Decoding Selective Attention and Cognitive Control Processing Through The Stroop Interference Effect: An Event-Related Electroencephalography-Derived Study

Submission Author: Razieh Kamali

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Background and Aim : The process of cognitive control and resultant selective attention constructs the very shared root of a continuum of neurocognitive functions. Efficient inhibition of the task-irrelevant information and unwanted attributes have been evaluated through a variety of paradigms. Stroop tasks in different forms could provide a platform for detection of the state of this type of inhibition and selective attention. Computational modeling of the electroencephalography (EEG) signals associated with attentional control could provide an essential complement to the investigations of this discipline.
Methods : 96 trials of three-condition Color-Word Stroop task performed while recording EEG. All subjects were right-handed (20-25 years) and half of them male. Three-condition signal epochs were redefined as two conditions: 1) Differentiated Incongruent epochs (DIe): which are incongruent epochs that their equivalent congruent epochs are subtracted from. 2) Neutral epochs, intervals of 150-300ms and 350-500ms post-stimulus were extracted. Preprocessed data were then analyzed, and the whole EEG epoch was considered as the variable to be compared between conditions. An acceptably fitted Support vector machine (SVM) algorithm classified the data.
Results : For each individual, the comparison performed regarding DIe and neutral epochs for two intervals (150-300 and 350-500). The SVM classification method provided acceptable accuracies between 59-65 % for the 150-300 interval and 65-70 % for the second interval, within individuals. Regarding frequency domain assessments, Delta frequency band for these two intervals did not show any significant difference between the two conditions.
Conclusion : The SVM models performs better for the late event-related epoch (350-500) classification, hence selective attention related features were more significant in this temporal interval.
Keywords : Support Vector Machine; Stroop Task; Incongruity; Delta Frequency

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 52
Abstract ID: 87
subject: Cognition: Attention
Presentation Type: Poster

Economy of Attention influences on scientists' academic activities

Submission Author: Fahimeh Azizmohammadi

Fahimeh Azizmohammadi[1]

1. University of Tehran

Background and Aim : The basic assumptions of Economy of Attention is that information accumulates but attention does not. Attention is a finite and nonrenewable resource. So as information multiplies, more and more decisions must be made about what someone will attend to versus ignore. The annual number of articles published in psychology has grown from about 50,000 per year to about 150,000 per a year in the last few decades. Yet most researchers have only enough attention time to read at most 100 of these per year; most read fewer than 20. So a typical psychology researcher exposes her/himself to less than 1/10 of 1% of each year's psychology literature. Which criteria do researchers use to choose which articles or parts of articles to read and which to ignore? Do they use the same criteria, or do the criteria change from person to person? And what are the implications of using the criteria they do? How they investigate their attention to academic activities. Economy of Attention was first proposed by Herbert Simon 1971.

Methods : I emailed a questionnaire via a link to 1505 scientists and professors from 30 universities of 23 countries. The universities and scientists were chosen randomly. They were categorized according to their h-index, age, gender, the country they got their highest degree, the numbers of years passing their graduation, academic ranking, field, and university ranking.

Results : The results showed h-index, academic ranking and the number of years of passing graduation correlated positively with each other but h-index had negative correlation with university ranking. Scientists with high h-index preferred not to allocate their time to teaching. From gender, men did not pay attention to the author gender while reading articles and they paid attention to introduction while reading articles.They also paid attention to academic databases differently according to their fields.

Conclusion : The criteria scientists use vary widely from scientist to scientist. There are some statistical trends, but generally speaking, selection criteria tend to be idiosyncratic. This finding is good to know. It has both advantages and disadvantages in the development of a scientific discipline.

Keywords : economy of attention; information; academic activities.

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BOOK of Abstracts

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Count: 53
Abstract ID: 80
subject: Cognition: Attention
Presentation Type: Poster

A comparison of attention system in bilingual and monolingual children and adults

Submission Author: Seyyedeh Sana Fekrazad

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Background and Aim : Attention manifests itself in every aspect of human life and behavior, ranging from the most superficial actions to sophisticated cognitive abilities. The human attention system has been subdivided into three networks: Alerting, Orienting, and Executive control (Posner & Petersen,1990). Besides, bilinguals have been shown to outperform monolinguals in different cognitive tasks in various studies in recent years; hence, this so-called "bilingual advantage" has attracted interest among researchers. Therefore, this study aimed to compare the attention system in bilingual and monolingual children and adults. For this purpose, three attention system networks in Turkish-Persian bilinguals and Persian monolingual children and adults were compared.

Methods : The sample included 120 children and adults as 30 bilingual and monolingual girls, 30 bilingual and monolingual boys, 30 bilingual and monolingual males, and 30 bilingual and monolingual females, which were selected through purposeful sampling. The Child Attention Network task (ANT-C) and the adult Attention Network Task (ANT-A) were used to investigate the attention system. The demographic information and language proficiency level were gathered through an interview and a questionnaire retrieved from Ellen Bialystock's Language and Social Background Questionnaire (2016). Descriptive statistics and inferential statistics were used to analyze the data.

Results : According to the present study's findings, alerting and orienting networks of attention system perform better in monolingual and bilingual children than bilingual and monolingual adults, and the executive control network between bilingual adults has better performance. Also, monolingual children's executive control network is better than bilingual children, and bilingual children's orientation network is better than monolingual children. In the adult groups, the alerting and executive control network's performance in bilingual adults was better than the monolinguals, and the orientation network performance in monolingual adults was better than bilinguals.

Conclusion : The alerting network performs better in monolingual and bilingual children than adults. Alerting performs the function of achieving and maintaining a vigilant state (Hussain & Wood, 2010); Thus, it is possible to explain children's better performance in the alerting network with higher vigilance in children than adults. Also, orienting network performance is better in monolingual and bilingual children. Given that the orienting network score is calculated by subtracting the mean RT in the spatial cue condition from the mean RT in the central cue condition (McConnel & Shore, 2011). In this instance, the spatial cues are better than the central cues in initiating attention processing; Therefore, it can be concluded that bilingual children and monolingual adults track the target stimuli faster through the orienting network, and bilingualism is an advantage in children; In adults, on the other hand, bilingualism does not seem to have a positive effect on network activity. Also, the executive control network in adults performs better than children, and this difference can indicate significant developmental differences between children and adults concerning the executive control network. The present study confirms that adults and children's bilingual experiences can somehow influence the attention networks. Although all individuals have the attention networks described, there are individual and developmental differences in these networks' efficiency.

Keywords : Attention system; Bilingual; Monolingual; Children; Adults

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 54
Abstract ID: 164
subject: Cognition: Attention
Presentation Type: Poster

Attention components in adults who stutter; behavioral and electrophysiological assessment

Submission Author: Ahmad Poormohammad

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Background and Aim : Stuttering is a neuro-developmental speech disorder that often starts between the years of 3-7 and has dire consequences on psychosocial development, communication, and quality of life. Evidence supports the postulation that attention contributes to stuttering in terms of chronicity and development. It also causes decreasing reaction time and weaker response control in these people. In this cross-sectional study, we compared adults who stutter(AWS) to matched normally fluent speakers(NFS)in attention elements in both visual and auditory modalities. Focused and sustained attention, vigilance, speed, and consistency scales were measured by a go-nogo computerized task named IVA2. Electrophysiolocally, theta/beta power ratio as an index of inattentiveness and power of alpha and beta in frontal areas(Fz,f3,f4, Cz, C3, and C4) which have a negative and positive correlation with brain metabolism respectively, were also measured and discussed.

Methods : 15 AWS and 15 matched NFS in terms of age, sex, and education performed two experiments. First, resting-state EEG for 4minutes was obtained in eye close condition. After importing data into Neuroguide software and artifact rejection, Quantitative EEG maps, and main wave powers for later analysis were obtained. For behavioral assessment, the IVA2 CPT task was performed by participants. They sat in a noise-free room in front of the laptop and performed tasks according to pre-prepared vocal instruction provided by the software.

Results : Considering the data test of normality, measurements of theta/beta ratio, main wave power, focused and sustained attention, vigilance, speed, and consistency scales compared between groups. Statistically, auditory sustained attention ($p<0.05$) in AWS was significantly lower compared to the control group.

Conclusion : Our findings confirm previous studies that pointed out that audio-speech brain areas between adults who stutter and normally speakers are different functionally. Therefore, auditory training and attention therapy may play a role in therapeutic protocols in AWS. On the other hand, as the resting state EEG is more concerned with hereditary not functional issues and correlated with the default mode network(DMN)system, we suggest that under- task EEG and more advanced approaches like Event-Related Potential techniques are needed to have a more comprehensive assessment of attention.

Keywords : stuttering, attention, Quantitative electroencephalogram

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 55
Abstract ID: 296
subject: Cognition: Neurolinguistics
Presentation Type: Poster

Clinical and imaging assessment of cognitive dysfunction in multiple sclerosis

Submission Author: Azin Golmoradi

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Background and Aim : In patients with multiple sclerosis (MS), grey matter damage is widespread and might underlie many of the clinical symptoms, especially cognitive impairment so This relation between grey matter damage and cognitive impairment has been lent support by findings from clinical and MRI studies.

Methods : This review article is about Clinical and imaging assessment of cognitive dysfunction in multiple sclerosis from Science Direct, Pro quest and Pub med Data Bases. 15 articles had been selected according to inclusion criteria from 2012 to 2019 and 5 of them had been deleted by exclusion criteria

Results : Standardised neuropsychological tests that are easy to administer and sensitive to disease-related abnormalities are needed to gain a better understanding of the factors affecting cognitive performance in patients with MS than exists at present. Imaging measures of the grey matter are necessary, but not sufficient to fully characterise cognitive decline in MS

Conclusion : In this study Imaging measures of the grey matter are necessary, but not sufficient to fully characterise cognitive decline in MS. Imaging measures of both lesioned and normal-appearing white matter lend support to the hypothesis of the existence of an underlying disconnection syndrome that causes clinical symptoms to trigger.

Keywords : cognitive ,ms , imaging assessment

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 56
Abstract ID: 246
subject: Cognition: Neurolinguistics
Presentation Type: Poster

semantic processing of action verbs and non-action nouns in Persian speakers

Submission Author: Tabassom Azimi

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Background and Aim : The processing of sensory-motor aspect of word's meaning, and its difference between nouns and verbs, is the main topic of neurolinguistic research. The present study aimed to examine the lexical-semantic processing of Persian non-action nouns and action verbs. The possible effects of semantic correlates on noun/verb dissociation were evaluated without morphological confound

Methods : A total of 62 neurologically intact Persian speakers responded to a computerized semantic similarity judgment task, including 34 triplets of non-action nouns and 34 triplets of action verbs by pressing a key. Response Time (RT) and percentage error were considered as indirect measures of lexical-semantic encoding efficiency. We also assessed the latency of hand movement execution with no linguistic demand

Results : The results showed that action verbs elicited more errors and had slower RT compared with object nouns. Mixed ANOVA revealed that the observed noun/verb distinction was not affected by demographic factors

Conclusion : These results provided evidence that the lexical-semantic encoding of Persian action verbs, compared to non-action nouns, requires more support from cognitive sources during the processing of the motor-related semantic feature. The possible accounts for the different processing of action verbs in terms of semantic view are suggested.

Keywords : Action; Verbs; Nouns; Object; Semantic processing; Persian

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 57
Abstract ID: 253
subject: Cognition: Other
Presentation Type: Poster

The Effects of Thinking Skills Training on Creativity in Elementary Students

Submission Author: Fatemeh Naghdi

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Background and Aim : Among the key goals used in the 21st Century Skills Framework is Creativity Skills, which is recognized as a vital skill for survival. The aim of this study was to evaluate the effectiveness of the thinking skills training package (creative thinking and critical thinking) on students' creativity.

Methods : : For this purpose, 20 second grade students were selected by available sampling method and were divided into experimental and control groups. The Form A Torrance Test of Creative thinking was used to evalutethe creativity of the participants. After performing the exercises of thinking skills training package by the experimental group, for six sessions and with online follow-up, the Torrance Form B questionnaire was taken as a post-test from both groups.

Results : : The findings of the research show the effectiveness of the thinking skills training package on the cognitive components of creativity (fluency, flexibility, originality and elaboration).

Conclusion : According to results of this research, using this educational package can lead to fostering the creativity of elementary students.

Keywords : Thinking Skills, Creativity, Elementary Students

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 58
Abstract ID: 297
subject: Cognition: Other
Presentation Type: Poster

Cognitive impairment after stroke: frequency, patterns, and relationship to functional abilities

Submission Author: Azin Golmoradi

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3. Speech and Language Pathologist /Tehran university of medical sciences

Background and Aim : Cognitive function was examined in patients three months after admission to hospital for ischaemic stroke, and in 240 stroke-free controls, using 17 scored items that assessed memory, orientation, verbal skills, visuospatial ability, abstract reasoning, and attentional skills. An alternative approach to characterising the cognitive consequences of stroke would be to examine a broad range of specific neuropsychological deficits, independent of the diagnosis of dementia. If those deficits are clinically meaningful, they should be related to functional abilities, whether or not dementia is diagnosed. In this report, our aim was to determine the frequency and patterns of cognitive impairment in our cohort of patients who had no history of functional decline before stroke, compared with control subjects who lived in the community and who were free of stroke and similar in age

Methods : This review article is about Cognitive impairment after stroke were extracted from Science Direct, Pro quest and Pub med Data Bases. 20 articles had been selected according to inclusion criteria from 2012 to 2019 and 7 of them had been deleted by exclusion criteria

Results : during Study cognitive impairment, subjects with defective performance on four or more tests in a single cognitive domain-for example, language or memory-might have been classified as impaired, reflecting a circumscribed neuropsychological defect. This did not occur, however, in any patient or control classified as cognitively impaired

Conclusion : In this report, our intent was not to describe those circumscribed neurobehavioural syndromes that are well known after focal brain infarction29; nor did we directly examine dementia, which we have previously described in this sample, defined by the presence of specific cognitive deficits in combination using modified DSM-III-R criteria.' Rather, our aim was to focus on cognitive impairment as a general indicator of intellectual decline following ischaemic stroke,'0 which we defined as failure on any four or more neuropsychological test items using a statistical criterion based on normative data from a stroke-free sample

Keywords : Cognitive impairment, functional abilities,stroke

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 59
Abstract ID: 264
subject: Cognition: Other
Presentation Type: Poster

The effect of 2.45 GHz electromagnetic field on stress and anxiety in male Rat

Submission Author: Mahvash Tarsaei

Mahvash Tarsaei

Background and Aim : Mobile communication is based on utilization of electromagnetic fields (EMFs) in the frequency range of 0.3-300 GHz. Human and animal studies suggest that EMFs, which are in the 0.1 MHz-300 GHz range, might interfere with cognitive processes. There is a growing concern that the Microwave range of environmental Electromagnetic wave may have adverse biological effects. This study investigated the possible effects of 2.45 GHz pulsed EMF on the anxiety and the corticosterone level in rats.

Methods : Thirty two male Wistar rat (180-200g) were randomly grouped into short term expose, short term sham, long term expose and long term sham. The short term and long term expose groups respectively 1 h 1 week & 1 h daily for 1 month were subjected in turn on EMF. The short term and long term sham groups were tested exactly like their respective expose groups, the different is that EMF was turned off. All group were tested in an Elevated Plus Maze system, then via the heart puncture scheme, the blood sample were collected. The serum corticosterone level were evaluated using ELISA method. The performance of exposed rats was comparable to that found in sham.

Results : The T-test revealed significant different between exposure groups together and each expose group with its sham groups, but no significant different between sham groups together. Previous studies have found contrasting results of EMF on laboratory rodent anxiety-like behavior and cognition. Our result show that the short term expose with 2.45 GHz radiation increase anxiety behavior in rats, also it increase the corticosterone level as a stress marker.

Conclusion : The present study showed that short-term radiation can reduce the percentage of entry into the open arm and the percentage of time spent in this arm, while such an effect of long-term radiation was not observed. These results mean increased stress and anxious behaviors due to short-term radiation, an effect that has apparently disappeared with long-term radiation. This may be due to adaptation in the animal, or the effects of increased anxiety due to the specific radiation in this study can be seen only in the short term.

Keywords : Electromagnetic field (EMF), Microwave, Anxiety, Elevated Plus Maze, corticosterone

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 60
Abstract ID: 329
subject: Cognition: Other
Presentation Type: Poster

Comparison of School Belonging, mind-wandering and playfulness in gifted and normal high school students

Submission Author: Zahra Bavar

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Background and Aim : The aim of this study was to compare the feeling of belonging to school, mind-wandering and playfulness in gifted and normal students of the first year of high school

Methods : This research is causal-comparative type. The statistical population of the present study was all gifted (699 students) and normal students (19240 people) of the first year of high school in Urmia in the second semester of the academic year 1399-99, referring to Krejcie Morgan table, 248 gifted students (124 boys and 124 girls) to The research sample title was selected. Also, in order to compare with gifted students, 248 normal students (124 boys and 124 girls) were selected by convenience sampling method and completed the School Belonging Questionnaire, Playfulness Scale and mind-wandering Scale

Results : The results showed that there was a significant difference between gifted and normal students in sense of belonging to school ($P < 0.05$), mind-wandering ($P < 0.01$) and playfulness ($P < 0.01$) and gifted students were in a better position in these indicators.

Conclusion : According to the results, gifted students had a higher sense of belonging to the school, mental confusion and playfulness than normal students.

Keywords : sense of belonging to school, mind-wandering, playfulness, gifted students

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 61
Abstract ID: 327
subject: Cognition: Other
Presentation Type: Poster

Comparison of Four Cognitive Assessment Tools: MMSE, MoCA, ACE-R and LOTCA in patients with stroke

Submission Author: Mahdieh Azin

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4. Physiology-pharmacology Research Center, Research Institute of Basic Medical Sciences, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

Background and Aim : Cognitive impairment after stroke occurs frequently in the patients and can cause disability with major impacts on quality of life and independence. Initial cognitive impairment is widely known to be a predictive factor in functional recovery in patients with stroke and selecting the appropriate methodes for cognitive assessment is important. Therefore, the aim of this study was to evaluate the characteristics of four cognitive assessment tests included Montreal Cognitive Assessment (MoCA), Addenbrooke's Cognitive Examination (ACE-R) , and Lowenstein Occupational Therapy Cognitive Assessment (LOTCA) in comparison with Mini-Mental State Examination (MMSE) in stroke patients.

Methods : Forty-five strocke patients were included in this cross-sectional study. We enrolled patients who met ischemic and hemorrhagic stroke criteria in the Ali Ebn Abi Taleb Hospital of rafsanjan city in 2019 . We excluded Patients in whom the cause of stroke was secondary to autoimmune disorders as well as patients with comorbidities such as dementia, Alzheimer's and other cognitive disorders and patients with aphasia or dysphagia. All the participants took the MMSE, MoCA, ACE-R and LOTCA . The MoCA that is a 10-minute, 30-point cognitive screening test. The ACE-R contains 5 sub-scores, each one representing one cognitive domain: attention/orientation, memory, fluency, language and visuospatial . ACE-R maximum score is 100, composed by the addition of the all domains. Lowenstein Occupational Therapy Cognitive Assessment (LOTCA) consists of 20 subtests in four areas: (1) orientation of time and place; (2) perception, which includes visual perception of shapes and objects, figure ground perception, object constancy, spatial perception, and praxis; (3) visual–motor organization, which examines perceptual– motor integration with spatial components, including copying of geometric forms, reproduction of twoand three-dimensional models, pegboard construction, colored- and plain-block design construction, reproduction of a puzzle, and drawing of a clock; and (4) thinking operations, which examine categorization and sequence, including pictorial classification, object classification (both unstructured and structured), pictorial sequence, and

geometrical sequence. To calculate the Sensitivity, specificity, positive predictive value and negative predictive value of mentioned cognitive assessment tests, MMSE test was assumed as the standard and its cut-off score was 27, which separates healthy people without cognitive impairment from people with cognitive impairment.

Results : For cut point 26 of MoCA test, sensitivity was 97% and specificity was 44.4% . Also, positive predictive value and negative predictive value were 86.5% and 80%respectively. For cut point 85 for ACE-R test, sensitivity was calculated to be 97% and specificity was 22.2%. Also, positive predictive value and negative predictive value were equal to 82.1% and 66.7% respectively. For cut point 63 for LOTCA test, sensitivity of 63.6% and specificity of 100% were calculated. Also, positive predictive value and negative predictive value were equal to 100% and 42.9% respectively.

Conclusion : The results indicated that the highest sensitivity was related to the MoCA and ACE-R tests, which showed that these tests were able to diagnose 97% of strocke patints with cognitive impairment. In addition, the highest specificity was related to the LOTCA test that indicated that the test is able to correctly diagnose all patients without cognitive impairment.

Keywords : stroke; sensitivity; specificity; cognitive assessment

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 62
Abstract ID: 130
subject: Cognition: Other
Presentation Type: Poster

Spatial Ability in Children with Attention-Deficit/Hyperactivity Disorder (ADHD) and Its Impact on Executive Functions.

Submission Author: Solmaz Soluki

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2. Department of Psychology, Shahid Beheshti University
3. Department of Psychology, Shahid Beheshti University

Background and Aim : Attention-Deficit/Hyperactivity Disorder (ADHD) is associated with deficits in cognitive functions such as spatial ability (SA). SA which plays a crucial role in different domains of academic and daily life is constructed with eight separate and unified factors: Flexibility of Closure, Closure Speed, Perceptual Speed, Visualization, Spatial Relation, Spatial Orientation, Spatial Temporal, and Wayfinding.

Methods : The first objective of this study was to explore the differences in SA factors in 128 ADHD and Typically Developing (TD) children of third to sixth grade. The second objective of the study was to examine the SA factors' ability to predict the performance of ADHD children in three executive functions.

Results : The results showed that ADHD children were less accurate in all the tasks except Spatial Temporal task, and it took them longer to respond to Visualization, Spatial Relation, and Spatial Orientation tasks comparing to TD children. Regression analysis exhibited that some SA factors were able to predict working memory and cognitive flexibility, but they could not predict response inhibition.

Conclusion : Regarding these results, it seems necessary for specialists to include assessment and training of all SA factors in cognitive rehabilitation programs for ADHD children.

Keywords : Spatial ability, factors of spatial ability, attention deficit hyperactivity disorder, executive functions, school- age children

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 63
Abstract ID: 199
subject: Cognition: Other
Presentation Type: Poster

Spontaneous cerebrospinal fluid leakage in a patient with normal pressure hydrocephalus: a miracle

Submission Author: Somaye Farhoodi

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Background and Aim : introduction: Normal Pressure Hydrocephalus (NPH) is a causes of potentially treatable dementia and presents with characteristic triad of gait apraxia, cognitive impairment and urinary incontinence .it can be improve after removal of cerebrospinal fluid (CSF) . We report a patient with NPH who improved significantly after spontaneous CSF leakage.

Methods : Case presentation: a 79-years old man was presented with urinary incontinence, gait disturbance and cognitive decline. The clinical and imaging features revealed classic findings of NPH and serial CSF removals led to significant improvement in his symptoms. due to emergence of COVID-19 pandemic ,treatment program was stopped temporarily and led to gait deterioration , but the situation was not ideal for performing new lumbar tap. but A spontaneous CSF leakage happened suddenly, which led to significant improvement in cognitive and gait profiles.

Results : .

Conclusion : Conclusion: spontaneous CSF leakage may occur in the context of high intracranial pressure and rarely in patients with normal intracranial pressure .we report a patient with NPH who developed spontaneous CSF rhinorrhea that resulted in dramatic improvement of clinical symptoms.

Keywords : Spontaneous cerebrospinal fluid leakage; Normal Pressure Hydrocephalus; cerebrospinal fluid rhinorrhea

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 64
Abstract ID: 122
subject: Cognition: Other
Presentation Type: Poster

Is cognitive function linked to levels of trace elements in patients with schizophrenia

Submission Author: Shokouh Arjmand

Shokouh Arjmand[1]

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Background and Aim : Altered serum profile of several trace elements have been reported in schizophrenia. This study was designed to elucidate if the serum level of copper (Cu) and magnesium (Mg), two essential trace elements with an established contribution in neurotransmitter transmission, is altered in schizophrenics and if there is any interrelation between cognitive functioning and serum levels of Cu and Mg.

Methods : Sixty patients with schizophrenia and 30 healthy controls participated in this study. Patient group was divided into: i) early patients (N = 35, equal or less than 5 years of illness initiation), and ii) chronic (N = 25, more than 5 years of illness duration). The serum levels of Cu and Mg were measured by atomic absorption spectroscopy and ion selective electrode potentiometry, respectively. A Persian adaptation of the Brief Assessment of Cognition in Schizophrenia (BACS) was administered to assess cognitive abilities.

Results : The results showed significantly higher serum Cu level in both patient groups than controls, whereas no significant difference was observed among groups for Mg. While healthy individuals' serum Cu profile demonstrated negative correlation with working memory and executive function, no significant correlation was observed between Cu serum levels of patients and BACS cognitive domains.

Conclusion : Our findings suggest that the high Cu serum concentration might play a role in cognitive decline in healthy individuals, but as cognition is severely impaired in schizophrenics no significant correlation was seen in the patients.

Keywords : Cognition, Copper, Magnesium, Schizophrenia, Trace elements, BACS

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 65
Abstract ID: 221
subject: Emotion, Motivation and Behavior: Neural Basis of Human Behavior
Presentation Type: Poster

The effect of Nicotine contamination on Repetitive, Stereotyped and Exploratory Behaviors in male Wistar rats

Submission Author: Fatemeh Teimorpour

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Background and Aim : In the present age, creativity at work gives rise to practical ideas. However, nicotine addiction and craving is a big obstacle in the way that by affecting the nervous system, it disrupts the systematic work of the body and causes mental and physical damage, which can include high stress and anxiety and reduced creativity.

Methods : In this study, the short-term and long-term effects of nicotine on the brain and the level of creativity of individuals are tested. In the short-term effects test, mice weighing approximately 150 g were used in both groups. The treatment group was exposed to nicotine smoke three times a day for 30-30 minutes in a 17 cubic meter chamber for one month and Then, open chamber maze tests were performed to measure anxious and inquisitive behaviors, Y-maze tests were used to measure and compare repetitive behaviors, and anxiety maze was performed to measure anxiety in chambers equipped with cameras. The long-term test was performed through the Torrance Creativity Test Questionnaire between two groups of healthy people and people who have been exposed to nicotine smoke for a long time. Finally, the test results were extracted and analyzed by two independent groups of SPSS software.

Results : The results showed that inhaling nicotine increased the tendency to perform repetitive activities (30% more than the control group) and decreased their mobility, search in the short term, and increased the level of anxiety (27% more). Also, the results of Torrance test in addicted people are 67.54 and in healthy people are 106.2 (p=0.05)

Conclusion : According to the data of the present study, it can be concluded that nicotine use in the long term as well as in the short term increases the level of anxiety in people involved and also has an inhibitory effect on creative and searching behaviors and causes repetition and tendency to perform repetitive behaviors. It becomes. In addition, by increasing the level of anxiety in people, it becomes a big barrier against personal development and the emergence of creative behaviors.

Keywords : Nicotine ; Repetitive activities ; Stereotyped Behavior ; Exploratory Behavior ; creativity

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 66
Abstract ID: 208
subject: Emotion, Motivation and Behavior: Neural Basis of Human Behavior
Presentation Type: Oral

The activity of different brain areas in discrete environment during a perceptual decision-making task: an EEG study

Submission Author: Zahra Azizi

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Background and Aim : In many cases, decisions require information integration from pieces of evidence with discrete time intervals. Yet, the neural mechanism underlying these decisions is uncertain. This research has mainly concentrated on the activity of different brain areas in discrete environment during a perceptual decision-making task. To inspect the concept, behavioral and electroencephalography (EEG) data have been analyzed.

Methods : Accordingly, we applied a perceptual decision-making experiment using Random Dot Motions (RDM) paradigm. Participants had to indicate the predominant direction of motion of a cloud of moving dots (left or right) by saccadic eye movement to the chosen target after receiving one or two pulses of 120 ms of information. Both direction and strength of the motion changed trial by trial. Moreover, the interval of two pulses is selected randomly from 0, 120, 360, and 1080 ms. Healthy adult subjects were tested and meanwhile, we used a 32-channel amplifier for the EEG signal recording. Here, we searched for the activity of different brain areas in relation to behavioral results and in the various conditions of the task. Moreover, the relation of accuracy, confidence, decision-time, and their ERP (Event-related potential) characterizations in a more real-life like decision-making was studied.

Results : Results from behavioral and the EEG have shown that participants develop similar behavior but with some differences in the discrete vs continuous environment. Subjects' performance and confidence were independent of the intervals up 1 s. However, unlike the confidence, accuracy improved considerably in double-pulse trials. The grand-average ERP from centroparial area showed a peak observed around 300ms after the stimulus offset in both single-pulse and double-pulse trials. This peak was identified to be related to decision-making. Receiving double pieces of evidence improved the relation of ERP peak with confidence and accuracy. Moreover, the higher temporal resolution of ERP in frontal sites and the spectral EEG oscillation (represented by ERS/ERD) provided confirmation about the role of working memory (WM) during the discrete trials.

Conclusion : To summarize, it seems, along with the continuous environment, brain activity could be tracked from ERPs component during decision-making in a discrete environment. In addition, the separate nature of receiving the evidence cue provided a role for brain areas related to working memory too.

Keywords : Perceptual decision-making; working memory; discrete environment

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BOOK of Abstracts

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Count: 67
Abstract ID: 239
subject: Emotion, Motivation and Behavior: Neural Basis of Human Behavior
Presentation Type: Poster

the effeetiveness of real cognitive and computer games on adjusting childrens excitement with spectrum of Autism disorder

Submission Author: Zohre Shams somehkabodin

Zohre Shams somehkabodin[1], lila kashani vahid[2], manochehr moradi[3], maryam asaseh[4]

1. writer
2. Supervisor
3. Supervisor
4. Supervisor

Background and Aim : Intro: Children with autism spectrum disorder have deficits in their emotion regulations.

Methods : Method: Effectiveness of Cognitive Games on Cognitive Emotion Regulation in Children with Autism Spectrum Disorder. The aim of study was to evaluate the effectiveness of cognitive games on cognitive emotion regulation in children with autism spectrum disorder. the research design was semi-experimental with pre-test and post-test with a control group. The statistical population of the study were chosen among children with autism in Tehran who have referred to autism centers for treatment. The sample size of this study included 30 children who were randomly. The participants played with games which were designed according to their cognitive and emotional needs and the control group did not receive any intervention and waited in the waiting list. The emotion regulation checklists (Shields & Cichiti, 1998) was used to evaluate the emotion regulation, and multiple analysis of covariance (MANCOVA) was used to analyze the data.

Results : Results: In examining the effect of real cognitive games, the results showed that after eliminating the effect of pre-test, the difference between the two groups in communication skills and emotion regulation is significant. According to the results, cognitive games can increase communication skills by 0.420.

Conclusion : Conlusion: It is concluded that these games can be used to improve cognitive emotional regulations in children with autism spectrum disorder.

Keywords : Keywords: real cognitive games, computer, emotion regulation, children's communication skills, autism spectrum disorder

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 68
Abstract ID: 198
subject: Emotion, Motivation and Behavior: Neural Basis of Human Behavior
Presentation Type: Poster

Effects of Nepeta menthoides hydroalchoholic extract on mouse reserpine induced depression

Submission Author: Banafsheh Bagheri

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Background and Aim : Nepeta menthoides commonly is known as Ustokhoddus in Iran, recommended for depression disease in Persian traditional medicine. This study was designed to determine the effects of N. menthoides extract on mouse model of reserpine induced depression.

Methods : Seventy-two mice were randomly divided into 9 groups: Normal saline, control extract (200 mg/kg), reserpine, fluoxetine (10 mg/kg or 20 mg/kg) + reserpine, fluoxetine (10 mg/kg) + extract (200 mg/kg) + reserpine, Three extract pretreated groups (100-200 and 400 mg/kg) + reserpine. Extract and fluoxetine were administrated by gavages daily, for 10 days, 30 min before reserpine (0.5 mg/kg) injection in peritonealy. Behavioral evaluations were done by forced swimming, tail suspension and open field tests.

Results : Immobility time was enhanced by reserpine (210.37 ± 2.43 in compared with normal saline 109.75 ± 3.13) and the extract decreased it, dose dependently (109.75± 2.90 and 61.87 ± 5.08, 200 and 400 mg/kg respectively) as the same as fluoxetine, in forced swimming test. Combination of extract and fluoxetine caused reduction of immobility time more effective than each one alone. The results obtained from tail suspension are similar to forced swimming test. On the other hand, while swimming time was decreased by reserpine, extract elevated it, dose dependently as the same as fluoxetine. Total crossed numbers that is equal to total motility in open field test, were not influenced by each one of agents.

Conclusion : N. menthoides hydroalcoholic extract meliorated the depression like behavior caused by reserpine.

Keywords : Nepeta menthoides; Reserpine; forced swimming test; tail suspension test; open field test

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 69
Abstract ID: 262
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

The role of sub-anesthetic dose ketamine on BDNF level and improvement of memory impairment in CUMS-induced depression in rat

Submission Author: Elham Zahedi

Elham Zahedi[1], Mohsen Khalili[2], Ashkan Sanaierad[3], Elham Esmaeil Jamaat[4], Khadijeh Moradbeygi[5], Marjan Nikbakhtzadeh[6], Shima Mehrabadi[7]

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7. Department of Physiology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran.

Background and Aim : In this century, Depression is the most common, recurrent, and debilitating illness. Depression is considered a neuropsychiatric condition which is associated with neuronal injury within specific brain regions that usually accompanied by cognitive impairments in the domains such as memory. Depression is associated with increased hippocampal atrophy and dysfunction. There are multiple paths by which hippocampal deterioration occurs in Depression. Evidences show that changes in brain-derived neurotrophic factor (BDNF) protein or receptor expression contribute to hippocampal atrophy. there is strong evidence that BDNF decreased in depression. So, it could be related to various disorder in depression such memory impairment. increasing BDNF by various ways appears to ameliorate hippocampal atrophy, reduce depression and improve memory function. Ketamine, as an NMDA receptor antagonist, is a rapid antidepressant. The aim of this study was to evaluate whether ketamine can improve the negative effects of depression on memory by effect on BDNF level.

Methods : For this purpose, 30 male rats were used. Animals were randomly divided into three equal groups, and except the control group, the other ones were depressed by CUMS method. Then, ketamine group was treated with the sub-anesthetic dose of ketamine for 21 days.

Results : Finally, BDNF level and behavior parameters were measured. It was found out that treatment with the sub-anesthetic dose of ketamine could markedly increase the BDNF level in brain tissue of ketamine relative to depressed group.

Conclusion : . Current research suggests that treatment with sub-anesthetic dose of ketamine could antagonize memory deficits of depression induced by CUMS in rats by enhancing the BDNF in brain. This conclusion is interpreted in relation to memory impairment in depression and its prevention by increasing BDNF by ketamine.

Keywords : Depression, Memory, Ketamine, BDNF

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 70
Abstract ID: 127
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

Effects of Chronic Stress, Methadone & Venlafaxine on Pain, Withdrawal Syndrome & Relapse to Morphine Dependence in Rats

Submission Author: Maysam Fadaeikenarsary

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Background and Aim : Relapse is highly prevalent after detoxification and chronic stress. Due to the advantages of venlafaxine compared with other antidepressants, it is expected that venlafaxine administration may reduce relapse after detoxification and chronic stress. This study aimed to evaluate the effects of venlafaxine on chronic stress-induced relapse to morphine dependence, pain sensitivity and morphine withdrawal syndrome after methadone detoxification.

Methods : Eighty Sprague-Dawley rats were habituated and conditioned with morphine (10 mg/kg, S.C., for 4 days). After that, primary forced swimming and conditioned place preference (CPP) were tested. Then primary withdrawal behaviours and tail flick test were performed.They were followed by methadone (70 mg/kg/day, P.O., for 7 days) administration, extinguishing, forced swimming stress (FSS) and administration of venlafaxine (80 mg/kg/day, I.P., for 7 days). Finally same tests were performed

Results : Combination of chronic methadone substitution and venlafaxine administration, significantly reduced freezing behaviour of spontaneous morphine withdrawal syndrome ($p<0.01$, 379±144%). Chronic methadone administration ($p<0.05$, 35±8% difference with venlafaxine treated group) induced hyperalgesia. A positive correlation ($p=0.001$, +63%) was observed between the animals final freezing scores and their response latencies to the painful stimulus. Administration of venlafaxine resulted in a decrement in final preference scores associated with a prime morphine injection (PMI) compared to the primary scores in methadone treated (MTD+) animals. In a swimming test, venlafaxine increased the amount of final floating and decreased final activity scores compared with the primary scores after

administration of methadone. Venlafaxine reduced locomotor activity in MTD+ animals in the final test with PMI. There was a positive correlation between the final activity and preference scores after PMI.

Conclusion : In conclusion, venlafaxine improved anxiety and chronic stress induced relapse on methadone detoxified rats.Combination of chronic methadone and venlafaxine administrations reduces freezing withdrawal behaviour. Further investigations on analgesic interventions are needed to overcome this hyperalgesia.

Keywords : Morphine; Methadone; Stress; Relapse; Venlafaxine; Rat

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 71
Abstract ID: 99
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

Study of electrical activity of brain during and after ACUTE SOCIAL STERSS

Submission Author: Marzieh Barzegar

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3. neuroscience research center of baqiyatallah university of medical sciences

Background and Aim : Acute social stress is a model of stressful situations that we experience many times, especially when we are in the context of academic or job interviews. Various studies on this stress model have shown that the heart rate rises during the test and the person compeletely understands the stress. Salivary cortisol levels begin to rise so that they continue to rise even half an hour after the cortisol test. Also, some other indicators of heart rate fluctuations have not returned to rest even after recovery. Fnair's study showed that during this test, there is an increase in blood oxygen saturation in the forehead, and EEG examination showed an increase in the alpha band (8-10 Hz) after stress and recovery period However, it is not yet clear what changes occur in the brain's electrical activity during stress. The aim of this study is to evaluate the EEG during and after the TSST test

Methods : 44 healthy young men were included in the study. TSST test was performed as interview two minutes of self-introduction and 8 minutes of mathematical operations in front of two judges. Saliva samples were taken three times, before TSST, after it and after half an hour of recovery. to measure salivary cortisol level and self-report stress test based on VISUAL ANALOGUE SCALE and in all sections of 2 minutes of EEG recording (1 minute opened eye and 1 minute closed eye) and during TSST. studied channels included F3, F4, F7, F8, T8, P4, O2. Significant value was considered below 0.05 based on the calculation of False discovery rate.

Results : Salivary cortisol levels and EVAS test scores increased significantly after TSST, and cortisol levels were still high during the recovery period. During stress, the relative delta band was markedly elevated in all channels, in contrast to the relative decrease from alpha 2 (10-12 Hz) to gamma, and most of reducing measures was in the relative beta 1 band (12-14) Hz. However, nonlinear indices indicating signal complexity decreased very clearly during the test period, especially temporal and frequency entropy indices. with Regarding to persistent changes after stress, only the nonlinear index of fractal dimention katz and sample entropy in F3 channel in the closed eye showed an arising which remained high in both recoveries. Other indicators did not reach a significant level.

Conclusion : During stress, the electrical activity of the brain increases at very low frequencies and, conversely, decreases at high frequencies and the complexity of the signal decreases, so the power of complex cognitive analysis decreases under stress

Keywords : EEG;TSST;cortisol;stress

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 72
Abstract ID: 79
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

Investigating the therapists' information seeking behavior during the diagnosis process of mental disorders

Submission Author: Ali Akbari

Ali Akbari[1], mohsen nowkarizi[2], Reza rostami[3], Ali moghimi[4]

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4. Ferdowsi University of Mashhad

Background and Aim : People select a variety of methods when they require information and display their information seeking behaviors based on different variables. In the last few decades, experts have classified these behaviors into different information seeking models of the field. They can be of importance and interest in various fields. Medical sector is a field with which almost all people deal at least indirectly. This study aimed to investigate the information seeking behavior of a group of therapists (psychologists and psychiatrists) during the diagnosis and treatment process of psychological disorders. For this purpose, their behavior was evaluated based on Kuhlthau's Information Search Process (ISP) model.

Methods : This research is an applied one due to the possibility of using its findings for designing a decision making support system for therapists. It is a mixed-methods research. Thirty volunteer therapists were selected through simple random sampling. The data were collected using semi-structured interviews, physiological evaluation of stress, Morae software, and quantitative EEG (qEEG). The quantitative data were analyzed through descriptive and inferential statistics such as repeated measures, mean comparisons, Mann-Whitney, Analysis of Variance, and Kruskal–Wallis. To analyze the qualitative data (the therapists' cognitive features while evaluating their information seeking behaviors), qEEG was employed.

Results : The findings confirmed Kuhlthau's circular motion. But, the results of the therapists' level of stress did not comply with Kuhlthau's predictions. The results showed that the therapists, contrary to the Kuhlthau's view, experienced a certain amount of stress at all stages of Kuhlthau's ISP model. This level of stress, which was significantly different from the therapists' baseline stress, did not change considerably in most stages of the Kuhlthau's model. It is useful and effective stress, based on their focus on and excitement during the diagnosis and treatment process. The data confirmed that the brain waves of the therapists performed a wide range of cognitive activities in the early stages of Kuhlthau's ISP. As the therapists moved on to the final stage of Kuhlthau's model, the cognitive components diminished and the emotional ones prevailed. Based on the results, stage 3 of Kuhlthau's model was the best stage

for the librarians to mediate to guide and assist the therapists. Finally, the results demonstrated that the therapists' information seeking behavior was consistent with Kuhlthau's model in both physical and cognitive interactions, while the emotional components were not.

Conclusion : Based on the results, it can be concluded that relying on the modern tools of neuroscience and information technology may yield a better understanding of the real-time processes of therapists' information seeking behavior and can provide the right information for the users with the help of smart and personalized systems at the right moment. This development can be a major step forward to facilitating information seeking behavior and improving users' access to information.

Keywords : Information seeking behavior; Cognitive Components; Emotional Components; Physical actions; Brain Mapping; Heart Rate Variability

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BOOK of Abstracts

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Count: 73
Abstract ID: 339
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

Effect of Prenatal Stress and Extremely Low-Frequency Electromagnetic Field Exposure on Anxiety- and Depressive-like Behaviors in Adult Male Offspring

Submission Author: MAHSA FARID HABIBI

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4. Neurosciences Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

Background and Aim : This study aimed to determine the effect of prenatal stress and extremely low-frequency electromagnetic fields (ELF-EMF) before and during pregnancy on the offsprings anxiety- and depressive-like behaviors.

Methods : Female Wistar rats were randomly divided into four groups (n=8): control (C), stress (S), electromagnetic field (EMF), and S-EMF groups. The control group was exposed to a switched off jammer device. Animals in the S and S-EMF groups were subjected to chronic mild stress (CMS) protocol for 21 days before and during pregnancy. The EMF groups were exposed to the ELF-EMF (50 Hz, 100 μT) for 4 h/day. Behavioral tests including the elevated plus maze, open field test, and forced swimming test were conducted on the male offspring at postnatal day (PND) 80, 81, and 90.

Results : The results showed that maternal stress exposure caused anxiety- and depressive-like behaviors in the male offspring.However, parallel ELF-EMF and stress exposures significantly attenuated anxiety and depressive-like behaviors.

Conclusion : ELF-EMF exposure partially prevented behavior changes induced by CMS exposure.

Keywords : Stress; Depression; Anxiety; ELF-EMF

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 74
Abstract ID: 72
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

Tanacetum polycephalum and pentylenetetrazol effects on conflict behavior in the rat

Submission Author: Vahid Azizi

Vahid Azizi[1], Farzin Allahyari[2], Abdolkarim Hosseini[3]

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3. Department of Animal Sciences and Biotechnology, Faculty of Life Sciences and Biotechnology, Shahid Beheshti University, Tehran, Iran.

Background and Aim : Pentylenetetrazole (PTZ) is a chemical substance which largely used for induction of seizure and epilepsy in the animal model, and it can also, disrupts free radicals balance and causes oxidative stress in the body with a negative impact on behavioral statuses like anxiety and depression. In this study, the medicinal plant Tanacetum polycephalum, was used to evaluate its effect on anxiety and depression caused by PTZ in the rat.

Methods : Twenty-four rats were randomly allocated to 4 groups: control negative under treatment with PTZ (sub-threshold dose 35 mg/kg for one month), control positive under treatment with Phenobarbital (PB-30 mg/kg), and two PTZ groups under treatment with T. polycephalum extract (TPE-300, and -600 mg/kg). For anxiety parameters, the elevated plus maze (EPM) was used. The forced swim tests (FST) was employed to assess the antidepressant potential. Data were analyzed using SPSS.

Results : TPE administered at the doses of 300, and 600 mg/kg, ip reduced immobility time in the FST exerting antidepressant-like activity. In the EPM test, TPE at the same doses, produced the anxiolytic-like effect.

Conclusion : Our results showed that TPE could prevent anxiety and depression in the PTZ-kindled rats.

Keywords : Tanacetum polycephalum; Seizure; Anxiety; Forced swim test; Elevated plus maze

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 75
Abstract ID: 71
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

Effect of hydroalcoholic extract of Buxus hyrcana against experimentally induced anxiety, depression in kindled rodents

Submission Author: Abdolkarim Hosseini

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3. Department of Animal Sciences and Biotechnology, Faculty of Life Sciences and Biotechnology, Shahid Beheshti University, Tehran, Iran.

Background and Aim : Epilepsy is the most common chronic neurological disorder disease, and its effect on behavioral statuses like anxiety and depression. In this study, the medicinal plant Buxus hyrcana, was used to evaluate its effect on anxiety and depression caused by PTZ in the rat.

Methods : Twenty-four rats were randomly allocated to 4 groups: control negative under treatment with PTZ (sub-threshold dose 35 mg/kg for one month), control positive under treatment with Phenobarbital (PB-30 mg/kg), and two PTZ groups under treatment with B. hyrcana extract (BHE-300, and -600 mg/kg). For anxiety parameters, the elevated plus maze (EPM) was used. The forced swim tests (FST) was employed to assess the antidepressant potential. Data were analyzed using SPSS.

Results : BHE administered at the doses of 300, and 600 mg/kg, ip reduced immobility time in the FST exerting antidepressant-like activity. In the EPM test, BHE at the same doses, produced the anxiolytic-like effect.

Conclusion : Our results showed that BHE could prevent anxiety and depression in the PTZ-kindled rats.

Keywords : Buxus hyrcana; Epilepsy; Anxiety; Depression; Elevated plus maze

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 76
Abstract ID: 273
subject: Emotion, Motivation and Behavior: Reward and the Brain
Presentation Type: Poster

Comparison of behavioral activation/behavioral inhibition system in adolescents with non-suicidal self-injury (NSSI) and normal counterparts

Submission Author: Nazir Mozafari

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3. Family Research Institute, Shahid Beheshti University, Tehran, Iran.
4. Faculty of Psychology, Shahid Beheshti University, Tehran, Iran.

Background and Aim : Non-suicidal self-injury (NSSI) is one of the serious public concerns. There are several hypotheses and reasons for NSSI. The aim of this study was to investigate the differences between two groups of adolescents with NSSI and normal counterparts in behavioral activation and behavioral inhibition system (BAS/BIS).

Methods : In this cross-sectional comparative causal study, 47 adolescents (girls and boys) having NSSI and 72 normal adolescents were compared. They responded Carver and White Behavioral Activation / Behavior Inhibition scale.

Results : Participants who reported NSSI, had higher scores on behavioral inhibition than participants without a history of NSSI.

Conclusion : The results support the concept that there is a significant difference between two groups of adolescents with NSSI and normal counterparts in BAS/BIS. The data can also be used to educate, prevent and treat adolescents with NSSI and to promote public health policies.

Keywords : Adolescence, behavioral activation, behavioral inhibition, non-suicidal self-injury.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 77
Abstract ID: 77
subject: Emotion, Motivation and Behavior: Reward and the Brain
Presentation Type: Poster

Electrophysiological study of the acute effects of tramadol on neuronal activity in medial prefrontal cortex

Submission Author: Neda Hasanpour Razmanjani

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Background and Aim : Tramadol is an opioid analgesic with monoamine reuptake inhibition. Although tramadol has been widely used to control pain in various diseases, there is controversy over the risk of its abuse. Therefore, in the present study, the acute effects of tramadol on the mPFC region, which is one of the important centers of the reward system, were investigated in order to assess the acute effects of tramadol on neuronal activity in mPFC, through electrophysiological study.

Methods : In this electrophysiological study, extracellular single unit recording has been used. The rats were assigned into four groups; control and tramadol (12.5, 25 and 40 mg/kg, respectively) groups. In order to collect data, after 15 minutes of baseline recording, the drug / placebo was injected (i.p. injection) and then recording was continued for 30 minutes.

Results : Acute systemic administration of tramadol did not significantly change the neuronal activity in the mPFC, in the experimental groups at none of the injected doses compared to the control group.

Conclusion : Based on the results, it is possible that systemic single-dose administration of tramadol may not significantly alter the neuronal activity of the mPFC region as one of the important areas in the reward system. previous studies have shown that long-term administration of tramadol had devastating effects on mPFC. Therefore, it can be expected that the changes that lead to tramadol addiction will need to be repeated. These side effects are probably from other areas that affect mPFC and can lead to addiction.

Keywords : Single unit recording; mPFC; Tramadol; Reward system

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 78
Abstract ID: 58
subject: Emotion, Motivation and Behavior: Reward and the Brain
Presentation Type: Poster

Whether and how there is contextual effect in partial human reinforcement learning

Submission Author: Zahra Barakchian

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Background and Aim : Value learning of an option is affected by its available options. This contextual effect is increased when outcomes of competing options are also provided (Complete feedback). The previously suggested learning mechanisms focused mostly on the role of counterfactual outcome as an effect of unchosen outcomes on chosen option, and the role of counterfactual outcome as an effect of chosen outcome on unchosen options has received less attention, in particular in the conditions where only factual outcomes are provided (Partial feedback). Here we investigated whether and how counterfactual outcomes with two mentioned aspects can affect value learning.

Methods : Two groups of participants performed two different versions of the instrumental learning tasks, the Partial feedback version, in which the factual outcomes were only provided, and the Complete feedback version, in which both factual and counterfactual outcomes were provided. Subjects were instructed to gain the most possible rewards during the task. After the learning phase, they unexpectedly entered the post-learning transfer phase, in which all possible binary combinations of options were presented to them, and they were asked to choose the option that was associated with the highest expected rewards in the preceding learning phase. Finally, in the value estimation phase we asked the subjects to report their estimated expected value of each stimulus on a scaled bar.

Results : We observed that subjects preferred the option with larger relative value in the post-learning transfer phase between the two equal absolute values. This bias was significant in the transfer phase, while this bias was very weak in the estimation phase.

Conclusion : Taken together, we could show that we are affected by the context by the fine interaction of counterfactual outcomes. In the two-option learning tasks, we learn the value of each option relative to its alternative, even when we don't explicitly use the comparison strategy. On the other hand, although this contextual effect results in suboptimal decision-making outside the original context, it leads to an ecological advantage by gaining more rewards within the original context. Furthermore, and not surprisingly, people can access to

both relative and absolute estimations of their options' values, and to use which of them depends on their needs and conditions. Investigating the mechanism of these irrationalities helps us find a solution in conditions where advantages change into disadvantages, and it will be more critical when they change to disorder.

Keywords : Reinforcement learning, Instrumental learning paradigm, contextual effect, dopamine

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 79
Abstract ID: 301
subject: Emotion, Motivation and Behavior: Reward and the Brain
Presentation Type: Poster

Maternal sleep deprivation affects methamphetamine reward memory in male offspring: role of dopamine receptors

Submission Author: Mehdi Khodamoradi

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Background and Aim : We aimed to determine whether maternal sleep–deprivation (MSD) affects extinction and reinstatement of methamphetamine (METH) reward memory in the offspring and also to evaluate the possible role of dopamine D1-like and D2-like receptors in these processes.
Methods : Thirty-day-old male offspring born to control and sleep-deprived dams (during their third trimester of pregnancy) were trained to acquire METH–induced place preference (2 mg/kg., i.p.). METH reward memory was then reinstated following an 8–day extinction period. The offspring received SCH 23390 (0.03 or 0.1 mg/kg, i.p.) or sulpiride (20 or 60 mg/kg, i.p.) as antagonists of dopamine D1-like and D2-like receptors, respectively, immediately after each daily extinction session. Moreover, in a separate experiment, the offspring received SCH 23390 or sulpiride prior to the reinstatement session.
Results : MSD postponed METH extinction and facilitated METH reinstatement in the offspring. SCH 23390 (only at the dose of 0.1 mg/kg) in the offspring from the control and MSD dams facilitated METH extinction and decreased reinstatement of the extinguished METH preference. Sulpiride (only at the dose of 60 mg/kg) in the offspring from MSD dams facilitated METH extinction, but it did not affect reinstatement of the extinguished METH place preference.
Conclusion : The results would seem to suggest that MSD may enhance vulnerability to METH abuse in the offspring. Furthermore, it seems that both dopamine D1-like and D2-like receptors may mediate METH extinction in the offspring born to the sleep–deprived dams; however, only the dopamine D1 receptor may play an important role in reinstating the extinguished METH reward memory in the offspring.
Keywords : Methamphetamine; maternal sleep–deprivation; extinction; reinstatement; dopamine receptors; offspring.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 80
Abstract ID: 348
subject: Emotion, Motivation and Behavior: Reward and the Brain
Presentation Type: Poster

Evaluation of the effects of brain stimulation and temporary inactivation of the Intra-ventral tegmental area on sensitization to morphine-induced conditioned place preference in male rats.

Submission Author: Mozhgan Ghobadi Pour

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Background and Aim : In processing the development of psychological dependency, opioid reinforcement, and opiate-related associative reward learning and memory, the ventral tegmental area (VTA) is considered the key zone.

Methods : The impact of direct unilateral electrical stimulation (25, and 150 µA) on VTA with morphine dose (0.5 or 5 mg/kg) was investigated by using a CPP behavioral pharmacology study. Reversible inactivation of VTA was performed by bilateral microinjection of Lidocaine (2%; 0.5 µL/site) into the VTA for DA receptor blockade by 2 implanted separate cannulae five minutes before morphine injection in the conditioning process during the acquisition phase of CPP

Results : Our findings also showed that morphine-induced CPP (mCPP) was suppressed by electrical stimulation of VTA (150 µA), which reveals impaired learning and memory formation in the process of conditioning phase and priming dose awoke sensitization probability through the proven reward system. The findings showed that bilateral intra-VTA administration of Lidocaine significantly decreases the acquisition ($P<0.05$) of morphine-induced CPP compared with their respective sham group which reversed in sensitization.

Conclusion : It was concluded that these results seem to be important for the identification of connections in the mesolimbic nervous system which can help to find new strategies to attenuate the rewarding action of morphine.

Keywords : Conditioned place preference; Deep brain stimulation; Lidocaine; Morphine; Rat; Ventral tegmental area.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 81
Abstract ID: 112
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Poster

Mediodorsal thalamic cannabinoid CB1 receptors mediate dextromethorphan-induced anxiety in rats

Submission Author: Golnoosh Banaei boroujeni

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Background and Aim : Dextromethorphan (DXM), as an NMDA receptor antagonist, is an over-the-counter cough suppressant which its abuse may lead to addiction. Thalamo-prefrontal network has been suggested to serve key functions in emotional behaviors including anxiety. The mediodorsal (MD) nucleus of thalamus sends excitatory inputs to the prefrontal cortex which expresses cannabinoid CB1 receptors on their synaptic terminals. A large body of evidence suggests that the endocannabinoid system plays a critical role in anxiety. However, the functional role of endocannabinoid system alongside with other neuromodulatory system within mediodorsal thalamus for regulation anxiety-driven behaviors is not as yet clear. Thus, the aim of the present study was to investigate the possible role of the MD cannabinoid CB1 receptors in the effect of DXM administration on anxiety-like behaviors, using the elevated plus-maze (EPM) test in rats.
Methods : Adult male Wistar rats (200-230 g) were anesthetized with an intraperitoneal injection of ketamine-xylazine mixture and then bilaterally cannulated in the MD, using a stereotaxic surgical procedure. They were allowed to recover for one week before the beginning of the experiments. Anxiety-like behaviors were measured in each animal using elevated plus-maze (EPM). The EPM is used as a valuable paradigm to define brain regions which are involved in anxiety and screen pharmacological agents for anxiety treatment. Statistical analyses were performed by one-way analysis of variance (ANOVA) and Tukey's post-hoc test was used to compare means of the groups using SPSS software.
Results : Systemic administration of DXM (3-7 mg/kg, i.p.) dose-dependently decreased the percentage of open arm time (%OAT), and open arm entries (%OAE) as measured by the EPM, indicating an anxiogenic-like behavior to DXM. No changes in locomotor activity were observed at given doses of DXM. Furthermore, we found that the microinjection of ACPA, a selective CB1 receptor agonist, (2.5-10 ng/rat) into the MD increased %OAT and %OAE parameters in the EPM, showing an inhibiting effect of the drug on DXM-induced anxiety. Interestingly, bilaterally microinjection of the high dose of ACPA into the MD by itself induced anxiolytic-like effects.

Conclusion : It can be concluded that the MD cannabinoid system, considering effect of bilateral intra-MD microinjection of ACPA when co-administered with DXM, plays a critical role in the anxiogenic effect of DXM. Despite dextromethorphan's long clinical success, the present results showed that the use of the drug could have serious side effect on emotional behaviors via the involvement of CB1 receptors.

Keywords : Dextromethorphan; Anxiety; Mediodorsal thalamus; CB1 receptors; Rat(s)

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 82
Abstract ID: 22
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

Effects of PPAR-γ agonist, pioglitazone on brain tissues oxidative damage and learning and memory impairment in juvenile hypothyroid rats

Submission Author: Mahdiyeh Hedayati Moghadam

Mahdiyeh Hedayati Moghadam[1], Mahdiyeh Hedayati-Moghadam[2], Yousef Baghcheghi[3], Hossein Salmani[4], Mahmoud Hosseini[5]

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Background and Aim : The effect of PPAR-γ agonist pioglitazone on the brain tissues oxidative damage and learning and memory in juvenile hypothyroid rats was evaluated.

Methods : Rats were classified as: (1) Control; (2) Propylthiouracil (PTU); (3) PTU-Pio 10 and (4) PTU-Pio 20. PTU was given in drinking water (0.05%) during six weeks. Pioglitazone (10 or 20 mg/kg) was daily injected intraperitoneally (IP). Passive avoidance (PA) and Morris water maze (MMW) were conducted. The animals were anesthetized deeply and for biochemical measurements, the brain tissues were removed.

Results : The results indicated that in the MWM escape latency as well as traveled path increased in the PTU group as compared to the control group. Also, the time spent in the target quadrant in the probe test of MWM and step-through latency in the PA test were decreased in the PTU group as compared to the control group. Pioglitazone reversed all the negative behavioral effects of hypothyroidism. Administration of PTU attenuated thiol and superoxide dismutase (SOD), and catalase (CAT) activities in the brain tissues, whereas increased malondialdehyde (MDA) and NO metabolites. PPAR? agonist improved thiol, SOD and CAT, while diminished MDA concentration.

Conclusion : Our finding in the present study indicated that PPARγ agonist pioglitazone prevented the brain tissues from oxidative damage and learning and memory impairments in juvenile hypothyroid rats

Keywords : Hypothyroidism, Memory impairment, Oxidative stress, Pioglitazone

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 83
Abstract ID: 27
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

Vitamin E improves brain derived neurotrophic factor and prevents from brain tissues oxidative damage and learning and memory impairments of juvenile hypothyroid rats

Submission Author: Yousef Baghcheghi

Yousef Baghcheghi[1], Hossein Salmani [2], Mahmoud Hosseini [3]

1. Department of Physiology, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.
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Background and Aim : The effects of vitamin E (Vit E) on brain derived neurotrophic factor (BDNF) and brain tissues oxidative damage and learning and memory impairments of juvenile hypothyroid rats was examined.

Methods : The rats were grouped as: (1) Control; (2) Propylthiouracil (PTU); (3) PTU-Vit E and (4) Vit E. PTU was given in their drinking water (0.05%) during 6 weeks. Vit E (20 mg/ kg) was daily injected (IP). Morris water maze (MMW) and passive avoidance (PA) was carried out. The animals were deeply anesthetized and the brain tissues were removed for biochemical measurements.

Results : PTU increased the escape latency and traveled path in MWM ($P< 0.001$). It also shortened the latency to enter the dark compartment of PA an also the time spent in the target quadrant in probe trial of MWM ($P<0.01$-$P<0.001$). All the effects of PTU were reversed by Vit E ($P<0.01$-$P<0.001$). PTU administration attenuated thiol, BDNF content and the activities of superoxide dismutase (SOD) and catalase (CAT) in the brain tissues while, increased molondialdehyde (MDA). Vit E improved BDNF, thiol, SOD and CAT while, diminished MDA.

Conclusion : The results of present study showed that Vit E improved BDNF and prevented from brain tissues oxidative damage and learning and memory impairments in juvenile hypothyroid rats.

Keywords : Hypothyroidism, Learning, Memory, BDNF, Oxidative stress, Vitamin E

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 84
Abstract ID: 47
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

Severe acute respiratory syndrome coronavirus 2 (COVID-19) and Coping strategies

Submission Author: Parya Abravani

Parya Abravani[1]

1. PhD student of Cognitive Psychology, Institute for Cognitive and Brain Sciences, Shahid Beheshti University, Tehran, Iran

Background and Aim : Since the emergence of the Covid- 19 pandemic in Wuhan, China, there have been 36,792,914 cases and 1,067,469 deaths worldwide to date, and the numbers are growing. These conditions in the world have created a kind of mental stress in people that provides a basis for studying coping strategies for this condition. Coping occurs in response to psychological stress—usually triggered by changes—in an effort to maintain mental health and emotional well-being. The Lazarus Coping Strategy Questionnaire is based on the Lazarus-Folkman theory of stress. In their view, our interpretation of events is more important than the events themselves. They believe that one's perception of situations determines its tension and severity.

Methods : In this study we used online questionnaire of Lazarus and Folkman coping strategies from June 22, 2020 to July 1 ,2020 to investigate the coping strategy of people. 100 questionnaires were collected from individuals and people answered 66 questions online and their answers were collected and analyzed through the Porsline.ir website

Results : The averages obtained from the emotion-focused and problem-focused strategies are as follows 1.20 and 1.40. T-test (61.05, 67.20) shows that people used more problem-focused strategy in this period.

Conclusion : . Problem-focused coping strategy are characteristic of people with good mental health and social well-being. Results show that participants used problem-focused coping strategy more than emotion-focused strategy.

Keywords : COVID-19, coping strategy, Lazarus, Folkman

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 85
Abstract ID: 275
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

Comparison of emotion regulation in adolescents with non-suicidal self-injury (NSSI) and normal counterparts

Submission Author: Nazir Mozafari

Nazir Mozafari[1], Fatemeh Bagherian[2], Ali Zadeh Mohammadi[3], Mahmood Heidari[4]

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Background and Aim : Non-suicidal self-injury (NSSI) is one of the serious public concerns. There are several hypotheses and reasons for NSSI. The aim of this study was to investigate the differences between two groups of adolescents with NSSI and normal counterparts in emotion regulation.

Methods : In this cross-sectional comparative causal study, 47 adolescents (girls and boys) having NSSI and 72 normal adolescents were compared. They responded Gratz and Roomer's emotion dysregulation scale.

Results : Participants who reported NSSI, had higher scores on emotion dysregulation than participants without a history of NSSI.

Conclusion : The results support the concept that there is a significant difference between two groups of adolescents with NSSI and normal counterparts in emotion regulation. The data can also be used to educate, prevent and treat adolescents with NSSI and to promote public health policies.

Keywords : Adolescence, emotion regulation, non-suicidal self-injury.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 86
Abstract ID: 54
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

The relationship between multiple intelligence and the Initiative of an entrepreneurial personality

Submission Author: Golareh Mohaghegh Daghigh

Golareh Mohaghegh Daghigh[1], Nasrollah Moradi-Kor[2]

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Background and Aim : Background and purpose: In this century, critical theory has been developed to explain individual differences, which is the theory of multiple intelligences and plays a crucial role in recognizing and strengthening individuals' entrepreneurial spirit. On the other hand, entrepreneurship is, in practice, the ability to create something out of nothing. One of the most influential currents in human life at the beginning of the third millennium AD is entrepreneurship and creativity, which is the basis for change and transformation. The emergence and promotion of entrepreneurial behavior depend on various factors, such as individuals' psychological and personality characteristics and environmental and structural elements. In this regard, it seems that different academic disciplines should look for factors related to understanding the components of entrepreneurship and the ability to Predict and influence it and prepare students for self-employment in the university environment by planning on them as the necessary training. Aim: This study aimed to investigate the relationship between multiple intelligences with entrepreneurial personality traits and students' creativity.

Methods : Methods: The method of the present study is descriptive-correlational. This research's statistical population is undergraduate students of technical and engineering, basic sciences, and humanities of Islamic Azad University, Mashhad Branch. The sample size was determined using Cochran's formula of 245 people, and the respondents were selected by stratified sampling method. Data were collected through two standard questionnaires of multiple intelligence and researcher-made individual entrepreneurial components and analyzed by SPSS 23 and Lisrel software. Content and face method were used to obtain the validity of the questionnaire. The reliability coefficient was calculated using Cronbach's alpha. Descriptive statistics, inferential statistics, correlation tests, and multiple regression analysis were used to analyze the data.

Results : Results: The results showed that there is a direct and significant relationship between linguistic-verbal intelligence, mathematical-logical intelligence, physical-motor intelligence, spatial intelligence, intrapersonal intelligence, interpersonal intelligence, real intelligence, with creativity Initiative of entrepreneurial components.

Conclusion : Conclusion : According to the findings, it can be concluded that by accurately identifying the types of intelligence in students, it can become the bedrock of entrepreneurship or cause the recognition and strengthening of entrepreneurial spirit in students and the creation of creativity in students.

Keywords : Multiple Intelligences, Initiative, Entrepreneurial Personality Components.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 87
Abstract ID: 55
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

The relationship between Fluidity of an entrepreneurial personality and the multiple intelligence

Submission Author: Golareh Mohaghegh Daghigh

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Background and Aim : Background and purpose: In this century, critical theory has been developed to explain individual differences, which is the theory of multiple intelligences and plays a crucial role in recognizing and strengthening individuals' entrepreneurial spirit. On the other hand, entrepreneurship is, in practice, the ability to create something out of nothing. One of the most influential currents in human life at the beginning of the third millennium AD is entrepreneurship and creativity, which is the basis for change and transformation. The emergence and promotion of entrepreneurial behavior depend on various factors, such as individuals' psychological and personality characteristics and environmental and structural elements. In this regard, it seems that different academic disciplines should look for factors related to understanding the components of entrepreneurship and the ability to Predict and influence it and prepare students for self-employment in the university environment by planning on them as the necessary training. Aim: This study aimed to investigate the relationship between multiple intelligences with entrepreneurial personality traits and students' creativity.

Methods : Methods: The method of the present study is descriptive-correlational. This research's statistical population is undergraduate students of technical and engineering, basic sciences, and humanities of Islamic Azad University, Mashhad Branch. The sample size was determined using Cochran's formula of 245 people, and the respondents were selected by stratified sampling method. Data were collected through two standard questionnaires of multiple intelligence and researcher-made individual entrepreneurial components and analyzed by SPSS 23 and Lisrel software. Content and face method were used to obtain the validity of the questionnaire. The reliability coefficient was calculated using Cronbach's alpha. Descriptive statistics, inferential statistics, correlation tests, and multiple regression analysis were used to analyze the data.

Results : Results: The results showed that there is a direct and significant relationship between linguistic-verbal intelligence, mathematical-logical intelligence, physical-motor intelligence, spatial intelligence, intrapersonal intelligence, interpersonal intelligence, real intelligence, with creativity Fluidity of entrepreneurial components.

Conclusion : Conclusion : According to the findings, it can be concluded that by accurately identifying the types of intelligence in students, it can become the bedrock of entrepreneurship or cause the recognition and strengthening of entrepreneurial spirit in students and the creation of creativity in students.

Keywords : Multiple Intelligences, Fluidity, Entrepreneurial Personality Components.

BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 88
Abstract ID: 332
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

Investigating the relationship between parents' religious beliefs in prevention Risky behaviors of children by using it In healthy lifestyles

Submission Author: Zohreh Shakib

Zohreh Shakib[1]

1. Master of Health Education and Health Promotion

Background and Aim : The prevalence of high-risk behaviors in adolescence, such as smoking, alcohol and drugs, has different short-term and long-term effects and consequences on a person's health. High-risk behaviors are the most important factor in endangering the health of society. Today, the prevalence of high-risk behaviors, especially among adolescents and young people, has become one of the most important and widespread concerns of human societies. Therefore, changing people's health behaviors requires their knowledge and awareness. Therefore, changing people's health behaviors requires their knowledge and awareness. Therefore, raising critical and accurate discussions entitled "healthy lifestyle" and preventing high-risk behaviors with the approach of religious beliefs is one of the most essential cultural issues of Islamic societies. The ideology and principles of Islamic civilization, derived from tradition and the web, can provide the basis for increasing social security. In this study, while carefully examining the concept of "healthy lifestyle" and high-risk behaviors, we analyze it from the perspective of parents' religious beliefs.

Methods : An examination of Persian books and articles on healthy lifestyles and the prevention of high-risk behaviors led to religious teachings found no specific book or article on the subject of the study, but on the topics discussed in the article with Various titles in some books, articles and publications of modern prevention, sites were obtained topics that are mentioned in the sources.

Results : In this study, a healthy lifestyle and prevention of high-risk behaviors in accordance with the religious beliefs of parents as a criterion and the main measure that plays a decisive role in the fate of young people in society, was tried and tried, principles that originate only from concepts. It is scientific, based on the classification done by the library method and documents were presented in a coherent manner related to the research topic.

Conclusion : Today, the prevalence of high-risk behaviors, especially among adolescents and young people, has become one of the most important and widespread concerns of human societies. Changing people's health behaviors requires their knowledge and awareness. In the meantime, health educators can play a very important role in raising the awareness of others in order to control and prevent high-risk behaviors in school, family and society. Therefore, their

level of awareness and continuous training is important. Adherence to religious values defines a limited framework in the individual, and the presence of an extraordinary and infinite force in the life and mind of the individual as a creator, assures him that life is purposeful and that nothing has been created in vain.

Keywords : religious beliefs, parents, risky behavior, healthy lifestyle, children

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 89
Abstract ID: 226
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

The effectiveness of emotional intelligence training on improving quality of life, anxiety and depression in soldiers with a history of drug use

Submission Author: Meysam Shiraliyan

Meysam Shiraliyan[1]

1. Prisons Organization

Background and Aim : Emotional intelligence as a nascent concept is a subject that refers to the place and role of emotions, feelings and emotions and their regulation in humans and it is mentioned as a variable related to quality of life, anxiety and depression. The aim of this study was to evaluate the effectiveness of emotional intelligence training on improving quality of life, anxiety and depression in soldiers with a history of drug use.

Methods : The research method of the present study is an intervention type with a control group. In this clinical study, 24 conscripts working in the disciplinary unit of the Greater Tehran Penitentiary were available by sampling and selection methods and in two experimental and control groups were randomly selected. The experimental group received emotional intelligence training while the control group did not receive any training. The research instruments were Beck Anxiety and Depression Questionnaire and Quality of Life Questionnaire (SF-36). The results were analyzed by univariate analysis of variance.

Results : Emotional intelligence training had a positive and significant effect on improving the quality of life, improving psychological symptoms and anxiety and depression in soldiers. (P <0/05).

Conclusion : The results indicate that emotional intelligence as a moderating and important variable can have a decisive effect on improving the quality of life, reducing the symptoms of anxiety and depression in soldiers with a history of substance use.

Keywords : Depression, Anxiety,, Quality of life, Emotional intelligence, Soldiers, Drugs

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 90
Abstract ID: 185
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

The effects of antipsychotic drugs on behavioral impairments and CACNA1C expression in animal models of schizophrenia

Submission Author: Mehrnoosh Azimi sanavi

Mehrnoosh Azimi sanavi[1], Hamed Ghazvini[2], Mehryar Zargari[3], Hossein Ghalehnoei[4], Zahra Hosseini-Khah[5]

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2. Ph.D. of Neuroscience 1. Department of Neuroscience, Faculty of Advanced Medical Sciences Mazandaran University of Medical Sciences, Sari, Iran
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Background and Aim : Schizophrenia is one of the most debilitating psychiatric illnesses.One way to treat schizophrenia is to prescribe antipsychotic drugs. This study aimed to investigate the neuroprotective effects of risperidone and clozapine on behavioral disorders in an animal model and examine the effects of drugs on CACNA1C gene expression

Methods : : In this study 45 male Wistar rats were divided into 5 groups. Schizophrenia, risperidone and clozapine groups received ketamine intraperitoneally at a dose of 30 mg / kg and the solvent group received normal saline for 10 days. Fifteen days after the last injection of ketamine and normal saline, social interaction and elevated-plus maze tests performed. Schizophrenia group were killed. One month after the last injection of ketamine, we started injecting clozapine at a dose of 7.5 mg/kg, risperidone at a dose of 1mg/kg, and normal saline up to 28 days. Twenty-four hours after the last injection, social interaction and elevated plus-maze tests were performed. Rats were killed and gene expression levels of beta-actin and CACNA1C in hippocampus, were analyzed by using of real-time quantitative PCR.

Results : The results of social interaction test revealed that a significant decrease in cumulative time with ketamine 30 mg/kg ($p < 0.01$), in compared with vehicle group. Furthermore, this findings showed that treatment with clozapine at 7.5 mg/kg ($p < 0.05$) and risperidone at 1 mg/kg ($p < 0.05$), increased in cumulative time in compared with ketamine group, respectively . Moreover, present results from elevated plus-maze test demonstrated a critical decrease in open arm time with ketamine at 10 mg/kg ($p < 0.001$) in compared with vehicle, also increased in open arm time with risperidone at 1 mg/kg ($p < 0.05$) in compared with ketamine. There was

no significant increase in open arm time with clozapine at 7.5 mg/kg ($p > 0.05$) in compared with ketamine but increased in close arm time with ketamine at 10 mg/kg ($p < 0.001$) compared with vehicle. There was no significant decrease in close arm time with clozapine at 7.5 mg/kg and risperidone at 1 mg/kg ($p > 0.05$) compared with ketamine. Our results represent that chronic administration of risperidone and clozapine improves anxiety-like behaviors. There were no significant differences in CACNA1C mRNA expression between groups in rat hippocampus, but mRNA fold changing in risperidone group is higher than others.

Conclusion : In brief, the results of this study indicated that antipsychotic drugs including clozapine and risperidone can partially improve the cognitive impairments in rat . However, our finding demonstrated that these treatment is not related to CACNA1C mRNA expression . Finally , further studies are required to investigate other aspect of antipsychotic drugs on schizophrenic like behaviors .

Keywords : Schizophrenia; Ketamine; Clozapine; Risperidone; Elevate plus maze; Social interaction test, Real-time PCR; Beta-actine; CACNA1C

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 91
Abstract ID: 346
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

Is ADHD Genetic ?

Submission Author: Mohamad reza Gholipour fallahy

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Background and Aim : Attention deficit hyperactivity disorder (ADHD or ADD) is a brain disorder with a number of likely causes — though the medical community still can't pinpoint exactly which one explains the symptoms of ADHD. Researchers suspect that a gene involved in the creation of dopamine, a chemical that controls the brain's ability to maintain regular and consistent attention may be traced back to ADHD.
Methods : Available evidence suggests that ADHD is genetic—passed down from parent to child. ADHD seems to run in at least some families. At least one-third of all fathers who had ADHD in their youth have children with the condition. What's more, the majority of identical twins share the ADHD trait. Researchers in the U.S. and Europe are working now to determine which genes, specifically, make an individual susceptible to ADHD. Scientists are investigating many different genes that may play a role in developing ADHD, especially genes linked to the neurotransmitter dopamine. They believe it likely involves at least two genes, since ADHD is such a complex disorder. There's still a lot of work to do on the genetic aspect of ADHD. The discovery of genes that contribute to ADHD could make diagnosing the condition easier. It might also make it possible to find better treatments for people with varying symptoms of ADHD. Scans and other neuro-imaging research have shown that the brains of children with ADHD mature more slowly than do those of children without the disorder. In addition, recent studies with fMRI imaging show variations in areas of the brain that control many ADHD symptoms. In children with ADHD, several brain regions and structures (pre-frontal cortex, striatum, basal ganglia, and cerebellum) tend to be smaller by roughly 5%.3 While this average difference is observed consistently, it is too small to be useful in making the diagnosis of ADHD in a particular individual.
Results : How Does ADHD Impact the Brain? ADHD appears to impair neurotransmitter activity in four functional regions of the brain: 1-Frontal cortex. This region orchestrates our high-level functioning: maintaining attention, organization, and executive function. A deficiency of dopamine within this brain region might cause inattention, problems with organization, and/or impaired executive functioning. 2-Limbic system. This region, located deeper in the brain, regulates our emotions. A dopamine deficiency in this region might result in restlessness, inattention, or emotional volatility. 3-Basal ganglia. These neural circuits regulate communication within the brain. A dopamine deficiency in the basal ganglia can cause information to "short-circuit," resulting in inattention or impulsivity. 4-Reticular activating system : A dopamine deficiency in the RAS can cause inattention, impulsivity, or hyperactivity.

Conclusion : There's no disputing that ADHD is a complex disorder and likely has many different causes and factors — all currently under investigation. Still, while environmental and cultural factors can alter behavior and child development, research confirms that ADHD is primarily a biologically-based disorder.

Keywords : ADHD-Genetic-Brain-attention

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BOOK of Abstracts
9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 92
Abstract ID: 5
subject: Neuropsychiatry and Psychology: Evidence-Based Psychology
Presentation Type: Poster

Neurocognitive foundations of life skills

Submission Author: Mahdi Madanifard

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Background and Aim : Life skills are a set of methods that are considered as neurological processes. These processes, which include skills such as decision making, problem solving, self-awareness, emotion regulation, etc., are interconnected processes that are formed from very complex neural connections. These processes consist of the activity of important structures in the cortical and subcortical parts of the brain. Therefore, it seems that cognitive and emotional processing can play an important role in applying life skills.

Methods : The present review article has tried to examine the important neural processes and structures in life skills based on the latest clinical research. For the compilation of the present article, the relevant sources from 2000 to 2020 have been cited. For this purpose, using keywords of life skills such as decision making, problem solving, self-awareness and neural structures of performance for searching in databases of ScienceDirect, Pubmed, Google Scholar, Proquest has been done and in the first stage 55 articles A topic related to the topic was selected. Then, from among these articles and based on a purposeful selection method, articles whose content was related to life skills and nervous system topics were selected, thus 7 articles are the main source of the present study.

Results : Based on the findings of these articles, it was found that cortical areas, especially the forehead area, play an important role in cognitive control and can play a key role in controlling and managing the emotions of subcortical parts of the brain such as the limbic system. Create problems with cognitive processing and emotional control

Conclusion : Based on the results, it can be said that people who are successful in life skills have more advanced cognitive and emotional processes, but life skills training can strengthen the cognitive processes of the brain and neuroplasticity in the brain and learn it.

Keywords : Life Skills, Neurocognitive, Emotion.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 93
Abstract ID: 115
subject: Neuropsychiatry and Psychology: Schizophrenia
Presentation Type: Oral

Auditory spatial processing in schizophrenia: behavioral evidence of abnormal hemispheric laterality

Submission Author: Sara Sardari

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Background and Aim : Spatial processing deficits are the reason of many daily life problems of schizophrenia (SCZ) patients. In this study, we aimed to examine the possibility of abnormal bias to one hemifield, in form of hemispatial neglect and extinction in auditory modality in these patients.

Methods : Twenty five SCZ patients and 25 healthy individuals were compared on a speech task (to study the auditory extinction) and an auditory localization task (as a tool for studying neglect). In the speech task, participants reproduced pairs of non-sense syllables which played from two speakers on the right and left side. On the localization task, examinees discriminated the subjective location of noise stimuli, presented randomly from 5 speakers. The directional bias, as measured as Deviation from Mid Line and Index of Asymmetry of Response were analyzed separately.

Results : On the speech task, patients had significantly lower hit rates for the right ear compared with controls ($p= 0.01$). While healthy controls showed right ear advantage, SCZs showed a left ear priority. No significant difference was found on unilateral trials. On localization task, although both groups followed a left- side bias, this bias was much more prominent for the patients (all $p< 0.05$).

Conclusion : SCZ could potentially alter the auditory spatial function, both for speech and non- speech sounds, which may appear in the form of auditory neglect and extinction on the right side, depending to the characteristics of patients' populations. The auditory spatial bias could appear without bias in the visual modality.

Keywords : Auditory; Spatial; Localization; Schizophrenia

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 94
Abstract ID: 134
subject: Neuropsychiatry and Psychology: Schizophrenia
Presentation Type: Oral

Electrophysiological brain responses to unilateral and bilateral auditory stimuli in schizophrenia

Submission Author: Shahrzad Mazhari

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3. Neuroscience research center, Kerman University of Medical Sciences

Background and Aim : Research has found auditory spatial processing deficits in patients with schizophrenia (SCZ), but no study has examined SCZ patients' auditory spatial processing at both pre-attentional and attentional stages. To address this gap, we investigated schizophrenics' brain responses to sounds originating from different locations (right, left, and bilateral sources).

Methods : The event-related potentials (ERPs) of 25 chronic schizophrenic patients and 25 healthy subjects were compared. Mismatch negativity (MMN) in response to frequency and duration deviants was assessed. Two P3 components (P3a and P3b) were elicited via a frequency discrimination task, and MMN and P3 were recorded through separate monaural and dichotic stimulation paradigms.

Results : Our results corroborated the previously published finding that MMN, P3a, and P3b amplitudes are reduced in SCZ patients, but they showed no significant effect of stimulus location on either MMN or P3. These results indicated similarity between the SCZ patients and healthy individuals as regards patterns of ERP responses to stimuli that come from different directions.

Conclusion : No evidence of auditory hemispatial bias in the SCZ patients was found, supporting the existence of non-lateralized spatial processing deficits in such patients and suggesting compensatory changes in the hemispheric laterality of patients' brains.

Keywords : schizophrenia, spatial attention

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 95
Abstract ID: 256
subject: Neuropsychiatry and Psychology: Disorders of Neurobehavior
Presentation Type: Poster

The Effectiveness of cognitive rehabilitation working memory by cogmed training method on processing speed and working memory in ADHD children with and without sluggish cognitive tempo symptoms

Submission Author: Rana Parvaz

Rana Parvaz[1], Gholamreza Chalabianloo[2]

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Background and Aim : attention-deficit/hyperactivity disorder (ADHD) is the most prevalent disorder in children. ADHD Children present some executive dysfunctions especially working memory deficites. Recently, researches indicated that some ADHD children are suffering from sluggish cognitive tempo which have covered by inattention features. Cogmed working memory training (CWMT) is the most validated method that enhance working memory and attention. The purpose of this study was to determine the effectiveness of cognitive rehabilitation working memory by cogmed training method on processing speed and working memory in ADHD children with and without sluggish cognitive tempo symptoms.

Methods : 40 ADHD children (20 with and 20 without sluggish cognitive tempo) aged from 6 to 12 years were assigned to CWMT treatment. All ADHD children were examined twice (pre-test and post-test) by using Wechsler Intelligence Scale for children (digit span and coding subscales), corsi block-tapping test, stroop color, word test, Go/no-go and sluggish cognitive tempo inventory. All patients underwent computerized working memory rehabilitation, 30 to 45 minutes, 3 days a week, for 2 months.

Results : Analysis of covariance indicated that cognitive rehabilitation had an effect on the different components of working memory (phonological loop, the visuospatial sketchpad and central executive) and sluggish cognitive tempo in ADHD children with sluggish cognitive tempo.

Conclusion : There are significant improvement in different components of working memory and sluggish cognitive tempo in children especially in group with a sluggish cognitive tempo. The result indicated that CWMT can help ADHD children to improve their sluggish cognitive tempo and working memory . Using CWMT in clinics might be helpful for cognitive abilities in these children.

Keywords : working memory; cogmed working memory training; sluggish cognitive tempo; ADHD

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 96
Abstract ID: 4
subject: Neuropsychiatry and Psychology: Cognitive Disorders
Presentation Type: Poster

Sleep problems and language disorders in children with autism spectrum disorder

Submission Author: Mahdi Madanifard

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Background and Aim : Language disorders are common in children with autism spectrum disorder. Meanwhile, it seems that children who suffer from sleep problems suffer from more severe disturbances in various linguistic areas. Accordingly, the aim of this study is to compare language disorders in autistic children with sleep problems and no problems with sleep.

Methods : The present study is a cross-sectional type of causal-comparative research. The statistical population of this study includes all children with autism between 7 and 12 years of age. A sample of 38 subjects was divided into two groups of 19, including those with sleep problems and no sleep problems, through purposeful sampling through (CSHQ) tests. They were then evaluated through continuous speech quality testing.

Results : Group autistic children with sleep problems in terms of; Mean Length utterance (2.93 ± 2.01), speech rate (74.13 ± 158), number of verbs (11.72 ± 2.61), lexical enrichment (16± 1.55) and echolalia (2.81± 1.10) as compared with autistic children without sleep problems, higher scores with significant differences ($P<0.05$) The findings also showed that the difference in mean scores in the subscale of the number of lexical words was not significant.

Conclusion : According to the findings of this study, it seems that sleep disorders may be one of the factors affecting language learning and continuous speech quality in autistic children.

Keywords : Autism, Sleep, Language

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 97
Abstract ID: 14
subject: Neuropsychiatry and Psychology: Mood Disorders
Presentation Type: Poster

The study of anti-depressive effect of piperine in rat experimental anxiety depressive model with corticostron.

Submission Author: Amin Ataie

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3. Student Committee Resarch , Mazandaran University of Medical Science ,Sari, Iran

Background and Aim : Depression is a usual psychological illness, and 10 to 20 percent of people suffer from it. Also anyone may have depressive condition once a year. Current treatment of depression is use of polycyclic and SSRI antidepressant. Piperin is active material from Piper nigrum plant. It is antioxidant and has neuroprotective effect. In this study, we investigate anti depressive effects of piperin in rats.

Methods : Rats were injected with corticostron 20mg/kg for three weeks for induce anxiety – depressive like behavior and in the test groups piperin 10mg /kg was injected before corticostrone in rats. Also interaction with Memantine (NMDA antagonist) was studied. For investigation the anxiety behavior we use plus maze apparatus and for depressive like behavior, force swimming test was used and immobility is considered as depressive like behavior. Also expression of BDNF and NMDA receptors were investigated in Hippocampus and prefrontal cortex and amygdala of rat brain with Real time PCR.

Results : Our results showed that piperin could not decrease anxiety but alone or with Memantine could improve depression in rats and memantine has additive effect with piperine in depression improvement. On the other hand expression of BDNF gene was increased with piperine and memantine.

Conclusion : In conclusion it seems that neuroprotective effects of piperin may related to its antioxidant effect and NMDA antagonist could increase its effect. Also it was suggested that NMDA antagonist has additive antidepressant effect with piperin.Also BDNF gene has been interacted with behavioral effect of piperine.

Keywords : Piperine , Corticostrone, Depression, Swimming test, BDNF, Plus Maze

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 98
Abstract ID: 259
subject: Neuropsychiatry and Psychology: Mood Disorders
Presentation Type: Poster

Comparison of wandering minds and sluggish cognitive tempo in patients with borderline personality disorder and normal persons

Submission Author: Rana Parvaz

Rana Parvaz[1], gholamreza Chalabianloo[2]

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Background and Aim : : Borderline personality disorder (BPD) is one of ten personality disorders identified in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders. Also it can cause cognitive impairment. The propose of this study was to compare wandering minds and sluggish cognitive tempo (SCT) in patients with borderline personality disorder and normal persons.

Methods : The research method was comparative causal design. 50 patients with BPD and 50 normal persons were selected through purposive sampling. they completed the Sluggish cognitive tempo inventory and wandering minds scale. Data were analyzed by MANOVA

Results : The results showed a significant difference in wandering minds (p 0/05) and sluggish cognitive tempo (p 0/01) in patients with BPD and normal persons.

Conclusion : Patients with BPD had significant higher scores in wandering minds and sluggish cognitive tempo, consequently these factors might have an important role in BPD. Pervious findings indicated wandering and SCT commonly co-occur with ADHD. Inasmuch as ADHD and BPD have overlapping symptoms and share some common genetic and temperamental risk factors, so wandering minds and SCT might impress BPD, likewise. These findings indicate Neurological factors have a lead role in minds wandering and SCT.

Keywords : wandering minds; sluggish cognitive tempo; borderline personality disorder

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BOOK of Abstracts
9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 99
Abstract ID: 166
subject: Neuropsychiatry and Psychology: Mood Disorders
Presentation Type: Poster

Antidepressant-like effects of Melissa officinalis on reserpine-induced depression in mice

Submission Author: Sedigheh Talebi pahmedani

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Background and Aim : Melissa officinalis is an old and traditional medicinal herb which is used in neurological disorders including depression. This study was designed to search the effects of M. officinalis aqueous extract pretreatment on reserpine-induced depression in mice.

Methods : Different doses of the aqueous extract of M. officinalis (150, 350, 550, 750 mg/kg) were administered orally daily for 7 days and depressive-like behaviors in mice were assessed 24 hours after subcutaneous injection of reserpine (4 mg/kg) in the sequence of forced-swimming test , suspension tail test and open-field test (8th day). Normal Saline (10 ml/kg), Fluoxetine (20 mg/kg) and Imipramine (10 mg/kg) were control groups of the study.

Results : Reserpine enhanced immobility time in compared to normal saline while M. officinalis pretreatment were declined immobility time in a dose dependent manner (350 mg/kg and 550 mg/kg). M. officinalis reduced immobility time dose dependently in tail suspension test and increased the total distance traveled in the open-field test. $p<0.05$

Conclusion : Pretreatment with M. officinalis could prevent of depression-like behavior in reserpine-induced mice better than fluoxetine and imipramine.

Keywords : Melissa officinalis, Depression, Reserpine, Antidepressant

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 100
Abstract ID: 345
subject: Neuropsychiatry and Psychology: Mood Disorders
Presentation Type: Poster

Vitamin D modulation of the dopamine reward system in a model of chronic mild stress in male rat

Submission Author: Katayoun Sedaghat

Katayoun Sedaghat[1]

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Background and Aim : Depression, a common mood disorder, involves anhedonia and defects in reward circuits and mesolimbic dopamine transmission in the striatum and nucleus accumbens (NAc). Active vitamin-D, (1,25-(OH)2 vitamin-D3), exerts protective and regulatory effects on the brain dopamine system

Methods : key depression-like symptoms were induced in rats by chronic mild-stress (CMS) and the comparative effect of treatment with 1,25-(OH)2 vitamin-D3 (5, 10 μg/kg, or vehicle; i.p., twice weekly) or fluoxetine (5 mg/kg or vehicle, i.p., daily) on anhedonic behavior, locomotor activity and anxiety-like behavior was examined using sucrose preference test (SPT), open field test (OFT) and novel object exploration test (NOT), respectively. We also measured serum corticosterone levels and dopamine transporter-immunoreactivity (DAT-ir) levels in NAc shell and core. CMS exposure for 3 weeks was followed by a SPT and thereafter CMS was continued for 5 weeks, along with vitamin- D or fluoxetine treatment and further testing, which was concluded with another SPT.

Results : Vitamin-D treatment enhanced sucrose preference ($P < 0.01$; an hedonic effect) and increased object exploration ($P < 0.01$) in CMS rats. CMS significantly reduced the level of DAT-ir in NAc ($P < 0.0001$). Vitamin-D treatment restored/increased DAT-ir levels ($P < 0.0001$) in CMS rat NAc (core/ shell), compared to levels in fluoxetine treated and non-treated CMS rats. Vitamin-D did not alter locomotor activity or produce an anxiolytic effect in the OFT.

Conclusion : These data suggest that similar to the antidepressant, fluoxetine, regular vitamin-D treatment can improve ‘anhedonia-like symptoms’ in rats subjected to CMS, probably by regulating the effect of dopamine-related actions in the NAc.

Keywords : Depression, Vitamin-D, Fluoxetine, Chronic mild stress, Nucleus accumbens, Rat

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 101
Abstract ID: 101
subject: Neuropsychiatry and Psychology: Anxiety Disorders and PTSD
Presentation Type: Poster

The effects of Deep Brain Stimulation of the Prelimbic Cortex for Facilitation of Extinction Process of Conditioned Fear

Submission Author: Gila Pirzad Jahromi

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Background and Aim : Fear extinction is a process in which frequent conditioned stimuli in the absence of the aversive unconditioned stimulus result in a lessening of the expression of conditioned fear responses. Since excessive fear and anxiety have led to loss of performance and even anxiety disorders in many people around the world, many researchers have focused on the neurobiological mechanisms involved in the extinction of conditioned fear. Electrical stimulation has been targeted several structures of the brain to examine its behavioral effects and to understand the role of different regions in underlying mechanisms of fear processing and anxiety in preclinical models.In this study, the effects of high-frequency deep brain stimulation (DBS) of prelimbic (PL) subregion of prefrontal cortex were evaluated on extinction process of conditioned fear.
Methods : Twenty eight male Wistar rats (250 g) were randomly assigned into four groups (n=7), named after their procedures, as follows: negative control group (NC; no manipulation), sham surgery (Sham; surgery circumstance without electrode implantation), positive control group (PC; surgery + fear conditioning + no treatment),PL-DBS group (PL; surgery + fear conditioning + DBS treatment in PL area).Then, we did stereotactic surgery on rats for electrode implantation. After recovery, some rats were conditioned, followed by a 10-day treatment schedule via high-frequency DBS in the PL. Next, freezing behavior was measured as a predicted response dedicated to extinction without being shocked (re-exposure (. Besides that, we used Enzyme-linked immunosorbent assay (ELISA) and Western blot to estimate blood serum corticosterone levels and c-Fos protein expression.
Results : The mean freezing time recorded for the PL group was significantly lower than the PC group ($p<0.01$). Corticosterone results indicated that the PL group had significantly higher serum corticosterone level compared with the PC group ($p<0.01$). In addition, the PL group revealed a significant reduction in c-Fos expression compared with the PC ($p<0.001$).
Conclusion : This study provides further evidence for the contribution of the prelimbic cortex in acquisition and extinction processes during contextual fear conditioning. However, the PL stimulation by high-frequency DBS might be more involved in the extinction process and play a more important role as an enhancer.
Keywords : Prelimbic; Fear extinction; Fear conditioning; Deep brain stimulation

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 102
Abstract ID: 191
subject: Neuropsychiatry and Psychology: Eating Disorders
Presentation Type: Poster

Prediction of Eating Problems in Children with Autism spectrum disorder based on Resilience and Interactive Style of Mothers

Submission Author: Arash Shahriyari

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Background and Aim : Eating problems in children with autism spectrum disorders are more than their healthy counterparts and can negatively affect their health, communication and other disabilities. Maternal resilience and interactive style play a vital role in the health, behaviors and quality of life of these children. The aim of this study was to predict the eating problems of children with autism spectrum based on resilience and interactive style of their mothers.

Methods : This is a descriptive and correlational study. The statistical population of this study was children with autism spectrum disorders aged 4 to 7 years who referred to private rehabilitation centers in Tehran. The sample size of 90 people was selected by available sampling method. Data were collected using the Child Eating Behavior Questionnaire, Resilience Scale and Child-Parent Relationship Scale. The data of this study were analyzed using SPSS software and Spearman correlation method.

Results : Based on the findings, increasing maternal resilience reduced eating problems in children with autism spectrum disorders ($p < 0.01$). Also, increasing the quality of the parent-child relationship reduces eating problems in these children ($p < 0.05$). Also, increasing the resilience of these mothers directly affects the quality of parent-child interaction ($p < 0.01$).

Conclusion : Resilience and communication style of mothers play a key role in the development of nutritional problems in children with autism spectrum disorders. It seems that by strengthening the parent-child relationship and mothers' resilience, the eating problems of these children can be reduced.

Keywords : Autism, Eating, Resilience, Relationship, mother

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 103
Abstract ID: 213
subject: Neuropsychiatry and Psychology: Addiction (Drug, Alcohol, Internet, Food) and Gambling
Presentation Type: Oral

Hyperexcitability of VTA dopaminergic neurons in male offspring exposed to physical or psychological prenatal stress

Submission Author: Mohammad Shabani

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Background and Aim : Prenatal stress (PS) exposure leads to cognitive and behavioural alterations in offspring including an increased risk of substance abuse and anxiety disorders. Signalling from dopamine (DA) neurons of the ventral tegmental area (VTA) in the mesoaccumbal and mesocortical pathways plays a vital role in drug dependency and anxiety behavior.

Methods : To provide further knowledge about the changes in drug seeking behavior and anxiety behaviors in prenatally stressed mice, we conducted ex vivo investigations in VTA brain slices of adult male PS offspring to evaluate the effects of two types of PS (physical vs. psychological) on activity of DA neurons.

Results : PS VTA DA cells exhibited greater Ih current and a higher frequency and amplitude of sEPSCs, which were consistent with a greater degree of pre- or postsynaptic excitability of the VTA. This was confirmed by lower rheobase and lower firing thresholds in PS VTA neurons, as well as increases in spontaneous firing frequency.

Conclusion : When taken together, these data suggest that alterations in VTA DA neurons in this mouse model of prenatal stress might be associated with late life alterations in drug seeking and anxiety-like behaviours through their role in mesocortical and mesoaccumbal pathways.

Keywords : VTA neurons; Addiction risk; Prenatal stressor

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 104
Abstract ID: 248
subject: Neuropsychiatry and Psychology: Addiction (Drug, Alcohol, Internet, Food) and Gambling
Presentation Type: Poster

Role of neurotrophic factors in the striatum and cerebellum in induction of morphine tolerance in rat

Submission Author: Elahe Rahmani

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Background and Aim : Chronic morphine treatment causes tolerance and dependence to the drug. Accumulating evidence suggests an essential role for neurotrophic factor signaling in neuronal adaptations after chronic drug administration. The aim of this study was to examine changes in the gene expression of different neurotrophic factors, including brain-derived neurotrophic factor (BDNF), glial cell line-derived neurotrophic factor (GDNF), and nerve growth factor (NGF) in the striatum and cerebellar cortex after induction of morphine tolerance in rats.

Methods : We used 16 male Wistar rats in this study. A rat model of morphine tolerance was established after repeated injections of morphine 10 mg/kg (s.c.) twice per day for 10 consecutive days. A control group received saline (1 ml/kg) instead of morphine. On day 10, morphine-induced analgesic tolerance was assessed using a hotplate test of analgesia. Then, each rat was sacrificed, the whole brain was removed, and the striatum and cerebellar cortex were dissected in both groups on day 10 of the schedule. A real-time PCR was used for gene expression assessment. The hotplate data was analyzed with a mixed two-way ANOVA. The real time-PCR data was converted to 2-ΔΔCT value, and then, an independent t-test was used for pairwise comparisons. Statistically significant level was set at $P<0.05$

Results : Induction of morphine tolerance after 10 days repeated injections of morphine was confirmed with the results of a hotplate test of analgesia compared with the control group ($P<0.001$). The results of the RT-PCR indicated significant decreases in gene expression of BDNF, GDNF, and NGF in the cerebellar cortex compared with control group ($P<0.001$). The results also indicated no significant differences in expression of BDNF, GDNF, and NGF in the striatum compared with the saline-treated control group.

Conclusion : It can be concluded that repeated morphine treatment affects expression of neurotrophic factors in the cerebellar cortex, but not in the striatum. We propose that changes in neurotrophic factors may have a site-specific involvement in morphine tolerance.

Keywords : Neurotrophic factors, Cerebellum, Striatum, Morphine tolerance, Gene expression

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 105
Abstract ID: 190
subject: Neuropsychiatry and Psychology: Addiction (Drug, Alcohol, Internet, Food) and Gambling
Presentation Type: Poster

Neurobiological Factors of Addiction Vulnerability: A Systematic Review Study

Submission Author: Zoha Hajiha

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Background and Aim : Besides the psychosocial, cognitive, and behavioral factors, neurobiological factors also lead to a tendency to substance abuse. So, the present study aimed to explore these factors of addiction vulnerability, based on existing research.

Methods : The method of this research was a systematic review method. The society of research was all articles published in this field. The method of collecting the articles was searching the words related to the research aim, such as addiction vulnerability, genetics, neurological factors, and biological factors, in the various databases (ISI Web of Science, Scopus, Sage, Springer, Google Scholar, and Science Direct). Finally, unrelated articles were removed and among available articles, 14 articles were selected and used.

Results : The findings of this study presented in 4 sections: 1. Genetic factors: a. Changes in the genes that encode monoamine oxidase (MAOs) are associated with personality styles that are affected by environmental exposure. b. The BDNF gene, whose production controls the growth of neurons in childhood and adolescence, is implicated in many psychiatric disorders, such as substance use disorders. c. The dopamine D2 receptor gene has been suggested as a possible candidate for vulnerability to alcoholism in severe alcoholism. e. The HOMER protein is involved in a variety of psychiatric disorders, including addiction. f. Nuclear Factor-Kappa-B (NF-KB), a potential candidate gene for nicotine dependency, may also play a role in the symptoms of substance abuse in alcohol and tobacco users. 2. Neural circuits' dysfunctionalities: dysfunctionalities of neuronal circuits involved in the 5 networks: a. reward, b. memory, learning, and conditioning, c. Inhibition control and executive function, d. motivation and drive, and e. normalization. 3. Premorbid deviations in key neurological systems: a. Reward processing: Orbitofrontal cortex (OFC) volume reduction, b. executive function: decreased arousal in the dorsolateral prefrontal cortex (DLPFC) and cingulate cortex (CC), and cerebellum, and volume reduction of rostral anterior cingulate cortex rACC and dorsal anterior cingulate cortex (daCC), c. learning and memory: decreased arousal in the putamen. 4. Specific abnormalities in neuroimaging: addicted individuals prominently exhibit abnormalities in many areas of the brain involved in motivation, reward, inhibition control, and decision making. These brain differences are related to substance use and cravings. a. FMRI: decreased activity of the cerebellar, posterior, temporal, or DLPFC areas, related to not

maintaining and tolerating prudent decisions in the face of temptations such as substance accessibility and peer pressure. b. EEG: alpha abnormalities in resting-state EEG, and low P300 event-related potential (ERP) amplitude, related to the risk of alcoholism. c. QEEG: abnormalities in the anterior cortical regions, related to cocaine use prioritization. Alpha abnormalities in resting state EEG are associated with the risk of alcoholism. A strong ERP study on alcoholism shows that alcoholics have the same low P300 event-related potential (ERP) amplitude in a variety of task paradigms as people at high risk of alcoholism.

Conclusion : Neurobiological factors cause changes in systems related to reward processing, motivation, executive function, learning, and memory that make individuals vulnerable to addiction.

Keywords : Addiction, Vulnerability, Neurobiological factors, Genetics, Neural circuits, Neuroimaging, Systematic review

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 106
Abstract ID: 83
subject: Neuropsychiatry and Psychology: Addiction (Drug, Alcohol, Internet, Food) and Gambling
Presentation Type: Poster

Video game addiction is associated with dysfunction in cognitive control

Submission Author: Mazyar Fathi

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Background and Aim : Millions of people enjoy playing video games over the world, but excessive video gaming could have adverse consequences for players and their families. The World Health Organization (WHO) added gaming disorder to its list of mental health condition. Video game addiction (VGA), is defined as the problematic, compulsive playing of video games that results in significant dysfunction in various life domains over a prolonged period of time. Excessive playing video games causes adverse effects on users mental and physical health. Moreover, studies showed cognitive dysfunctions and impaired attention in VGA subjects

Methods : A group of 25 VGA was recruited from two game clubs. Inclusion criteria included: male gender, aged between 17-35 years, playing 30 hours or more online video game per week for at last 12 month, and having a score of 2.5 or higher on Video Game Addiction Test. The control group comprised 25 male participants, aged between 17-35 years. We measured ERPs while participants performed cued Go/No-Go tasks. Amplitude and latency of N2 and P3 have been measured for evaluation of inhibitory control.

Results : Results showed there was a significant difference in commission NoGo errors between the two groups, that VGA group had more errors in this trial)P = .027(. In addition there was significant difference in amplitude of N2 NoGo [F (1, 46= 6.133), p = .017, ŋ2 = .118] between groups, in that amplitude of N2 was reduced in VGA group compare with control group.

Conclusion : NoGo N2 has been considered as a marker of inhibitory processes and conflict monitoring. So, the present study showed VGA subjects had deficits in inhibition of action and conflict monitoring. Smaller amplitude of N2 in this study was associated with committion errors in NoGo trials, that may indicated deficit in inhibitory control in VGA subjects. Previous studies and our results suggest that the reduced inhibitory control in VGA individuals could be related with a dysregulated activation of inhibitory function at an early stage of cortical processing.

Keywords : video game addiction, ERP, Go/NoGo, response inhibition

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 107
Abstract ID: 10
subject: Neuropsychiatry and Psychology: Other
Presentation Type: Poster

Pharmacological evidence for the involvement of the opioid system in the antidepressant-like effect of simvastatin in mice: Without tolerance and withdrawal syndrome

Submission Author: Behnam Ghorbanzadeh

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Background and Aim : Statins, 3-hydroxy-3-methylglutaryl co-enzyme A (HMG-CoA) reductase inhibitors, have been shown to be effective in reducing depression in animal models. The present study aimed to investigate the potential antidepressant- like activity of simvastatin and the possible involvement of opioid systems in the mouse forced swimming test (FST).

Methods : After assessment of locomotor behavior in the open-field test (OFT), FST was applied for evaluation of depressive behavior in mice

Results : Simvastatin (20, 30, and 40 mg/kg, i.p.) or morphine (0.01, 0.1, 1 and 10 mg/kg, i.p.) were administrated 30 min before the OFT or FST. Results showed that simvastatin produced antidepressant effect in a dose-dependent manner. The effect of simvastatin (30 mg/kg) was prevented by the pre-treatment of mice with naloxone (1 mg/kg, i.p., a nonselective opioid receptor antagonist). In addition, a sub-effective dose of simvastatin (20 mg/kg) produced a synergistic antidepressant-like effect in the FST with a sub-effective dose of morphine (0.1 mg/kg) that it was reversed by naloxone. Moreover, in contrast to morphine, treatment with simvastatin for six days induced neither tolerance to the antidepressant-like effect nor withdrawal signs.

Conclusion : In conclusion, these findings demonstrated that simvastatin elicited antidepressant-like action possibly through the stimulation of opioidergic pathways, without inducing tolerance and withdrawal signs

Keywords : Simvastatin Antidepressant-like Opioid system Tolerance Withdrawal signs Mice

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 108
Abstract ID: 261
subject: Neuropsychiatry and Psychology: Other
Presentation Type: Poster

The effectiveness of cognitive-behavioral therapy training on anxiety and quality of life in postmenopausal women

Submission Author: Sadegh Yoosefee

Sadegh Yoosefee[1], Maryam Shafie Tali[2]

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2. Non-Profit University of Tolouemehr

Background and Aim : Menopause, usually occurring between the ages of 45-55, is the cessation of menstruation and is a common occurrence for all women. Ovarian dysfunction and hormone fluctuations during this period cause physical and psychological consequences including anxiety, which in turn leads to negative effects on various aspects of life and reduces the quality of life. Although the symptoms and complications of menopause are not the same in all women, in some cases it has severe side effects. This study was conducted to examine the effectiveness of cognitive-behavioral therapy (CBT) training on anxiety and the improvement of the quality of life among postmenopausal women aged 48 to 56 in Tehran's 21st district.

Methods : The statistical population according to its purpose of the study included postmenopausal women in district 21 of Tehran. Forty people meeting the inclusion criteria (no chronic or acute psychological illnesses) entered the study through available sampling method and were divided into two equal experimental and control groups. To collect the data, Beck Anxiety questionnaire and quality of life in postmenopausal women were used for both groups (pretest) by self-reported method. The experimental group received the CBT training package in 8 weekly sessions each lasting 90 minutes, but no training was provided for the control group. At the end of the training sessions, Beck Anxiety and Quality of Life (post-test) questionnaires were distributed and collected in both groups. Statistical analysis was performed with SPSS-21.

Results : The results showed that cognitive-behavioral therapy has a significant effect on reducing anxiety and increasing quality of life in postmenopausal women.

Conclusion : Cognitive-behavioral therapy as a non-pharmacological approach can be used to reduce anxiety and increase the quality of life of postmenopausal women.

Keywords : Cognitive-behavioral therapy, anxiety, quality of life, postmenopausal women

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 109
Abstract ID: 295
subject: Neuropsychiatry and Psychology: Other
Presentation Type: Poster

The effect of thought bubble training on the theory of mind of children with high-functioning autism spectrum disorder; Preliminary study

Submission Author: Sara Takini

Sara Takini[1]

1. The effect of thought bubble training on the theory of mind of children with high-functioning autism spectrum disorder

Background and Aim : The aim of this study was to investigate the training of thought bubbles on the theory of mind of children with high-functioning autism spectrum disorder. Quasi-experimental research method with pre-test-post-test design with budget control group. The statistical population of the study for all girls aged 8 to 12 years with high-functioning autism spectrum disorder referred to 2 medical centers in Tehran (for votes and friends of autism) was formed in the first six months of 1398.

Methods : Among them, 26 people were randomly assigned to the experimental group (n = 13) and the control group (n = 13) according to the available sampling method and according to the inclusion and exclusion criteria. The members of the experimental group performed the Jababs-e-Bakhsh training program in 8 sessions of 45 minutes (one session per week) individually; The control group was placed on a waiting list. The Steammann (1999) Theory of Mind test was used to collect information. Data were analyzed using univariate analysis of covariance.

Results : Findings showed that by controlling the effect of pre-test, there was a significant difference between the minimum post-test scores of the experimental and control groups in theory of mind

Conclusion : According to research, children with autism have difficulty with the business theory of the patient's mind and have a bubble approach.

Keywords : Bubbles of thought; Mind theory;Autism;Children

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 110
Abstract ID: 141
subject: Neuropsychiatry and Psychology: Other
Presentation Type: Poster

The Effect of Portulaca oleracea on Sleep in a Pentobarbital-Induced Sleep Model in Mice

Submission Author: Fatemeh Forouzanfar

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Background and Aim : Portulaca oleracea (P. oleracea) is reportedly used for treatment of insomnia and anxiety in traditional medicine. The present study was carried out to investigate the sleep-prolonging effect of P. oleracea.

Methods : This work was an experimental study on mice which were randomly divided into these groups: saline (control); Diazepam: positive control); hydro-alcoholic extract of P. oleracea (12.5, 25, 50, 75 and 100 mg/kg) by Soxhlet apparatus and maceration; in the effective (dose25 mg/kg), different fractions of extract were tested. Ethyl acetate fraction (EAF); N hexane fraction (NHF); water fraction (WF). All the test compounds were injected intraperitoneally 30 minutes before pentobarbital administration (30 mg/kg). Duration and latency of pentobarbital-induced sleep were recorded. Also, LD50 of P. oleracea extract was determined and the possible neurotoxicity of the extract was tested on neural PC12 cells. Besides, 30 min after administration of hydroalcoholic extract (HAE) motor coordination (rota-rod test) was assessed.

Results : HAE increased the duration of pentobarbital-induced sleep at doses of 25, 50, 75 and 100 mg/kg. The hypnotic effect of HAE was comparable to that induced by diazepam. Similarly, WF, EAF, and NHF at 25 mg/kg could increase sleep duration. The sleep latency was decreased by HAE and NHF but not by WF and EAF. The LD50 value for HAE was found to be 4.8 g/Kg. HAE and its fractions did not show neurotoxic effect in cultured PC12-cell line, also HAE did not affect the animals performance on the rotarod test.

Conclusion : The present data demonstrated that P. oleracea potentiates sleeping behaviors. The main components responsible for the hypnotic effects of this plant is most likely a non-polar agent which is found in NHF. Isolation of the active constituents may yield a novel sedative drug.

Keywords : Insomnia; N hexane fraction; Pentobarbital; Portulaca oleracea; hypnotic effects; sleep

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 111
Abstract ID: 89
subject: Neuropsychiatry and Psychology: PTSD
Presentation Type: Poster

Effects of Hypericum perforatum extract on hormonal signs of post-traumatic stress disorder (PTSD) induced by electric shock in rats

Submission Author: Fatemeh Ghasemi

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Background and Aim : Hypericum perforatumis is a medicinal plant which has been has various used in traditional medicine. Traditionally, this medicinal plant has sedative, anti-anxiety, anti-cancer, anti-inflammatory and anti-depressant effects and has been used to cure different diseases such as insomnia, anorexia, slowness of motor activity, 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 Hypericum perforatum 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 Hypericum perforatum extract (10, 25, 50 mg/kg) intraperitoneally 10 min before placing into the stress box (n = 7-8 rats/group). Control group received saline (1 mg/kg). Plasma corticosterone levels were assessed by ELISA kit in control and treated animals.

Results : One-way ANOVA followed by post hoc tukey test showed that stress elevated plasma corticosterone level (144 nmol/L) concentration in the control animals. Intraperitoneal administration of the Hypericum perforatum extract reduced plasma corticosterone level (97 nmol/L).

Conclusion : These findings revealed that Hypericum perforatum extract decreased hormonal signs of PTSD and can use as an agency for moderation of PTSD signs.

Keywords : Post-traumatic stress disorder (PTSD); Hypericum perforatum; Corticosterone

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 112
Abstract ID: 29
subject: Neuropsychiatry and Psychology: PTSD
Presentation Type: Poster

Naloxone modified facial formalin induced pain in rat model of Post-traumatic stress disorder

Submission Author: Marjan Nikbakhtzadeh

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Background and Aim : PTSD (Post-traumatic Stress Disorder) is a common chronic stress which changes the HPA (Hypothalamus-Pituitary-Adrenal) axis and induced anxiety-like behavior. The symptoms of PTSD have comorbidity with facial pain problem. Naloxone as an opioidergic antagonist has reciprocal effect on the pain threshold.

Methods : In this study, we induced SPS as a model of PTSD and for confirming the SPS induction; we used the elevated plus-maze and dexamethasone suppression test. According to the relation that existed between PTSD and facial pain, chronic facial pains were evaluated by the formalin injection to the SPS and control groups. Naloxone was also injected 30 minutes before formalin in both groups to find naloxone effects on facial pain alone in control group and SPS and facial pain combination in another.

Results : Our results showed that anxiety-like behavior increased in SPS group compared to control, but corticosterone concentration reduced versus control. Chronic pain reduced after the formalin injection in SPS compared to control ($P<0.001$). Naloxone had an anti-nociceptive effect on control group ($P<0.001$) but does not have the same effect on SPS group at three phases of pain ($P<0.001$).

Conclusion : Therefore the role that is masked behind the curtain of endogenous opioids may be justified the analgesic effects of PTSD. But the result that is seen from naloxone is dual and that is because of the naloxone interference with the opioids characteristics.

Keywords : Chronic pain; Post-traumatic stress disorder; Naloxone; Single prolong stress; Rat

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 113
Abstract ID: 330
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Neurotransmitters and Signaling Molecules
Presentation Type: Oral

Cell injury and receptor expression in the epileptic human amygdala

Submission Author: Maryam Jafarian

Maryam Jafarian[1]

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Background and Aim : Neuropathological findings in the amygdala obtained from patients with mesial temporal lobe epilepsy (MTLE) indicate varying degrees of histopathological alterations, such as neuronal loss and gliosis. The mechanisms underlying cellular damage in the amygdala of patients with MTLE have not been fully elucidated

Methods : , we assess cellular damage, determine the receptor expression of major inhibitory and excitatory neurotransmitters, and evaluate the correlation between the expression of various receptors and cell damage in the basolateral complex and the centromedial areas in the amygdala specimens resected during brain surgery on 30 patients with medically intractable MTLE.

Results : Our data reveal an increased rate of cell damage and apoptosis as well as decreased expression levels of several GABAergic receptor subunits (GABAARα1, GABAARβ3, and GABABR1) and GAD65 in the amygdalae obtained during epilepsy surgery compared to autopsy specimens. Analyses of the expression of glutamate excitatory receptor subunits (NR1, NR2B, mGluR1α, GluR1, and GluR2) reveal no significant differences between the epileptic amygdalae and autopsy control tissues. Furthermore, the increased occurrence of apoptotic cells in the amygdala is negatively correlated with the reduced expression of the studied GABAergic receptor subunits and GAD65 but is not correlated with the expression of excitatory receptors

Conclusion : The present data point to the importance of GABAergic neurotransmission in seizure-induced cell injury in the amygdala of patients with MTLE and suggest several GABA receptor subunits as potential druggable target structures to control epilepsy and its comorbid disorders, such as anxiety

Keywords : Seizure, Intractable epilepsy, Brain surgery, Limbic system

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 114
Abstract ID: 335
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Neurotransmitters and Signaling Molecules
Presentation Type: Oral

The effects of Ramosetron (a 5-HT3 receptors antagonist) into the entorhinal cortex on memory impairments in the electrical amygdala kindled rats

Submission Author: Abdolrahman Sarihi

Abdolrahman Sarihi[1], Zeinab sayyahi[2], Alireza Komaki[3], Safoora Rauofi [4], Seyed Javad Mirnajafizadeh[5]

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Background and Aim : The monoamine serotonin (5-HT) is a neurotransmitter engaged in the regulation of a broad spectrum of cognitive functions. Cognitive impairment is common among epileptic patients. In this study, we aimed to study the role of 5-HT3 receptors into the entorhinal cortex in memory impairments in the electrical amygdala kindled rats.
Methods : Male Wistar rats were used in this study. Animals were assigned to seven groups as: Control, Sham, Kindled, Kindled + vehicle and three groups as Kindled + Ram. 1, 10 and 100 µg. In kindled + vehicle group, animals were injected with vehicle and then received the kindling stimulations. In kindled + Ram. groups, animals were injected with ramosetron 1, 10 and 100µg / 0.5 µl (ICV) and then received the kindling stimulation. Open field, novel object recognition test and Y-maze were used to test locomotion and memory impairments.
Results : High dose injection of 5-HT3 receptor selective antagonist reduced distance moved and mean velocity compared with the Kindled + vehicle group. The blockade 5-HT3 receptor significantly increased the discrimination index in the novel object recognition test in all three doses compared to the Kindled + vehicle group. Ramosetron at doses 10 and 100 significantly increased spontaneous alternation percentage in Y-maze task compared to the Kindled + vehicle group.
Conclusion : We observed, Kindling leads to dysfunction in the recognition and spatial memory, and acute injection of ramosetron into entorhinal cortex leads to improved recognition and spatial memory. Therefore, ramosetron as 5-HT3 receptor antagonist, possibly by enhancements of acetylcholine activity can improve memory and learning impairments caused by electrical amygdala kindling.
Keywords : 5-HT3 Receptors, Electrical kindling, Amygdala, Entorhinal Cortex

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 115
Abstract ID: 81
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Synaptic Transmission and Synaptic Plasticity
Presentation Type: Poster

Lentiviral expression of rabies virus glycoprotein in the rat hippocampus strengthens synaptic plasticity

Submission Author: Shayan Aliakbari

Shayan Aliakbari[1], Soheil Ghasemi[2], Hadi Mirzapour delavar[3], Hamid Gholami Pourbadie[4], Mohammad Sayyah[5], Christophe Prehaud[6], Monique Lafon[7], Nima Naderi[8], Kayhan Azadmanesh[9]

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Background and Aim : Rabies virus (RABV) is a neurotropic virus exclusively infecting neurons in the central nervous system. RABV encodes five proteins. Among them, the viral glycoprotein (RVG) plays a key role in viral entry into neurons and rabies pathogenesis. It was shown that the nature of the C-terminus of the RABV G protein, which possesses a PDZ binding motif (PBM) modulates the virulence of the RABV strain. The neuronal protein partners recruited by this PBM may alter host cell function. This study was conducted to investigate the effect of RVG on synaptic function in the hippocampal dentate gyrus (DG) of rat.
Methods : Two µl (108 T.U. /ml) of the lentiviral vector containing RVG gene was injected into the DG of rat hippocampus. After 2 weeks, the rat's brain was cross-sectioned and RVG-expressing cells were detected by fluorescent microscopy. Hippocampal synaptic activity of the infected rats was then examined by recording the local field potentials from DG after stimulation of the perforant pathway. Short term synaptic plasticity was also assessed by double pulse stimulation.
Results : Expression of RVG in DG increased long term potentiation population spikes (LTP-PS), whereas no facilitation of LTP-PS was found in neurons expressing ?RVG (deleted PBM). Furthermore, RVG and ?RVG strengthened paired pulse facilitation. Heterosynaptic long term depression (LTD) in the DG was blocked in RVG expressing group compared to the control group. This blockade was dependent to PBM motif as rats expressing ?RVG in the DG expressed LTD comparable to the RVG group.

Conclusion : Our data demonstrate that RVG expression facilitates both short and long term synaptic plasticity in the DG indicating that it may involve both pre- and post-synaptic mechanisms to alter synaptic function. Further studies are needed to elucidate the underlying mechanisms.

Keywords : Long term potentiation, Dentate gyrus, PDZ binding motif, Plasticity, Rabies

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 116
Abstract ID: 63
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Synaptic Transmission and Synaptic Plasticity
Presentation Type: Poster

Toxoplasmosis strengthens synaptic plasticity in rat hippocampus

Submission Author: Shayan Aliakbari

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Background and Aim : Toxoplasma gondii is an intracellular parasite with high tropism for excitable cells including neurons. Serological studies estimate that 30–50% of the global population has been exposed to and may be chronically infected with T. gondii. Laboratory animals with T. gondii chronic infection exhibit alterations in the personality and behavior characterized by anxiety, cognitive impairment, decreased neophobia, and loss of fear. These neuropsychiatric changes correlate with changes in regulation of neurotransmitters including dopamine, GABA, serotonin, noradrenaline, nitric oxide, and glutamate in brain of the infected animal. This study was conducted to investigate the effect of T. gondii on synaptic function in the hippocampal dentate gyrus (DG) of rat.

Methods : Toxoplasmosis was induced in rats by intraperitoneal injection of T. gondii cysts. After 4 weeks, hippocampal synaptic activity was examined in the infected rats by recording the local field potentials from DG after stimulation of the perforant pathway. Short term synaptic plasticity was also assessed by double pulse stimulation.

Results : Chronic toxoplasmosis increased long term potentiation population spikes in DG by more than two-fold. Furthermore, paired pulse facilitation was also strengthened in the infected rats.

Conclusion : Our data demonstrate that chronic infection with T. gondii facilitates both short and long term synaptic plasticity in the DG indicating that it may involve both pre- and post-synaptic mechanisms to alter synaptic function. Further studies are needed to elucidate the underlying mechanisms.

Keywords : Long term potentiation, Dentate gyrus, Plasticity, Toxoplasmosis

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 117
Abstract ID: 222
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

D-Lys-3-GHRP-6 induces status epilepticus in the electrically-kindled rats

Submission Author: Siamak Beheshti

Siamak Beheshti[1], Mansour Azimzadeh[2]

1. Department of Plant and Animal Biology, Faculty of Biological Science and Technology, University of Isfahan, Isfahan, Iran
2. Department of Plant and Animal Biology, Faculty of Biological Science and Technology, University of Isfahan, Isfahan, Iran

Background and Aim : Experiments have shown the anti-seizure properties of ghrelin hormone in different models of epilepsy. Nevertheless, its effect has not been studied in the electrical kindling model of epilepsy. In this study, we evaluated the effect of antagonism of the ghrelin receptors in the brain of the fully-kindled rats.

Methods : Adult male Wistar rats weighing 300 g were used. Animals were stereotaxically implanted with two monopolar electrodes in the skull surface and a tri-polar electrode in the basolateral amygdala, and a guide cannula in the left lateral ventricle. Animals underwent a semi-rapid kindling protocol. After showing 3 consecutive stages 5 seizures, the animals were considered fully-kindled. D-Lys-3-GHRP-6 (25, 50, and 100 µg/rat) was injected intracerebroventricularly (i.c.v) in the kindled animals. Each rat was considered as its own control. Seizure parameters including stage 4 latency (S4L), stage 5 duration (S5D), seizure stage (SS), and after discharge duration (ADD) were recorded.

Results : Paired t-test indicated a significant increase in the seizure induction in the rapid kindled rats. D-lys-3-GHRP-6 (25 ?g/rat; i.c.v), significantly prolonged ADD in the kindled rats. D-Lys-3-GHRP-6 (50, and 100 ?g/rat; i.c.v) induced status epilepticus in the kindled rats.

Conclusion : The results indicate that antagonism of ghrelin functional receptors prolongs seizures, and induces status epilepticus in the kindling model of epilepsy, and propose that the endogenous ghrelin has crucial antiepileptic properties.

Keywords : D-Lys-3-GHRP-6; Electrical kindling; Ghrelin; Status epilepticus

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 118
Abstract ID: 19
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Blocking the ghrelin receptor type-1a in the rat amygdala induces status epilepticus in a rapid kindling model of epilepsy

Submission Author: Siamak Beheshti

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3. Department of Plant and Animal Biology, Faculty of Biological Science and Technology, University of Isfahan, Isfahan, Iran

Background and Aim : A growing body of evidence shows that the ghrelin hormone has anti-seizure effects in various experimental models of epilepsy. However, the impact of its signaling has not been studied in the electrical kindling model of epilepsy. We studied the effect of blocking the ghrelin receptor type 1a (GHS-R1a) in the rat amygdala on seizure parameters in a rapid amygdala kindling model of epilepsy.

Methods : Adult male Wistar rats weighing 300 g were used. Animals were implanted with two monopolar electrodes in the skull surface and a tri-polar electrode twisted with a guide cannula in the basolateral amygdala. Animals underwent a rapid kindling protocol. After showing 3 consecutive stages 5 seizures, the animals were considered fully-kindled. Each rat was considered as its own control. D-Lys-3-GHRP-6 as the GHS-R1a antagonist was injected in the basolateral amygdala at three doses (1, 12, and 25µg/rat). Seizure parameters including stage 4 latency, stage 5 duration, seizure stage, and after-discharge duration were recorded.

Results : Paired t-test indicated that antagonism of the GHS-R1a in the amygdala, significantly increase seizure induction in the rapid kindled rats, in a dose-dependent manner, and induce status epilepticus.

Conclusion : The results indicate that ghrelin signaling in the rat amygdala has crucial anti-seizure properties, so that antagonism of the ghrelin functional receptors induces spontaneous seizures, and a status epilepticus condition. Therefore, ghrelin hormone is proposed as a powerful therapeutic agent in the control of complex partial seizures.

Keywords : Amygdala; Rapid kindling; Ghrelin; D-Lys-3-GHRP-6

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 119
Abstract ID: 152
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Effect of IL4 on the acquisition of epilepsy in rats underwent traumatic brain injury

Submission Author: Mozhdeh Radpour

Mohammad Sayyah[1], Mozhdeh Radpour[2], Bahar Khoshkroodian[3]

1. Pasteur Institute of Iran
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3. Pasteur Institute of Iran

Background and Aim : Epilepsy is one of the most common neurological diseases with a 1% global prevalence. Brain trauma causes 5% of all types of epilepsy. Trauma triggers inflammatory reactions in the brain. Neurological inflammation facilitates the acquisition of epilepsy. Interleukin-4 is an anti-inflammatory cytokine. Most of the anti-inflammatory effect of interleukin-4 (IL-4) is mediated by increasing the differentiation of microglia inform M1 to M2 phenotype, with anti-inflammatory activity. The effect of IL-4 on epileptogenesis is not studied yet. In this study, effect of IL-4 on the acquisition of epilepsy in "traumatic" rats was investigated.

Methods : Trauma was inserted to parieto-temporal cortex of male Wistar rats by controlled cortical impact. Immediately after trauma, IL-4 (1µg/rat) was infused into the left lateral ventricle of rats. Sham group underwent stereotaxic surgery without CCI. The control traumatic rats received ACSF (Artificial cerebrospinal fluid). Twenty-four hours after the injection, rats received PTZ (35 mg/kg, i.p.) every other day until the manifestation of generalized seizures (n=7 in each group).

Results : Rats insham group became kindled by 12±2 PTZ injections. Traumatic rats were kindled after 4 PTZ injections ($p<0.05$ compared to sham group). Traumatic rats that received IL-4 were kindled after 10±2 PTZ injections.

Conclusion : IL-4 inhibited the acceleration of PTZ kindling by CCI in rats.

Keywords : seizure,IL4,PTZ kindeling,Traumatic epilepsy

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 120
Abstract ID: 151
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Effect of IL4 on the acquisition of epilepsy in rats underwent traumatic brain injury

Submission Author: Bahar Khoshkroodian

Mohammad Sayyah[1], Mozhdeh Radpour[2], Bahar Khoshkroodian[3]

1. Pasteur Institute of Iran
2. Pasteur Institute of Iran
3. Pasteur Institute of Iran

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Keywords : seizure,IL4,PTZ kindeling,Traumatic epilepsy

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 121
Abstract ID: 111
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Preventive effects of Sinigrin against the memory deterioration in the pentylenetetrazole-kindled male Wistar rats

Submission Author: Fatemeh Aghaie

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1. Department of Animal Sciences and Biotechnology, Faculty of Life Sciences and Biotechnology, Shahid Beheshti University, Tehran, Iran
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Background and Aim : Sinigrin (2-propenyl glucosinolate) is found mainly in broccoli, brussels sprouts, and black mustard seeds. Recently, sinigrin has received attention for its role in disease prevention and health. . This study investigated the effect of sinigrin on macrophage function, including the activity of Nod-like receptor protein 3 (NLRP3) inflammasome, nuclear factor-kappa B (NF-κB) activity , IL-1, and oxidative stress and memory loss in the pentylenetetrazole (PTZ)-kindled epilepsy were investigated.

Methods : The present study aims to investigate the effects of the intracerebroventricular (icv) injection of of sinigrin on inflammation, oxidative stress and memory. Thirty male Wistar rats (180-220 g) were randomly divided (n = 6/group) into the experimental and control groups. The experimental groups were treated with intracerebroventricular (icv) injection of of sinigrin. the control negative group received normal saline and the control positive group received the phenobarbital (30 mg/kg, i.p.) treatment. All groups were kindled by the sub-threshold dose (35 mg/kg, i.p.) of PTZ for 12 times in one month.

Results : . The treatment with Sinigrin significantly delayed the appearance of the seizure symptoms and reduced the duration of seizure arrest in comparison to PTZ group. Treatment with sinigrin decreased IL-1β and NF-κB production and concurrently suppressed NLRP3. It alsosignificantly increased the memory parameters like step-through latency in the retention trial (STLr) (192.0 ± 35.41 vs. 31.20 ± 5.38 s) and the total time spent in the light compartment (TLC) (228.0 ± 29.52 vs. 109.0 ± 19.65 s) in the epileptic rats. In addition, Sinigrin increased the superoxide dismutase (SOD) (150.2 ± 3.057 vs. 56.38 ± 3.51 U/g tissue) and catalase (657.6 ± 39.38 vs. 161.5 ± 12.29 U/g tissue) levels in the brain tissues.

Conclusion : . In sum, Sinigrinis prevents memory impairment against the PTZ-kindling epilepsy in rats and warrants its use in clinical trials

Keywords : Epilepsy; inflammation, Sinigrin; Antioxidant activity; Epileptogenesis; Passive avoidance learning

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 122
Abstract ID: 337
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

The effect of electrical stimulation of the brain on depression in people with seizures

Submission Author: Fezzeh Hosseinzadeh

Fezzeh Hosseinzadeh[1]

1. Faculty of Medical Sciences Sarab, Sarab, Iran

Background and Aim : Depression is one of the most common psychological disorders in the category of mood disorders. The prevalence of depression in patients with epilepsy is four to five times higher than the average rate in the community and is twice as high in people with other debilitating diseases. The importance of the symptoms of depressive disorder in these patients becomes clearer as the incidence of suicide attempts increases to four to five times that of the general population. The pharmacological treatment of depression in epilepsy is complex because there is always the concern that certain types of antidepressants may affect the frequency of seizures. Therefore, one of the main strategies to overcome this problem is to use new non-invasive methods to treat depressive disorders in these patients that do not have detrimental effects on the frequency of epileptic seizures. In recent years, research into the effectiveness of non-invasive techniques such as direct electrical stimulation of the skull has increased. Transcranial Direct Current Stimulation (tDCS) is a non-invasive method of electrical stimulation of the brain that uses a weak electric current (1 to 2 mA) to stimulate specific areas of the scalp.

Methods : -

Results : -

Conclusion : Electrical stimulation of the brain (tDCS) is safe and effective in relieving the symptoms of mild to moderate depression in patients with well-controlled temporal lobe epilepsy (TLE) and reduces depressive symptoms for two or four weeks and does not increase the frequency of seizures.

Keywords : tDCS, Depression, epilepsy

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 123
Abstract ID: 306
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Exercise improved anti-epileptic effect of carbamazepine through GABA enhancement in the epileptic rats

Submission Author: Fariba Karimzadeh

Fariba Karimzadeh[1], Mitra Barzroodi pour[2], Mohamad Bayat[3], Mansoureh Soleimani[4]

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Background and Aim : The benefits of exercise have been indicated in the several neurological disorders. This study assessed how exercise improved the anti-epileptic effect of carbamazepine in the epileptic rats.
Methods : Seizure was induced by injection of 35 mg/kg pentylentetrazole (PTZ) every other day for 4weeks. Animals were randomly divided into: • Sham: Dimethyl sulfoxide (DMSO) were injected intraperitoneal (i.p.) every other day during four weeks. • Seizure group: pentylenetetrazol (PTZ) was injected with the same protocol of sham group. • CBZ (25), CBZ (50) and CBZ (70): CBZ (Sigma Aldrich, Germany) was solved in the DMSO. CBZ (25, 50 and 70 mg/kg) were injected half an hour before seizure induction in three experimental groups separately. • Exercise (EX): animals were forced to run on a motorized treadmill consisted of 30 minutes running in 5 days per week for four weeks. • EX+CBZ (25), EX+CBZ 50 and EX+CBZ (75): Rats did exercise with the same protocol of EX group. Five hour after doing exercise, CBZ (25, 50 and 70 mg/kg) were injected half an hour before seizure induction in three experimental groups separately. Seizure properties (latency and severity) were assessed by scoring of convulsive behaviors. The gene expressions as well as distribution of glutamic acid decarboxylase 65 (GAD65) and GABAA receptor α1 in the hippocampus and cortex were evaluated.
Results : The mean score of convulsive behaviors of EX+CBZ (50) group significantly reduced compared to the CBZ (25) and CBZ (50) in the days 5, 12, 15, 17, 19, 22, 24 and 24. The expression of GAD65 as well as GABAA receptor α1 in the CA1 and CA3 areas of EX+CBZ (75) group significantly increased compared to the other groups ($p < 0.001$). The cortical expression of GAD65 as well as GABAA receptor α1 in the EX+CBZ (75) group significantly increased compared to the other groups ($p < 0.001$).
Conclusion : our findings suggested the exercise as the combination therapy for epilepsy to reduce the anti-epileptic dose of carbamazepine. The possible role of exercise in the GABA enhancement should be mentioned.
Keywords : Epilepsy; Exercise; Seizure; brain; Hippocampus; GABA

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Iran University of Medical Sciences

BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 124
Abstract ID: 307
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Novel therapies in Epilepsy: Panel

Submission Author: Hadi Aligholi

Hadi Aligholi[1], Ali Akbar Asadi-Pooya[2], Amir Savardashtaki[3], Najme Shahpari[4], Esmail Mirzaei[5], Masoume Nazeri[6], Maryam Safahani[7], Mehdi Zarshenas[8]

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Background and Aim : Epilepsy affects about 70 million people worldwide. The cornerstone of treatment of epilepsy is drug therapy with antiseizure medications (ASMs); there are about 30 ASMs available in the market. However, about 30% of patients with epilepsy have drug-resistant epileptic seizures while using appropriate ASMs. While, epilepsy surgery is a beneficial option for some people with drug-resistant epileptic seizures, it is not always an option. Furthermore, ongoing uncontrolled epileptic seizures increase the risks of morbidity and mortality; hence, it is of paramount importance for the scientific community to investigate and discover other ways to treat patients with epilepsy, particularly those who suffer from drug-resistant seizures.

Methods : In this panel new approaches for treatment of epilepsy will be discussed.

Results : Application of stem cells for patients with epilepsy is an attractive issue. In addition, the role of microRNAs in treatment of epilepsy is another new topic. Moreover, machine learning can be helpful in management of epilepsy. Another approach is application of nanotechnology for drug delivery. Furthermore, using Pgp inhibitors are one of the promising approaches in treatment of epilepsy. In addition, dietary compounds can be considered for management of refractory epilepsy. Finally, herbal medicine focused on beneficial effects of herbs on epileptic behaviors of patients with epilepsy.

Conclusion : Based on the multifactorial feature of epilepsy, a combination of novel approaches can be helpful in management of epilepsy.

Keywords : Epilepsy, stem cells, nanotechnology, nutrition, machine learning, biotechnology

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 125
Abstract ID: 144
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Electromagnetic field effects on learning and memory in kindled rats

Submission Author: Sina Khajei

Sina Khajei[1], Khadijeh Esmaeilpour[2], Javad Mirnajafi-Zadeh[3], Vahid Sheibani[4], Meysam Ahmadi-Zeidabadi[5], Soheila Rezakhani[6], Yaser Masoumi-Ardakani[7]

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Background and Aim : Kindling impairing effects on learning and memory are demonstrated in previous studies. In the current study, we tried to reverse those impairments using electromagnetic field (EMF).
Methods : Fully kindled rats were exposed to an EMF with the intensity of 10 mT, the frequency of 100 Hz, and the duration of one hour/day for one week. Following the EMF exposure, the Morris water maze (MWM) and the open field (OF) tests were carried out after 24 hours.
Results : Learning disorder were conspicuous in the kindled rats during the training phase of the MWM. In addition, escape latency and path length were increased when compared to the sham group. Less spent time in the target-quadrant of the MWM in the probe test phase indicated spatial memory impairment. EMF exposure in the KEMF group (kindling + EMF) reversed learning and memory deficits. Moreover, the escape latency and the path length decreased significantly in comparison with the kindled group. EMF alone did not affect learning and memory significantly. The decreased total traveled distance and the increased spent time in the peripheral zone of the OF, in comparison with the sham group, indicated that EMF alone in the EMF group, but not in the kindled or the KEMF groups, engendered anxiety-related behaviors.
Conclusion : EMF could be a potential therapy for seizure-induced deficits of learning and memory. Further studies concerning EMF safety considerations regarding anxiogenic side effects are recommended.
Keywords : Kindling; Electromagnetic Field (EMF); Morris Water Maze (MWM) Test; Open Field (OF) test; Learning and Memory; Anxiety

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BOOK of Abstracts

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Count: 126
Abstract ID: 210
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Alcea aucheri: evaluation of its anticonvulsant effect in pentylenetetrazole and maximal electroshock seizures in mice

Submission Author: Tajmah Mombeini

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Background and Aim : We previously showed that both of single and repeated dose treatment with the aqueous extract of Alcea aucheri (EFA) has anxiolytic and, a dose-dependent sedative effects in rats. Our preliminary phytochemical analysis showed the presence of phenolic compounds, polysaccharides, and flavonoids in the extract. The flavonoids have a selective affinity for central benzodiazepine receptors and some of them possess a pharmacological profile compatible with a partial agonist action. In addition, GABAA ergic drugs are the mainstay of treatments to suppress seizures. Therefore, this study was designed to investigate anticonvulsant effect of aqueous extract of flowers of Alcea aucheri (EFA)in mice.

Methods : Seizures were induced in male adult mice by administration of Pentylenetetrazol (PTZ) or Maximal Electroshock (MES). Mice were randomly subjected to receive saline, EFA (8.75-175 mg.kg-1), or diazepam intraperitoneally (i.p.) 15 or 30 min before intravenous PTZ injection (i.e. PTZ-15, PTZ-30). In another experiment, mice were treated (i.p.) with saline, EFA (8.75-350 mg.kg-1), or phenytoin 15 or 30 min before the MES test (i.e. MES-15, MES-30). Diazepam and phenytoin were used as positive control drugs.

Results : Our findings showed that EFA increased the PTZ seizure threshold in the PTZ-15 test. In the MES test, EFA increased the latency to onset of seizure at both time points, decreased seizure duration, and protected mice against seizure in the MES-30 test. Furthermore, EFA at all doses reduced the mortality rate of mice after electroshock convulsion.

Conclusion : These findings suggest that Alcea aucheri possibly have anticonvulsant effects in PTZ and MES-induced seizure models in mice. The phenolic acids, polysaccharides and/or flavonoids may be contributed to the observed effects.

Keywords : Alcea aucheri, Pentylenetetrazole, Maximal electroshock, Seizure

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 127
Abstract ID: 201
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Localization of Epileptic Focus Using One-Dimensional Convolutional Neural Network

Submission Author: Saman Ebadzadeh

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Background and Aim : Epilepsy is a neurological disease that affects about 50 million people worldwide. This is specified by the recurrence of abnormal electrical activity called epileptic seizures. Epilepsy may cause loss of consciousness, irrational feelings, inability to move, or impair other cognitive functions. More than half of epilepsy patients are treated with medication, while other patients need surgery to recover. One of the most common methods used in surgery is focal resection. The goal of this surgery is to remove an area of the brain where epilepsy begins. As mentioned, this surgery can have many side effects, so the chances of successful surgery and epilepsy control depends on the correct and accurate localization of the seizure focus.

Methods : One method of localizing the seizure focus, is analyzing the iEEG signals to diagnosis the focal and non-focal signals. Up to now, various machine learning-based methods have been developed for this work which can be categorized as classic and deep learning algorithms. Discrete wavelet transform and bivariate empirical mode decomposition are used as classical methods and convolutional neural network, recursive neural network and auto encoder used as deep learning methods for localizing of epileptic focus. In this work a one-dimensional CNN has been developed to classify brain signals into focal and non-focal categories. In our proposed method, the iEEG signal is passed to the CNN network without any feature extraction. This network consists of five layers including convolution layer, pulling layer, fully connected layer, dropout layer and batch normalization layer.

Results : The Proposed algorithms was evaluated using Bern-Barcelona data set. This data set consists of the iEEG signals of 5 patients with epilepsy and is divided into two general categories: focal and non-focal. Each section contains 3750 pairs of samples that are sampled at a time interval of 20 seconds at a frequency of 512 Hz. All recordings were filtered using fourth-order Butterworth band-pass filter with cutoff frequency at 0.5 and 150 Hz and these are labeled by medical experts in both focal and non-focal models. We split the iEEG database into three parts: train set (80%), validate set (10%) and test set (10%). The training dataset and the validation data were used during the learning stage, and test data was used during the testing stage. During the training phase of the model, the training accuracy is about 99%, and the validation accuracy is about 85%. In 10-fold cross-validation, the average validation accuracy is about 85.14%.

Conclusion : It is a challenging task to distinguish the focal channels by iEEG signals in interictal. Our developed model is able to detect the focal signals with an accuracy of 85.14% by using raw signals.

Keywords : Epilepsy; focal; non-focal; CNN

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 128
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subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Convulsive consequences of COVID-19: Evidence from electrophysiological and brain imaging studies

Submission Author: Zahra Keshtgar

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Background and Aim : The novel infection of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has spread worldwide. In addition to respiratory failure, Covid-19 infection can affect various organs, including the liver, kidneys, and nervous system. Encephalopathy is a major neurological complication in this disease whose possible mechanisms include the following: The virus enters the CNS through the olfactory nerve or other cranial nerves, Hematogenous release of viral particles through circulating lymphocytes in the CNS or entry through the blood-brain barrier or via the Angiotensin-converting enzyme 2 receptor (ACE2), It is also expressed in glial cells and neurons. In addition to viral infection, the host's immune response triggers a cytokine storm, which damages the blood-brain barrier and increases leukocyte migration, and could be another mechanism for encephalitis. Finally, encephalitis can cause stroke or seizures.

Methods : There is ample evidence of the prevalence of seizures and extensive changes in the nervous system following infection with the virus.

Results : Magnetic resonance imaging (MRI) studies show changes in the ventricles and encephalitis, multiple demyelinating lesions, bleeding at the bilateral junction of the white matter, and various areas of the carpus callosum and internal capsule, indicating disease-associated brain microbleeds. Extensive and diffuse changes in the electroencephalographic (EEG) activity of some patients, especially in focal areas of epilepsy, including the temporal lobe, frontotemporal areas and centroparital areas have been observed. QEEG parameters also include changes in spectral power and temporal variance in different bandwidths, which have been predictive markers for seizures and epilepsy

Conclusion : Evidence suggests that the neurological symptoms of Covid-19 infection in the brain are mainly due to the entry of proinflammatory cytokines into the nervous system or the production of these cytokines by microglia and astrocytes. Proinflammatory cytokines can increase glutamate, aspartate, decrease GABA levels, and ion channel dysfunction, and ultimately, high levels of cytokines can cause seizures and epilepsy. In addition, COVID-19 may predispose the patient to a coagulation state because studies have shown the accumulation of venous thromboembolism in these patients despite receiving standard thromboprophylactic.

Therefore, impaired microcirculation in this disease can lead to edema and seizures. The use of anti-epileptic therapies with mannitol to reduce cerebral edema in these patients has been reported to improve the patient's consciousness. Future therapies including the role of direct antiviral agents lopinavir/ritonavir, immunomodulators tocilizumab in combating the cytokine storm and treating/ preventing encephalopathy in COVID-19 patients should be investigated further

Keywords : seizure, COVID-19, MRI, EEG.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 129
Abstract ID: 197
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Poster

Reduction of Nuisance effects in Concurrent TMS-fMRI: A simulation study

Submission Author: Mohsen Keshtkar

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Background and Aim : Functional magnetic resonance imaging (fMRI) is a common method for correlational study of the brain functional organization with superb spatial resolution. Transcranial magnetic stimulation (TMS), as a non-invasive stimulation method, has also played an essential role in the research of causal interactions of brain regions. Concurrent TMS-fMRI makes it possible to probe the brain causal interactions with very good spatial resolution. However, using TMS coil inside the MRI scanner during fMRI has some challenges like subtle changes in TMS coil position, susceptibility artifact of TMS coil on fMRI images, and other image artifacts due to TMS stimulating field. In recent years, numerous studies have been conducted to provide appropriate procedure for concurrent TMS-fMRI, which some of those have led to either low-cost or expensive solutions. Here in this study we use a simulation environment to study the concurrent TMS-fMRI, in order to adjust the techniques toward less artifact and better image quality during effective brain stimulation.
Methods : We developed an MRI imaging simulator with Echo Planar Imaging (EPI) pulse sequence. We simulated the TMS coil and its spatio-temporal pattern of magnetic field when applied on the subject's brain inside the (simulated) MRI. We used the spatio-temporal pattern of TMS magnetic field to calculate the phase distortion in the k-space (raw data) of MRI in EPI. We also simulated the susceptibility effect of TMS coil in fMRI brain images. For reducing influence of susceptibility artifact, we proposed a protocol for imaging in which the "head to TMS coil" distance is adjusted considering the amount of magnetic potential needed for exciting a specific region.
Results : Our results demonstrated, the simulators can correctly represent the effects of TMS application on MR-images during imaging. We applied our proposed imaging protocol in our simulator, and the results showed a significant susceptibility artifact reduction. The images with and without applying our proposed protocol were compared to the same those taken in the absence of TMS application. The comparison was made using Mean Square Error (MSE) and Correlation methods. The distance between a particular slice and TMS coil increased from 1cm to 7 cm. The MSE and correlation graphs showed significant artifact reduction when the TMS coil is located 4 to 7 cm away from the target region. Also, we estimated that amount of displacement error in placing the TMS coil considering perfect excitation for the target region along the longitudinal and transverse coil axis could be 10 mm and 5 mm, respectively.

Conclusion : Our consolidated results show that our developed simulators are useful for finding and examining solutions to diminish obstructions and artifacts of concurrent TMS-fMRI. The methods proposed so far to reduce artifacts, are mostly based on practice and experiment with real world devices, whereas our simulators provide an accessible approach that save time and cost to find a proper solution for imaging and stimulation protocol.

Keywords : functional Magnetic Resonance Imaging; Transcranial Magnetic Stimulation; Artifacts

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BOOK of Abstracts

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Count: 130
Abstract ID: 285
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Poster

PET approach to spinal cord metabolism in amyotrophic lateral sclerosis: a systematic review and meta-analysis

Submission Author: Mozhan Parsa

Mozhan Parsa[1]

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Background and Aim : Amyotrophic lateral sclerosis (ALS) is a progressive neurodegenerative disorder, which is diagnosed approximately one year after symptom onset.Positron emission tomography(PET) researches on the brain can be a diagnostic marker to identify these patients, but there are still problems in differentiating between ALS patients and diseases that mimic ALS symptoms. Many researches have been done on the brains of ALS patients with various PET biomarkers,and functional changes in various aspects have been identified, but few studies have been performed on metabolism and the increase or decrease of different receptors in the spinal cord. The aim of the present study was to analyze the results of the articles on the study of spinal cord metabolism and to see if a uniform and definitive pattern can be found to distinguish ALS from the values obtained.

Methods : We systematically searched the electronic databases, including PubMed, Scopus, EMBASE, Web of Science, and Google Scholar from inception to 23th of October 2020. Cochrane's Q and I-square statistics were used to assess the existence of heterogeneity between the included studies. We used the randomeffects model to pool the odds ratios (ORs) at 95% confidence intervals (CIs).

Results : In fluorodeoxyglucose (FDG)-PET studies hypermetabolism is clearly seen in the spinal cord of ALS patients, but analysis of different segments showed the highest amount of glucose uptake in their cervical segment, and dorsal segment hypermetabolism is negligible compared to others. There is a direct relationship between cervical hypermetabolism and rate of mortality and disease progression. But the results of 11C-flumazenil-PET did not show any increase in blood flow.

Conclusion : The reason for this increase in glucose intake may be that glycolysis is increased to compensate for the decrease in ATP production by mitochondria lost in these ALS patients. Therefore, the pattern of increased metabolism in the spinal cord of ALS patients can be a new and effective diagnostic marker to differentiate them from diseases with symptoms similar to ALS,accompanied by earlier diagnosis.

Keywords : amyotrophic lateral sclerosis;positron emission tomography;spinal cord

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 131
Abstract ID: 251
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Poster

The value of Positron emission tomography in prognosis and diagnosis of ALS: a systematic review

Submission Author: Mozhan Parsa

Mozhan Parsa[1]

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Background and Aim : Positron emission tomography (PET) is a type of imaging in which we will be able to examine the function of different parts of the brain. Many radiotracers have been developed to visualize and quantify an increasing number of brain receptors,specific functions, and other targets.Amyotrophic lateral sclerosis (ALS) is a fatal neurodegenerative disorder in which the exact cause has not been determined and both genetics and the environment play a role. Despite years of efforts to find a cure for this group of patients, only two -modifying drugs —riluzole and edaravone — are available to ALS patients.PET imaging can show the effect of these drugs and be effective in the prognosis and diagnosis of ALS disease.

Methods : In this review, the results of 33 years of PET imaging with different biomarkers are discussed to examine different aspects of ALS disease and to prognosis,diagnosis and evaluation of disease process. We systematically searched the electronic databases, including PubMed, and Google Scholar from inception to 8th of August 2020.Thirty two articles out of 380 citations were included.

Results : The most well-known use of PET is to measure changes in glucose metabolism in different parts of the brain, either glucose metabolism or cerebral blood flow is similarly reduced in patients with ALS, but researches have shown that glucose is not consumed exclusively by neurons and as a result changes in glucose levels do not directly indicate neuronal activity. PET studies make it possible to detect astrocytes in ALS patients and to measure the activity of microglia in them,the results of these studies show that increased activity of microglia and astrocytes occurs. Cortical excitability is altered in ALS. To assess whether loss of GABA inhibition contributes to increased cortical excitability in ALS, specific PET biomarkers for GABA receptors can be utilised.ALS patients demonstrated relative decreases in different areas of their brain. PET also has specific biomarkers for binding to serotonin receptors that are expressed in pyramidal neurons, so it can be a diagnostic marker of cerebral neuronal loss or dysfunction in ALS.ALS patients showed a decrease in tracer binding to these receptors in different areas of the brain, especially frontotemporal regions. PET could also help to understand pathology that involves cannabinoid receptor 2 (CB2) and explore the role and importance of CB2 in neuroinflammation in ALS. Similarly, glutamate

and dopamine receptors in ALS patients were measured by PET.Results showed a decrease in the former and an increase in the latter, respectively; an increase in glutamate may be associated with neuroinflammation. Other uses of PET include measuring oxidative stress, the increase of which is well seen in ALS patients.

Conclusion : Several diagnostic,prognostic,and pharmacodynamic PET biomarkers can be used for special purposes in different stages of ALS,however research in this area is low due to the high cost of the device and the small number of cases, so it needs more work.

Keywords : amyotrophic lateral sclerosis;positron emission tomography;biomarker

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 132
Abstract ID: 95
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Oral

Instantaneous phase synchrony of fMRI reflects large-scale disconnection in schizophrenia

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Background and Aim : Characterizing metastable functional connectivity (FC) at rest using functional magnetic resonance imaging (fMRI) is the main focus of dynamic functional connectivity (DFC) analyses. Among DFC measures, instantaneous phase synchrony (IPS) of fMRI is a recent addition that circumvents the choice of window size, and has demonstrated functional and clinical relevance. To identify recurrent IPS patterns, time-dependent IPS matrices are normally clustered in order to find the dominant modes of IPS, among which the brain keeps switching at rest. However, finding and validating cluster structure in noisy and abundant IPS data has been a challenging task, despite numerous efforts. Furthermore, IPS analysis has been mostly restricted to regional investigations based upon anatomical atlases, and between-network connectivity has been largely neglected. We intended to perform IPS analysis within and across functional networks, and to identify recurrent large-scale IPS patterns using a robust clustering method. The clinical application of interest was schizophrenia.

Methods : We hypothesized that disconnection in schizophrenia alters the intrinsic (temporal) arrangement of large-scale IPS modes. To test this hypothesis, resting state fMRI data from 51 schizophrenia (SZ) patients and 68 healthy controls (HC) were analyzed. Fifty functional subnetworks of seven resting state networks were derived from independent component analysis. IPS was computed as cosine of the difference between instantaneous phases of (every pair of) subnetwork time series. The repertoire of eight IPS states was identified in empirical data (using spectral clustering) and further assessed using cluster validation and surrogate data analysis. The prevalence and persistence of empirical IPS states were compared between HC and SZ groups, using statistical tests.

Results : Statistical results showed that, on average, SZ patients spend 45% less time in a globally coherent state and a subcortical/auditory-centered state, but 40% more time in states reflecting anticoupling within the cognitive control network, compared to the HC. Moreover, the transition profile (between states) revealed a deep temporal structure, shaping one strongly-coupled and one weakly-coupled metastate. Notably, metastate occupation balance has been upturned in SZ, in favor of the less synchronous metastate that promotes disconnection within and across networks. The trajectory of IPS patterns also turned out to be less efficient, less smooth and less diverse in SZ patients, compared to the HC (Cohen's d= -0.36, -0.46, -0.67, respectively).

Conclusion : These results provide a new outlook on the disconnection hypothesis of SZ. We found that the distributed connectivity disorder of SZ manifests in the evolution of momentary phase synchrony patterns within and across large-scale resting state networks. These alterations demonstrate the tendency of the schizophrenic brain to dwell in weakly-connected IPS states and metastates, to the extent that metastate expression has been reversed in the patient group. Notably, the weak metastate that dominates in SZ reflects anticoupling within the cognitive control network, which could be related to cognitive impairments in SZ. The restricted trajectory of IPS evolution also speaks to the less efficient spatiotemporal organization of the SZ brain. The methods developed in this research can be applied to other disorders as well, potentially for diagnostic purposes.

Keywords : resting-state fMRI, instantaneous phase synchrony, dynamic functional connectivity, disconnection, schizophrenia

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 133
Abstract ID: 37
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Poster

Neuroimaging modalities for the brain mapping: Advantages and limitations

Submission Author: Ali Ebrahiminia

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Background and Aim : Neuroimaging includes the use of different modalities to image the brain and consists of functional and structural imaging. Neuroimaging can be conceived as a part of brain mapping. Brain mapping is a set of neuroscience techniques, producing brain images by using the data processing methods. Therefore, it is important to study the advantages and limitations of neuroimaging methods such as functional magnetic resonance imaging(fMRI), positron emission tomography(PET), and single photon emission computed tomography (SPECT) which are used for the brain mapping.
Methods : This review aims to discuss the clinical applications, technical tools, limitations and potential solutions associated with neuroimaging modalities used for the brain mapping. The comparison of different Neuroimaging modalities also will be discussed. PubMed, Ovid Medline, and Embase were the sources of research in this article.
Results : Brain mapping techniques are important methods for understanding brain function and the physiological factors of brain diseases. fMRI is increasingly used for the diagnosis, and follow up of brain diseases in the neuroscience field. fMRI has the advantages of non-invasiveness, presurgical availability, and capability of mapping the whole brain. fMRI is susceptible to motion artifact due to long data acquisition time and has a poor temporal resolution. SPECT imaging is similar to PET and uses gamma emitter radioisotopes to acquire images of active brain regions. Both SPECTand PET are valuable approaches for brain imaging. A significant limitation of SPECT is its poor spatial resolution. In comparison to SPECT, PET has a better image resolution and high costs. In quantitative electroencephalogram (QEEG) technique, the electrical activity of the brain is measured. This technique has a high temporal resolution, but a relatively low spatial resolution.
Conclusion : It should be noted that the limitations and advantages of neuroimaging modalities should be evaluated against the clinical task, diagnostic image quality and the patient's clinical conditions, and each neuroimaging department should make clinical decisions in this regard. The combination of different neuroimaging method is an interesting compromise to obtain a good temporal and spatial resolution. Data processing techniques provide an opportunity to optimize the brain mapping approaches.
Keywords : Neuroimaging; Brain mapping; fMRI; PET; SPECT

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 134
Abstract ID: 104
subject: Novel and Cutting-Edge Technologies: Brain Machine Interface and Neuroengineering
Presentation Type: Poster

An efficient spike sorting based on linear separation

Submission Author: Sheida Majouni

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Background and Aim : Brain-Machine Interfaces (BMIs) have enabled patients who are suffering from disabilities to benefit from direct communication between their brain and artificial organ. To develop this connection, methods like neural decoding, which is based on the prediction of patient's decisions and movements are used. Spike sorting (SS) is a practical and critical pre-processing step in decoding and BMI. In this process, action potentials (called spikes) are detected from neural signals and assign to correct neuron. By introducing Multi-Electrode Arrays as a new generation of microelectrodes, the opportunity of recording the activity of more isolated neurons becomes possible. In this article, we tried to increase channels and enhance accuracy through a suitable structure for hardware implementation by introducing a novel classification method.
Methods : In the first step of SS, spike detection, we used the amplitude threshold which is not only a suitable and simple method but also is an efficient method in both software and hardware implementation. Although some efforts have been done to sort spikes through spikes shapes, the complexity of computation has convinced many researchers to use extracted features of signals in order to decrease computation order. Therefore, we used different feature extraction methods as second step to extract information and features represent waveform in lower dimensions, such as principal component analysis (PCA), first derivatives (FD), and second derivatives (SD). Classification, the third step, is the most crucial step in SS and can be considered as its kernel. According to highly complicated computation, some methods are not suitable for implementation on hardware. On the other hand, using simple methods and reducing computations can result in a significant reduction in accuracy. This article proposed a novel method for classification, which benefits from high accuracy and simplicity at the same time. Generally, separating classes with lines is considered an ideal condition due to significant decline in complexity. So, we consider linear boundaries for separating classes. Besides, in contrast with common methods like K-means, our method is not limited to data distribution and is able to separate classes with different distributions. To this end, each class is described with five symbolic points. These points are used to find decision boundaries, the priority is finding parallel lines with the feature axis. If two clusters are not separable with parallel lines, oblique lines will be applied. Hardware implementation of tree structures is simple and give us the ability to increase number of channels and process them parallel. So, a binary search tree predicts class of new samples. Each node of this tree is a calculated linear equation in previous, and class labels are on tree leaves.

Results : Our method is suitable for different feature extractions and leads to high accuracy in comparison with methods like support vector machine (SVM). Based on the results, on average, the accuracy of our method in PCA is 5% better than SVM and less than 1% is different from S in FD and SD.

Conclusion : The novel represented method can support high channel recording and compete in accuracy with state-of-the-art methods like SVM.

Keywords : Spike sorting; Classification; Binary search tree; linear separation

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 135
Abstract ID: 186
subject: Novel and Cutting-Edge Technologies: Brain Machine Interface and Neuroengineering
Presentation Type: Poster

Intra-cortical Neural Spike Sorting Using Gradient Boosted Decision Trees

Submission Author: Katayoon Yahyaei

Katayoon Yahyaei[1], Hossein Hosseini Nezhad[2]

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Background and Aim : Implantable Brain machine interfaces (BMIs) need the neural activity of thousands of neurons to develop prosthetic devices with more natural movements. This high-density recording results in huge data amounts with high data rate wireless interface and subsequently high power consumption, which are serious challenges in implantable microsystems. Spike Sorting (SS) can address this issue by reducing the data rate to only relevant spiking activity. The feature-based SS is usually a multi-step procedure, which generally consists of 1) spike detection, 2) feature extraction (FE), and 3) clustering or classification. The classification stage plays a significant role in the overall accuracy of a SS system.

Methods : Recently, machine learning algorithms have been widely used in many fields. They present high precision and are trainable, so they provide more generalized optimum results than classic methods. In this paper, we propose a new spike sorting approach based on gradient boosted decision trees (GBDTs). GBDTs have been already used in numerous applications, including biomedical signal classification, with exceptional results in terms of accuracy and implementation cost. Decision tree-based algorithms are benefited from low computation complexity because they use simple comparators for sequential evaluation of tree levels. Additionally, with the help of the gradient boosting, which is a combination of gradient descent and boosting techniques, high accuracy is provided. Interestingly, it is achieved without requiring any computationally-intensive features or complex feature extraction methods. A small number of amplitude-based features in low noise levels and gradient-based features (or a combination of those two feature sets) in high noise levels are extracted, selected, and fed to the training process. Features are selected to reduce the feature space by muting unneeded, irrelevant, and redundant ones. It provides faster modeling while preventing performance degradation, which is caused by noisy features. In this paper, it is shown that three features are adequate to represent a spike. In the training process, a feature and its corresponding threshold are selected to evaluate samples at each tree level. There is a set of DTs for each cluster, which indicates whether a spike belongs to this cluster or not. Trees have a weighted contribution to the decision-making process within the cluster, which is calculated during the training. The final decision is a combination of answers of all DT sets.

Results : A publicly available dataset is used, which consists of four different synthetic sub-datasets from 594 different spike shapes with different noise levels (0.05, 0.1, 0.15, 0.2). Sub-datasets are labeled as “Easy1”, “Easy2”, “Difficult1”, and “Difficult2”. Average sorting accuracy for each of them among all noise level is 99.87%, 99.68%, 99.58%, and 99.83%, respectively.

Conclusion : This paper has presented a novel approach for SS. An implementation of GBDTs is used, and it has been shown that it provides significantly high sorting accuracy.

Keywords : spike sorting; Gradient boosted trees; biomedical signal processing

BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 136
Abstract ID: 133
subject: Novel and Cutting-Edge Technologies: Drug Discovery and Neuropharmacology
Presentation Type: Poster

Pulsed and Discontinuous Electromagnetic Field Exposure Decreases Temozolomide Resistance in Glioblastoma

Submission Author: Meysam Ahmadi zeidabadi

Meysam Ahmadi zeidabadi[1], Samereh Dehghani-Soltani[2], Seyed Hassan Eftekhar-Vaghefi[3]

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Background and Aim : Glioblastoma is a malignant and very aggressive brain tumor with a poor prognosis. Despite having chemotherapy concomitant with surgery and/or radiation therapy, the median survival of glioblastomaaffected people is less than 1 year. Temozolomide (TMZ) is a chemotherapy drug used today as the first line of glioblastoma treatment. Several studies have reported that resistance to TMZ due to overexpression of O6-methylguanine-DNA methyltransferase (MGMT) is the main reason for treatment failure. Several studies described that pulsed-electromagnetic field (EMF) exposure could induce cell death and influence gene expression.

Methods : In this study the authors assessed the effects of EMF (50 Hz, 70 G) on cytotoxicity, cell migration, gene expression, and protein levels in TMZ-treated T98 and A172 cell lines.

Results : In this study, the authors show that treatment with a combination of TMZ and EMF enhanced cell death and decreased the migration potential of T98 and A172 cells. The authors also observed overexpression of the p53 gene and downregulation of cyclin-D1 protein in comparison to controls. In addition, T98 cells express MGMT protein following treatment, since A172 cells did not express MGMT.

Conclusion : Their data indicate that EMF exposure improved the cytotoxicity of TMZ on T98 and A172 cells and could partially affect resistance to TMZ in T98 cells.

Keywords : pulsed-electromagnetic field, MGMT, P53, human glioblastoma cells (T98, A172), temozolomide resistance

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 137
Abstract ID: 149
subject: Novel and Cutting-Edge Technologies: Molecular, Biochemical, and Genetic Techniques & Gene . Therapy
Presentation Type: Poster

Ultrasensitive optical biosensor for detection of microRNA in Multiple Sclerosis disorder

Submission Author: Abbas Ebrahimi kalan

Hanieh Beyrampour-Basmenj[1], Abbas Ebrahimi kalan [2], Mohammad Rahmati[3], Mahnaz Talebi[4], Mohammad Pourhassan Moghamddam[5], Nosratollah Zarghami[6], Mohammadreza Alivand[7]

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Background and Aim : An ultrasensitive optical biosensor based on Colorimetric methods and isothermal amplifications was developed for the detection of upregulated microRNAs in Multiple Sclerosis disorders. Colorimetric based methods have attracted great attention due to their rapidness and low cost. As well, different isothermal amplification techniques such as hybridization chain reaction and rolling circle amplification, have been developed as an ideal methods because of their simple operation, low cost, and high sensitivity.

Methods : In the present study, double strand DNA polymers form based on hybridization of specifically designed probes for target microRNA. Gold nanoparticles were synthesized positively by using CTAB and NaBH4 according the latest literatures.

Results : Under the optimal conditions, gold nanoparticles absorb onto the negatively charged surface of DNA polymers and resulted in the participation of particles and decrease of absorption spectra. It has been shown that in the absence of target, a high adsorption of nanoparticles was observed by UV-vis spectrum and no precipitation was found. However, in the presence of target, the spectra reduced meaningfully. Such results approved the happening hybridization between probes and their targets and consequently the absorbtion of them with positively charged gold nanoparticles.

Conclusion : In conclusion, a stable and label-free sensor for microRNA detection was developed based on isothermal amplification techniques and precipitation of gold nanoparticles. microRNA detection is approved by absorption spectrum changes and low limit of detection in the range of picomolar was obtained.

Keywords : Multiple sclerosis, miRNAs; biosensor; isothermal amplification; colorimetric

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 138
Abstract ID: 242
subject: Novel and Cutting-Edge Technologies: Molecular, Biochemical, and Genetic Techniques & Gene . Therapy
Presentation Type: Poster

Participation of voltage-gated calcium channels in the striatum and cerebellar cortex in morphine tolerance in rat

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Background and Aim : Morphine has unfavorable side effects including analgesic tolerance. However, the precise underlying mechanism of morphine tolerance have remained elusive. Different brain regions including the striatum and cerebellar cortex are affected by morphine. A growing body of evidence shows that calcium channels are involved in morphine tolerance. For example, it has been shown that blockade of L-type calcium channels could abolish the development of opioid-induced analgesic tolerance. The aim of this study was to examine changes in the gene expression of different voltage-gated calcium channels, including Cav1.1, Cav1.2, Cav2.2, and Cav3.1 in the striatum and cerebellar cortex after induction of morphine tolerance in rats.

Methods : Male Wistar rats were used in which morphine tolerance was induced with ten days injections of morphine 10 mg/kg (S.C.) twice per day. A control group received saline (1 ml/kg) twice daily for 10 consecutive days. On day 10, morphine-induced analgesic tolerance was assessed using a hotplate test of analgesia. For gene expression study, each rat was sacrificed, the whole brain was removed, and the striatum and cerebellar cortex were dissected in both groups on day 10 of the schedule. The gene expression was examined using a quantitative RT-PCR method. The hotplate data was analyzed with a mixed two-way ANOVA. The real time-PCR data was analyzed using the 2-ΔΔCT method and an independent t-test was used for pairwise comparisons. $P<0.05$ was set as a statistically significant level.

Results : The results showed that the morphine treatments induced analgesic tolerance on day 10 of the treatments compared to control group ($P<0.001$). The results of the RT-PCR indicated significant increases in Cav1.2 and Cav3.1 mRNA levels ($P<0.001$), but significant decreases in the gene expression of Cav1.1 ($P<0.001$) and Cav2.2 ($P<0.05$) in the cerebellar cortex of morphine-tolerant rats compared with the saline-treated control group. The results also indicated significant increase in Cav3.1 mRNA level ($P<0.01$), but significant decrease in the gene expression of Cav1.1 ($P<0.001$) in the striatum. No significant changes were detected in expression of Cav1.2 and Cav2.2 in the striatum between the experimental groups.

Conclusion : It can be concluded that repeated morphine treatments affect expression of voltage-dependent calcium channels in the cerebellar cortex and striatum. We propose that changes in voltage-dependent calcium channels may underlie, at least partly, morphine-induced analgesic tolerance.

Keywords : Calcium channels, Cerebellum, Striatum, Morphine tolerance, Gene expression

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 139
Abstract ID: 240
subject: Novel and Cutting-Edge Technologies: Molecular, Biochemical, and Genetic Techniques & Gene . Therapy
Presentation Type: Poster

Interaction between purinergic receptors and morphine tolerance and withdrawal in rat striatum and cerebellar cortex

Submission Author: Maryam Koraei

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Background and Aim : ATP-mediated neurotransmission is present in peripheral and central nervous systems. Purinergic receptors responsible for effects of ATP on neurons are divided into three main classes, including P1, P2Y, and P2X receptors. According to many published pharmacological studies, morphine tolerance and withdrawal are associated not only with changes in mu-opioid receptor signaling but also with the signaling pathway of some other receptors such as purine receptors. The involvement of two types of P2X receptors known as P2X4 and P2X7 in morphine tolerance and withdrawal has been proposed. In this study, we aimed to investigate changes in the p2rx4 and p2rx7 gene expression in the striatum and cerebellar cortex of rats after morphine tolerance and withdrawal in rats.
Methods : Four groups of male Wistar rats were used. Morphine tolerance was induced by repeated injections of morphine (10 mg/kg) twice daily for 10 days. A control group received saline (1 ml/kg) instead of morphine during the schedule. Induction of morphine tolerance was assessed using a hotplate test of analgesia on day 10. Two hours after the last repeated injections on day 10, each rat was anesthetized, decapitated, and the striatum and cerebellar cortex were dissected on an ice-chilled surface. Two other groups of rats subjected to 30 days withdrawal after 10 days of the repeated saline or morphine treatments, and the intended brain areas were extracted on day 30 of the withdrawal. Changes in gene expression were assessed using real-time PCR. A two-way repeated measure ANOVA was used to analyze the hotplate data. The real time-PCR data was converted to 2-ΔΔCT values. An unpaired t-test was used for comparisons of the experimental groups. $P<0.05$ was considered as statistically significant level throughout.
Results : Real-time PCR results showed that expression of p2rx4 and p2rx7 in the cerebellar cortex significantly decreased in morphine-tolerant rats ($P <0.001$). After morphine withdrawal, no group difference was detected for p2rx4 expression, but p2rx7 expression significantly increased compared with the control group ($P <0.001$). The gene expression results in the striatum of morphine-tolerant rats revealed no group difference for the p2rx4 gene expression, but there was a significant decrease in expression of p2rx7 compared with saline-treated control group ($P <0.01$). However, expression of p2rx4 in the striatum of rats after withdrawal significantly increased compared with control group ($P <0.001$). No group difference was detected in expression of p2rx7 between the experimental groups.

Conclusion : It can be concluded that morphine tolerance site-specifically affects the gene expression of P2X4 and P2X7 receptors in the cerebellar cortex and striatum, which are compensated after Morphine withdrawal. The present results suggest important functional interaction between the purinergic system and morphine tolerance and withdrawal.

Keywords : Morphine tolerance; Morphine Withdrawal; Purinergic receptor; Gene expression

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 140
Abstract ID: 170
subject: Novel and Cutting-Edge Technologies: Molecular, Biochemical, and Genetic Techniques & Gene . Therapy
Presentation Type: Poster

Curcumin-loaded on graphene quantum dots induced apoptosis and inhibited cell migration in neuroblastoma cells

Submission Author: Saeideh Jafarinejad

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Background and Aim : Neuroblastoma is the first leading cause of death in children among malignancies and about 70% of patients are metastatic cases. Curcumin, a polyphenol natural compound extracted from turmeric, has attracted scientific and research interest for its inhibitory effects on metastasis, angiogenesis and inflammation in different tumors including neuroblastoma. Although the anticancer property of curcumin has been thoroughly demonstrated, poor aqueous solubility, rapid metabolism and rapid systemic elimination has limited its application. In this regard, loading curcumin on nanocarriers is one approach to improve curcumin bioavailability. graphene quantum dots (GQDs) are two dimensional sheets of hexagonal rings of carbon atoms with high adsorption capacity through hydrophobic and π-π interactions. High surface area, low toxicity and their capacity for chemical modification had made them suitable as nanocarriers for anticancer drugs. GQDs had the ultrahigh capacity for curcumin loading through p–p stacking and hydrophobic interaction.

Methods : We investigated the effects of graphene quantum dots-curcumin (GQDs-Cur) nanoparticles on apoptosis and cell migration in neuroblastoma (SH-SY5Y) cells. We also evaluated the effects of GQDs-Cur nanoparticles in bone marrow derived mesenchymal stem cells (BMMSCs) and fibroblasts as normal cells. The cytotoxicity of GQDs, curcumin and GQDs-Cur was performed by MTT assay. The incidence of apoptosis evaluated by Hoechst 33342/propidium iodide (PI) double Staining. The influence of GQDs-Cur on cell migration was assessed by cell migration assay

Results : According to our results, there was no significant decrease in viability of cells after exposure to different concentrations of GQDs (2-250). GQDs-Cur (40 ?g/ml) and curcumin (40 ?g/ml) significantly decreased viability of SH-SY5Y cells. Hoechst 33342/PI staining confirmed apoptosis of SH-SY5Y cells. GQDs-Cur had no significant effects on viability of normal cells. In addition, migration of SH-SY5Y cells inhibited by curcumin (40 ?g/ml) and GQDs-cur (40 ?g/ml) nanoparticles. Curcumin loaded on GQDs was more effective in induction of apoptosis and inhibition of cell migration in comparison to curcumin alone.

Conclusion : In conclusion, GQDs could be suggested as a biocompatible nanocarrier for curcumin to protect its anti-metastatic and apoptosis inducing properties.

Keywords : Neuroblastoma, Curcumin, Graphene quantum dots, Apoptosis, cell migration, SH-Sy5Y

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BOOK of Abstracts

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Count: 141
Abstract ID: 323
subject: Novel and Cutting-Edge Technologies: Other
Presentation Type: Oral

The importance of zebrafish in neuroscience researches

Submission Author: Hadi Aligholi

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Background and Aim : The zebrafish (Danio rerio) is rapidly becoming an outstanding model organism in biology. Major neuroscience centers have been established zebrafish labs. Both larval and adult zebrafish can be useful for neurosciences researches.

Methods : The importance of zebrafish-based studies in neuroscience is reviewed.

Results : Zebrafish has several characteristics that make it a favorable species for neuroscience investigations. High physiological and genetic homology to human facilitate translation of the zebrafish-based researches. In addition, morphology of zebrafish central nervous system has similarities to that of human. Moreover, reproduction and maintenance of zebrafish are cost-effective. Due to the transparency of larval zebrafish, studying the structures of live brain larva is feasible. Further, the sleep-wake cycle of zebrafish is similar to that of human. These days, various genetic manipulation can be performed in zebrafish. By using video tracking systems, various zebrafish behaviors can be monitored and analyzed easily. Specifically, these animals have a social behavior named shoaling which helps researchers to model neurological disorders in which social interactions are abnormal.

Conclusion : Considering these advantages of zebrafish, neuroscientists can use this vertebrate to produce several neurological models like autism spectrum, anxiety, sleep disorders, depression, brain cancers and epilepsy and move from tank to bedside.

Keywords : Zebrafish, Animal models, Neuroscience

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 142
Abstract ID: 331
subject: Novel and Cutting-Edge Technologies: Other
Presentation Type: Poster

Studying the behavioral neuroscience by using zebrafish

Submission Author: Zahra Karimi

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Background and Aim : Zebrafish (Danio rerio) is emerging as an excellent model organism in behavioral neuroscience. This species have a high degree of physiological, morphological and genetic homology to human. The behaviors of zebrafish are robust, evolutionary conserved and analogous to those of mammalian species.

Methods : Here we reviewed a number of validated behavioral tests using zebrafish.

Results : There are various behavioral tests we can performed by using zebrafish including anxiety and fear, learning and memory(spatial and avoidance), social behavior (shoaling, social preference, social interaction and mirror biting), aggression behavior, stress response, nocifensive response, locomotor and startle behaviors(tactile, visual, acoustic), olfactory and optokinetic responses, habituation to novelty response and seizures behavior in both larval and adult zebrafish. In this sense, video tracking systems help us to record animal behaviors for long time and to evaluate several aspects of special behaviors of zebrafish. In our lab, we established a setup of behavioral studies using a novel tracking system.

Conclusion : Behavioral assessment in zebrafish model can be used as an exciting novel tool to identify the pathway involved in neurobehavioral disorders.

Keywords : Zebrafish, Behavior, Neuroscience

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 143
Abstract ID: 320
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Cell-free therapeutics for neurodegenerative diseases

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Background and Aim : These days, neurodegenerative diseases including Alzheimer disease, Parkinson's disease, multiple sclerosis, stroke and epilepsy have an enormous impact on society health. Unfortunately, there is no infinite treatment for neurodegenerative diseases.

Methods : We will discuss and review the novel cell- free based approaches for management of neurodegenerative diseases.

Results : One of the common characteristics of these disorders is progressive degeneration of nervous system cells. Preclinical studies indicated that cell therapy can be as a promising approach to improve disabilities of cases with neurodegenerative diseases. Cell replacement and release of supportive elements are two main mechanisms considered for beneficial effects of cell therapy. Although, cell therapy faces several concerns like low survival of transplanted cells, unwanted migration of cells, uncontrollable differentiation of cells, aberrant neuronal circuit creation and tumor formation. So, the use of cell-based components instead of cells for alleviation of neurodegenerative diseases symptoms is attractive. In this sense, conditioned medium, micro vesicles and exosomes can be achieved from cells. There are various advantages when using these elements: they possess minimal risks of thrombosis, their size ranging from 30 to 150 nm, they have low immunogenicity and Low toxicity, they possess minimal risks of tumors, they can easily cross the BBB, and they can be engineered to package specific mRNAs, miRNAs, and proteins. Previous basic studies and our investigations in this field showed beneficial effects of cell-based components for neurodegenerative disorders.

Conclusion : In conclusion, cell-free therapeutics may be considered as a promising approach for treatment of neurodegenerative diseases with lower side effects and higher effectiveness compared to cell therapy.

Keywords : cell therapy, neurodegenerative diseases, exosomes, extracellular vesicles, conditioned medium

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 144
Abstract ID: 272
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Apoptotic effects of Frankincense in Hippocampal tissue of rat Alzheimers model

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Background and Aim : Introduction:Alzheimer's disease is characterized by a progressive cognitive decline, where memory of recent facts, spatial orientation, attention and executive functions are ones of the first affected. Apoptosis as a biological process plays an important role in the development of nervous system.Frankincense is important as a substance that strengthens memory and the nervous tissue.The aim of this study was to investigate the role of frankincense in the regulation of Alzheimer's-induced apoptosis.

Methods : In this experimental study,24 adult male wistar rats weighing (220-270g) were divided into three groups: Frankincense(50mg/kg),STZ(1.5mg/kg)(ICV) and STZ+Frankincense. Tunnel test was performed 18 and 45 days after injection.

Results : The rate of apoptosis in rats receiving frankincense was significantly lower than in the Alzheimer group.

Conclusion : The reduction in the incidence of apoptosis by frankincense indicates the protective properties of the central nervous system against damage caused by Alzheimer's disease.

Keywords : frankincense,hippocampus,STZ,rat

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 145
Abstract ID: 250
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Oral

Intraneuronal pH acidification may trigger degenerative consequences: a closer look at its mechanisms

Submission Author: Javad Mahmoudi

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Background and Aim : Any alteration in the cytosolic pH of neuronal cells may have deleterious consequences. Therefore maintenance of intracellular pH in its physiological range is needed for normal neuronal functions. This presentation aims to focus on the conditions that fluctuate cytosolic pH and results in abnormal intraneuronal acidification.

Methods : Data bases including MEDLINE via PubMed, Embase, Google Scholar, and Proquest were searched and restricted the find to publications on intraneuronal pH acidification mechanisms involved in neurodegeneration.

Results : The results revealed ten different categories of mechanisms at molecular levels jeopardizing neuronal vitality.

Conclusion : Notably, oxidative stress leads to cytosolic acidification, and consequently promotes apoptosis, protein misfolding and excitotoxicity. Collectively these insults triggers irreversible neuronal damage. Extending the current knowledge about mechanisms by which intraneuronal pH may propose new strategies to cope with neurodegenerative conditions.

Keywords : Intraneuronal pH acidification, Neurodegeneration, Apoptosis, Oxidative stress

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 146
Abstract ID: 225
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

A review of common voice disorders in patients with amyotrophic lateral sclerosis(ALS)

Submission Author: Nasrin Shahouzaei

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Background and Aim : ALS is a progressive neurological disease that leads to muscle wasting and decreased motor control. One of the first signs of bulbar involvement in these patients is progressive damage to the vocal cords. Voice impairment in ALS patients is due to laryngeal muscle weakness, which greatly affects the quality of communication and quality of life. Since the early diagnosis of voice disorders and subsequent early treatment have a significant effect on reducing voice disability caused by ALS on a person's quality of life, so in this study, we decided to review the voice problems in these people.

Methods : In this review study conducted in 2020, articles indexed in google scholar, PubMed, science direct databases with the keywords voice disorder, and amyotrophic lateral sclerosis were used. Inclusion criteria in this study were selected in such a way that only articles that were in English were used, articles that were published from 2000 to 2020, and finally, only articles that examined the voice problems of ALS patients were selected. Studies that had unclear implementation or examined other problems in ALS patients were excluded from the study process. The collection of review articles included 68 articles from different countries, and finally, 24 articles were selected and used.

Results : After reviewing the selected articles, we found that in almost all of them, the presence of vocal problems such as respiratory disabilities and problems in vocal parameters such as loudness, hoarseness, longevity, and sound quality have been reported. Defects in almost all ALS patients Such as harsh sound quality, vocal fatigue, effort and struggle, and changing the position of the vocal folds are the strongest predictors of ALS.

Conclusion : According to the studies that have been done in this field, it can be concluded that almost all ALS patients experience voice problems and disabilities in the course of their disease. Acoustic is more common in ALS people without bulbar symptoms.

Keywords : Amyotrophic lateral sclerosis - Neurological and motor neurons diseases

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 147
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subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Non-Invasive Induction of Brain Oscillations: A Path to the Treatment of Alzheimer's Disease

Submission Author: Mojtaba Lahijanian

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Background and Aim : The accumulation of beta-amyloid (Aβ) proteins in the synaptic space of neurons is a major characteristic of Alzheimer's Disease (AD). A study carried out on a mouse model of AD showed that optogenetic stimulation of the CA1 neurons of the hippocampus to flickering blue light at 40 Hz reduced the level of Aβ in that region. In other studies, non-invasive stimulation of the mice brain with visual light flickering at 40 Hz or auditory chirp signal modulated by 40 Hz tone were reported to reduce the Aβ plaque load in related processing regions in the brain as well as the hippocampus, and improve spatial and recognition memory of the treated animals. In this study, we examine the effect of 40 Hz auditory stimulation on the human brain's response recorded by electroencephalography (EEG). Through examining synchrony across the regions of the brain involved in the processing of auditory input, our study's objective is to provide an explanation for the network mechanisms underlying the improvements reported earlier on the mouse models of AD treated with similar stimulation.

Methods : EEG signals were recorded from 11 participants (6 healthy, 5 mild AD) during a stimulation task using an especially-designed 40 Hz auditory signal. MMSE test scores were recorded for all the participants and an expert neurologist provided the diagnosis. The task consisted of 6 trials of 40-second auditory stimulus interleaved with periods of 20 seconds of rest. The temporal synchrony of each electrode's signal was determined during the stimulus and rest cycles based on measuring its instantaneous phase averaged over one-second windows.

Results : Meaningful difference was observed in the responses of the healthy controls between the stimulus and rest cycles, in that the brain's oscillatory response showed high synchronicity in stimulus periods. Such a difference between the stimulus and rest cycle responses was not detected in most, but not all, of the AD patients. However, local entrainment of the 40 Hz oscillation was observed in some of the electrode data recorded from the AD patients.

Conclusion : Therapeutic effects of auditory stimulation in the mouse model of AD have been reported earlier. While Aβ plaque aggregation causes neurodegeneration and synaptic loss in AD, different studies have suggested that enhancing synchronization in neural activity can bring about neuroprotection. The results of the current study propose that inducing synchrony in the brain circuitry may be the mechanism for the noted improvement. This is explained through the principle of neuroplasticity, which states that synchronized neural activity can lead to synaptic weight boost. In other words, entraining the brain with especially-designed auditory stimuli can play a role in forcing populations of neurons to synchronize, thereby promoting neural plasticity and improved synaptic function. Our study hence provides an explanation of the mechanism by which inducing brain oscillations could enhance the functionality of the brain's neuronal circuitry and suggest a path to the treatment of Alzheimer's Disease.

Keywords : Alzheimer's Disease; brain oscillations; auditory stimulus; neuroplasticity; Alzheimer's therapy

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 148
Abstract ID: 126
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Evaluation of the effect of flavonoid morin on beta-amyloid-induced oxidative stress in the hippocampus of rats

Submission Author: Negin Mohammadi

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Background and Aim : Alzheimer's is the most common neurodegenerative disease in the elderly that begins with the deposition of beta-amyloid (Aβ) peptide in the brain. Studies have shown that beta-amyloid causes oxidative stress in various areas of the brain, especially in the hippocampus, leading to neuroinflammation, neuronal death, and memory loss. Evidence suggests the neuroprotective effects of the flavonoid morin. This study aimed to evaluate the effect of morin on Aβ-induced oxidative stress in the hippocampus of Alzheimer's model rats.

Methods : In this experimental study, 20 male Wistar rats were divided into four groups: control, morin, Aβ, and Aβ-morin. Aβ 1-42 was injected bilaterally into the hippocampus. Morin at a dose of 20 mg/kg BW was received by gavage after Aβ injection for 15 consecutive days. The animal hippocampus was removed to determine the level of malondialdehyde (MDA) and glutathione (GSH) and to evaluate catalase activity.

Results : Beta-amyloid increased MDA levels, decreased GSH content, and reduced catalase activity in the hippocampus of rats ($P<0.05$). 15-day morin treatment prevented these changes in Alzheimer's disease model rats.

Conclusion : Flavonoid morin reduces oxidative stress in the hippocampus of Alzheimer's model rats, so it is an appropriate option to strengthen the antioxidant system in patients with neurodegenerative diseases. Morin may be effective in preventing and treating neurodegeneration.

Keywords : Morin, Beta-amyloid, Oxidative stress, Hippocampus.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 149
Abstract ID: 114
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Study the effect of Gensing extract following epilepsy model induction by Penicillin on cognitive behaviour in adult male rat.

Submission Author: Sanaz Janati

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Background and Aim : Background and Objective: Penicillin injection into the neurocortex is the model of experimental epilepsy and cause brain toxicity and cognitive problem by damaging the target neurons which have a high density of glutamate receptors. Ginseng has been used in traditional Chinese medicine to improve brain functions like memory, behavior and mood. So, in this work we assessed the effect of gensing extract following epilepsy model induction by Penicillin on cognitive behaviour in adult male rat.

Methods : Materials and Methods: In this study, 50 male rats (Wistar) were divided into 5 groups: control, sham, penicillin, Gensing and Gensing-treated penicillin groups. Penicillin (1500ul dosage) was injected by ICV method to the neocortex of Adult rats (230-280 g). 7 days after recovery period Gensing was injected 100 mg / kg for 7 days in treatment groups. Cognitive-behavioral study was performed by using Morris water maze test.

Results : Results: Penicillin injection could affect the animal's descriptive memory and skills to find appropriate strategy reach to the target platform and increase unusual behaviors of swimming, such as swimming along the wall ($p<0.05$), the uncertain movements of the circular ($p<0.01$) and random movement ($p<0.01$) compared to the control and sham groups and Gensing treatment can reduce unconventional behaviors and increase the search-seeking behavior in order to reach the target platform in the shortest time.Conclusion: These results suggest that Gensing has been effective on cognitive behavior in epileptic rat by penicillin injection.

Conclusion : Jinsing can improve the effects of epilepsy on the learning and spatial memory of epilepsy rat.

Keywords : Gensing extract, epilepsy model, Cognitive behavior, Rat.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 150
Abstract ID: 103
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Protective effect of ceftriaxone on brain neurons in aged mice with D-galactose

Submission Author: Elham Hakimizadeh

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Background and Aim : Senescence is a slow and progressive biological process associated with many morphological and biochemical alterations in different organs. ceftriaxone is accompanied by antioxidant and anti-inflammatory properties. It has been shown that ceftriaxone has beneficial effects on Alzheimer's disease. In the current study, the effect of ceftriaxone on brain neurons in a mice model of aging was investigated.

Methods : Forty male mice were equally aliquoted into four groups as follows: Control, D-galactose group (treated with 500 mg/kg/day DG for 6 weeks), DG + Cef group (treated with DG plus Cef 200 mg/kg/day for 6 weeks), and ceftriaxone group (treated with Ceftriaxone 200 mg/kg/day for 6 weeks). The activities of catalase (CAT), glutathione peroxidase (GPx), and superoxide dismutase (SOD), as well as the level of malondialdehyde (MDA) in the brain, were measured by biochemical methods. Also, to determine the brain damage, histopathological alterations in the hippocampus were measured using hematoxylin and eosin (H&E) staining.

Results : Our results indicate that ceftriaxone increases the activity of SOD, GPx, and CAT as well as decreasing the level of MDA in the brain of aged mice. In addition, our histopathological observations are in agreement with the findings of biochemical tests.

Conclusion : Based on our findings, ceftriaxone declines neuronal dysfunctions in the DG-induced model of aging, possibly through its antioxidative properties.

Keywords : ceftriaxone ; brain ; D-galactose

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 151
Abstract ID: 124
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Linoleic acid strengthens the hippocampal antioxidant system in the rat model of Alzheimer's disease

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Background and Aim : Research has shown that the occurrence of oxidative stress in the brain is one of the most important causes of neurodegenerative diseases such as Alzheimer's. Deposition of beta-amyloid (Aβ) peptide in the brain weakens the antioxidant system and leads to neuronal apoptosis and behavioral dysfunctions. Linoleic acid is an unsaturated fatty acid that has a neuroprotective effect. This study evaluated the effect of linoleic acid on the activity of the antioxidant system in the hippocampus of Alzheimer's disease model rats.

Methods : Adult male Wistar rats were divided into four groups: control, beta-amyloid, linoleic acid, beta-amyloid-linoleic acid. Aβ 1-42 was injected bilaterally into the hippocampus. Linoleic acid was also injected subcutaneously (150 µg/kg body weight) for 15 consecutive days. Malondialdehyde (MDA), glutathione (GSH), and nitric oxide (NO) levels and catalase activity were measured in the animal hippocampus.

Results : Beta-amyloid increased the level of MDA and NO, reduced the level of GSH, and also decreased the catalase activity in the hippocampus of Alzheimer's disease model rats ($P < 0.05$). Linoleic acid prevented these changes in beta-amyloid-injected rats.

Conclusion : Linoleic acid, by strengthening the antioxidant system in the hippocampus of Alzheimer's disease model rats, prevents oxidative stress in these animals and is probably a good option for the prevention and treatment of neurodegeneration.

Keywords : Linoleic acid, Oxidative stress, Beta-amyloid, Hippocampus

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 152
Abstract ID: 179
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

The Effect of Trehalose on memory in the male aged rat

Submission Author: Bentolhoda Shafiei

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Background and Aim : Aging is damaging process in all living organisms, which is associated with the gradual accumulation of various injuries and decreased efficiency in different organs of the body, such as the brain, over time. Brain aging is associated with gradual loss of neurophysiological functions, often a risk factor for aging-related diseases such as neurological disorders. Trehalose is a non-resuscing disaccharide found in plants, microorganisms and invertebrates Neuroprotective effects of trehalose have been fairly consistent in many different neurodegenerative disease models.in the present study, we aimed to investigate the effect of oral trehalose consumption on memory and learning in old male rats.

Methods : In this study, 32 male Wistar rats were used. Animals are divided into four groups as follows: Normal young male rats (3-4 months old) with no intervention. old normal male rats (22-24 months old) with no intervention. Young male rats (3-4 months old) who consume 2% of the water with trehalose for one month. Old male rats (22-24 months old) who consume 2% of the water with trehalose for one month. After a month of taking trehalose, we used Morris water maze method to study spatial learning and memory.

Results : Our results in Morris water maze test showed that the animals in control old group spent more time and moved more distance to finding the hidden platform compared to animals in control young group. It means that spatial learning impaired due to aging. Also, distance moved percentage and time spent percentage in target quadrant in old group was less than young group and spatial memory disrupted too by aging. Terhalose group could decrease distance moved and time spent to finding the hidden platform and also increase time and distance in target quadrant compared to control old group and improved spatial learning and memory following by aging.

Conclusion : The findings of this study showed the treatment of trehalose could probably improve neurological outcome on memory of rat, following by aging. The mechanism of the effect of trehalose in aging will be examined in a future study.

Keywords : Trehalose; Neurological disorders; Aging; Old; Memory; Morris water maze

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 153
Abstract ID: 41
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Tissue Plasminogen Activator Loaded PCL Nanofibrous Scaffold Promoted Nerve Regeneration After Sciatic Nerve Transection in Male Rats

Submission Author: Amir Raoofi

Amir Raoofi[1]

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Background and Aim : According to the studies, damages to the peripheral nerve as a result of a trauma or acute compression, stretching, or burns accounts for a vast range of discomforts which strongly impressed the patient's life quality. Applying highly potent biomolecules and growth factors in the damaged nerve site would promote the probability of nerve regeneration and functional recovery. Tissue plasminogen activator (tPA) is one of the components that can contribute importantly to degenerating and regenerating the peripheral nerves following the injuries occurred and the absence of this biomolecule hinders the recoveries of the nerves. This technique would guarantee the direct accessibility of tPA for the regenerating axons. Structural, physical, and in vitro cytotoxicity evaluations were done before in vivo experiments.

Methods : In this study, twenty-four mature male rats have been exploited. The rats have been classified into four groups: controls, axotomy, axotomy + scaffold, and axotomy + tPA-loaded scaffold. Four, 8, and 12 weeks post-surgical, the sciatic functional index (SFI) has been measured. After 12 weeks, the spinal cord, sciatic nerve, and dorsal root ganglion specimens have been removed and stereological procedures, immunohistochemistry, and gene expression have been used to analyze them.

Results : Stereological parameters, immunohistochemistry of GFAP, and gene expression of S100, NGF, and BDNF were significantly enhanced in tPA-loaded scaffold group compared with axotomy group. The most similarity was observed between the results of control group and tPA-loaded scaffold group.

Conclusion : According to the results, a good regeneration of the functional nerve tissues in a short time was observed as a result of introducing tPA.

Keywords : Scaffold; Nerve Regeneration; Sciatic Nerve; Axotomy

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 154
Abstract ID: 18
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

The effect of Nigella sativa on remyelination and behavioral change in Cuprizone model of demyelination

Submission Author: Khadijeh Moradbeygi

Khadijeh Moradbeygi[1], Dr Mohsen Parviz [2], Dr Hosein Rezaeizadeh [3], Dr Arman Zargaran [4], Dr Mohammad Ali Sahraian [5], Marjan Nikbakhtzadeh [6], Shima mehrabadi [7], Elham Zahedi[8], Fariba Akhoundzadeh [9]

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Background and Aim : Multiple sclerosis (MS) is the major, immune-mediated, demyelinating neurodegenerative disease of the central nervous system (CNS). Nigella sativa (N.S) has been suggested to have antioxidant and neuroprotective effects. To this purpose, the therapeutic effects of Nigella sativa seeds on remyelination, inflammatory factors and behavioral dysfunction were investigated on CNS myelin loss induced by cuprizone toxin.

Methods : Thirty C57Bl/6 mice were randomly divided into 3 groups: control, MS, MS+ N.sativa. N. sativa + MS group received daily oral administration of N. sativa (870.9 mg/kg body weight). MS groups were fed a chaw containing 0.2 % cuprizone for 6 weeks. We assessed the myelin content and the number of myelinating cells in corpus callosum by FluoroMyelin and luxol Fast Blue staining as well as by immunostaining against MBP. Motor impairment and behavioral reaction measured by Open-field (OFT) and pole test at the end of the 6th week of experiment

Results : treatment group, Motor impairment significantly was improved. Nigella sativa administration decrease the extent of demyelination area and enhanced NF200, MBP ,BDNF and decrease amount of Thelper17 and CD45 within corpus callosum.

Conclusion : could conclude that myelinated structures could be protected by N. sativa in corpus callosum, which provide favorable evidence for the possibility of application of N. sativa in demyelinating diseases.

Keywords : Nigella sativa; Cuprizone Model;Multiple Sclerosis

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 155
Abstract ID: 78
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Audiovestibular function in vestibular schwannomas.

Submission Author: Sahar Neemati

Sahar Neemati[1]

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Background and Aim : vestibular schwannomas are bening,slow growing tumors that originate from schwann cells linig the vestibular nerve and can lead to hearing loss,tinnitus,vertigo,facial palsy and brain stem compression.They arise at the neurilemmal/neuroglial junction which is situated within the internal auditory canal.Uni lateral sensori neural hearing loss in the primary presenting symptom in around two thirds of patients with vestibular schwannomas. vestibular schwannomas are known to cause unilateral damage to both auditory and vestibular function. This raises intresting questions regarding the pathophysiology of hearing loss in patients with vestibular schwannomas.possible hypotheses are discussed.The purpose of this review article is to evaluate the function of audiovestibular in vestibular schwannas.

Methods : This study is a review of the audiovestibular function in vestibular schwannomas by analyzing articles from dependable scientific databases, including Google Scholar, ScienceDirect.

Results : since hearing loss correlates poorly with tumor size,a retrocholear lesion is probably not the only cause for hearing loss.also cochlear mechanisms seem to play a role.Audiovestibular diagnostic tests are essential for detection and treatment planning.A uni lateral sensori neural hearing loss and tinitus are the most common symptoms,but vertigo is also frequently occuring.indicating the affection of vestibular system. Although the balance section of the eighth nerve is the source of these tumors, the balance problems are the lowest in prevalence compared to other problems.

Conclusion : The presence of VS lead to significant deterioration of audiovestibular function in all objective measures.Increasing tumor size is not directly associated with hearing loss and only somewhat to vestibular deficit.However,audiovestibular finding are correlated.in order to preserve audiovestibular function VS it is important to stop the growth of the tumor and to avoid degenerative changes in the inner ear.

Keywords : Audiovestibular function,Vestibular schwannomas,hearing loss

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 156
Abstract ID: 342
subject: Neural Injuries and Neurodegenerative Disorders: Dementia
Presentation Type: Poster

Brain-derived neurotrophic factor (BDNF) in Alzheimer disease

Submission Author: Ehsan Dal minoufar

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Background and Aim : Alzheimer's disease (AD) is an age-related neurodegenerative disease and the most common type of dementia. More than 46 million people worldwide have AD. Bdnf is the most widely used neurotrophic growth factor in the central nervous system (CNS), which is essential for neuronal development, growth, differentiation, improved neuronal survival, axonal and dendritic growth, and synaptic plasticity. bdnf plays a very important role in brain functions including memory and learning. Areas, where bdnf is most active, include the hippocampus, cortex, and basal forebrain. Evidence suggests that decreased BDNf levels are involved in the development of Alzheimer's disease. To further explore this issue and gather evidence, the following review article examines the role of BDNF in Alzheimer's disease.

Methods : articles published between 2000 and 2020 were selected manually and computerized using the sites Scopus, PubMed, and Google Scholar.

Results : Results suggested that BDNF mRNA and protein levels are reduced in postmortem brain samples of AD patients. Decreased Bdnf regulation occurs in the late stage of AD in the hippocampus. Also, BDNF has been shown to promote survival and differentiation of basal forebrain cholinergic neurons. Modification of BDNF and / or the expression of its receptors (TrkB.FL, TrkB.T1 and TrkB.T2) during normal aging and Alzheimer's disease have also been described.

Conclusion : Several lines of evidence point to BDNF deficit as an important contributor to the pathogenesis of AD. Human genetic and experimental animal studies suggest that declined BDNF levels associate with synaptic and neuronal loss and cognitive impairment with aging and AD, but there is little evidence that BDNF signaling would play a major role in the disease-specific amyloid or tau pathology.

Keywords : Brain-derived neurotrophic factor; Alzheimer; neurodegenerative disease

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 157
Abstract ID: 36
subject: Neural Injuries and Neurodegenerative Disorders: Dementia
Presentation Type: Poster

Effects of Eugenol on Alzheimer's Disease-like Manifestations in Insulin- and Aβ-Induced Rat Models

Submission Author: Peyman Taheri

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Background and Aim : Eugenol is a phenylpropene having antidepressant properties. We investigated the effect of eugenol on amyloid plaques as a hallmark of Alzheimer's disease (AD) in two AD rat models, beta amyloid and insulin amyloid fibrils.
Methods : Beta amyloid (Aβ) and insulin amyloid fibrils were injected into the rat hippocampus. One week after stereotaxic surgery, the rats were treated with 0.01 and 0.02 mg/kg eugenol for two weeks. Passive avoidance learning and memory performance was assessed by measuring the step-through latency (STL). Amyloid plaques in the hippocampus were quantitatively evaluated and statistically analyzed using image processing software and ANOVA.
Results : Behavioral Studies: One-way ANOVA showed that the effect of i.p. injection of 0.01 mg/kg eugenol on amelioration of memory in the experimental groups Ia+E0.01 and Ia+E0.02 was significant ($P < 0.05$). The STLs in the lit chamber, measured for the AD model induced by amyloid insulin, showed considerable positive effects for both 0.01 and 0.02 mg/kg eugenol treatment. The effects were more significant ($P < 0.001$) in the case of the 0.01 mg/kg dose. Alzheimer's signs were also induced by beta-amyloid (Aβ), while other parameters and experimental conditions were the same as in the former model. The animals that received 0.01 mg/kg eugenol showed more significant results ($P < 0.001$) in both AD models. The STLs upon entering the dark chamber were also measured. Upon using both insulin amyloid and Aβ, treatment with the lower dose of eugenol showed more significant results with confidence level $P < 0.001$. Histological Studies and Image Processing: The hippocampus tissue of rats was studied using fluorescence microscopy. Amyloid plaques showed a yellow fluorescence against a green background. These plaques were quantitated using ImageJ. The collective sum areas of yellow spots were taken as the extent of AD manifestations. These values were close to null in the control tissue, as hippocampus integrity and tissue homogeneity were observed in the normal brain. Amyloid plaques were more prominent in the case of β-amyloid (Aβ) rather than after insulin amyloid injections. The average collective sums of amyloid plaques in the β-amyloid (Aβ) and insulin amyloid-induced models were 630 and 591 μm 2, respectively. Both 0.01 and 0.02 mg/kg doses of eugenol provided significant reduction of the collective area of amyloid plaques with $P < 0.01$. In both models, the 0.01 mg/kg dose of eugenol was somewhat more effective in reducing the total area of amyloid plaques. The effect of 0.01 mg/ kg eugenol, i.e., the reduction in the sum area of amyloid plaques, was also more significant in the case of β-amyloid (Aβ) (50%) compared to the respective value at insulin amyloid (39%) with $P < 0.01$.

Conclusion : Aβ amyloid was a more potent inducer of the signs related to Alzheimer's disease than insulin. Eugenol at a 0.01 mg/kg dose improved memory and reduced the number of amyloid plaques significantly ($P < 0.001$).

Keywords : Alzheimer's disease; eugenol; amyloid plaques; hippocampus; step-through latency (STL)

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 158
Abstract ID: 76
subject: Neural Injuries and Neurodegenerative Disorders: Dementia
Presentation Type: Poster

Validation and Normativeness of The Mini-Addenbrooke's Cognitive Examination (M-ACE) as brief Cognitive Screening Instrument in Mild & Major NCD on People in the Elderly Population

Submission Author: AHMAD SHAKER HOSSEINI

AHMAD SHAKER HOSSEINI[1], Dr. Meysam Sadeghi[2], Dr. Mustafa Almasi Doghaei[3]

1. FIRST WRITER
2. RESPONSIBLE WRITER
3. FIRST Advisor

Background and Aim : The availability of a short, accurate and sensitive cognitive screening tool to quickly and timely identify signs of cognitive decline in the elderly population that leads to early detection of neurocognitive disorders can be an opportunity To therapists to identify neuro cognitive disorders in its early stages and begin to treatment planning. The aim of this study was to Validation and Normativeness of The Mini-Addenbrooke's Cognitive Examination (M-ACE) as brief Cognitive Screening Instrument in Major and Mild Neuro Cognitive Disorders on People in the Elderly Population
Methods : the test was applied total of 163 elderly people 55 years and older (38 patients with major neurological disorders, 37 patients with mild neurological disorders, 88 healthy individuals) who met the inclusion criteria were included in this study. Data were analyzed based on the output results of the ROC curve to determine the cut-off points, sensitivity, accuracy, specificity and specificity and correlation of Pearson and multivariate analysis of variance
Results : M-ACE test at Cut op pointt 24 had 86.4% sensitivity, 0.73 specificity and 0.896 accuracy in screening and differentiation of mild Neuro Cognitive disorders from the control group. M-ACE test at cut-off point 20 had a sensitivity of 96.6 and a specificity of 97.4 and an accuracy of 0.994 in screening and differentiation of major neurological disorders from the control group. Reliability and internal consistency of the test using Cronbach's alpha coefficient was 0.911 and there was a significant difference between the participating group with major neuro cognitiv disorder and the control node in the overall score of M-ACE test. It was present in all areas (attention and orientation, memory recording, verbal fluency, spatial visual ability, and recall).
Conclusion : It seems that Mini-Addenbrooke's Cognitive Examination (M-ACE) is an effective, accurate and reliable cognitive screening tool with appropriate psychometric properties for cognitive screening of the elderly with major and minor neuro cognitive disorders in all health and care situations.
Keywords : Cognitive Screening Test, Eden Brook Short Cognitive Assessment Test, Major Neuro Cognitive Disorder, Mild Neuro Cognitive, Disorder, Alzheimer's Disease

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 159
Abstract ID: 136
subject: Neural Injuries and Neurodegenerative Disorders: Dementia
Presentation Type: Poster

Sour aversion in frontotemporal dementia: a case report and review on physiologic-anatomic mechanisms

Submission Author: Taravat Vahedi

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Background and Aim : Frontotemporal dementia (FTD) is a common cause of early-onset dementia and accounts for approximately 5-10% of all cases of dementia. FTD is characterized by a broad range of behavioral and personality changes manifested in apathy, emotional blunting, impulsiveness, and social withdrawal which, in turn, is associated with severe neural loss, predominantly involving frontal and temporal lobes.Eating abnormalities are assumed as one of the main symptoms for the diagnosis of behavioral variant FTD. These abnormalities are more common in bvFTD as compared with two other types. They include overeating, profound alteration in appetite, especially sweet craving, and changes in eating habits.

Methods : we present a 66 years old woman who suffered from a behavioral variant of FTD with an interesting symptom of food aversion, typically sour foods. We assessed her neuropsychological function with the Montreal Cognitive Assessment (MoCA).

Results : The brain MRI of our patient had demonstrated asymmetric anterior temporal atrophy, which was more prominent on the left side. This pattern of atrophy explains the difficulty in the naming of objects and very low MoCA score.

Conclusion : Flavour processing contains integration of multiple sensory inputs including olfactory, gustatory and somatosensory signals. In agreement with previous studies, degradation of anterior temporal lobe could result in altered flavour identification. The unique presentation of our patient might reflect damange to limbic structure which is likely to be involved in unpleasant food perception.

Keywords : Frontotemporal dementia;Eating disorder;Food aversion

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 160
Abstract ID: 129
subject: Neural Injuries and Neurodegenerative Disorders: Dementia
Presentation Type: Oral

Association of microbiota-derived propionic acid and Alzheimer's disease; bioinformatics analysis

Submission Author: Morteza Aliashrafi

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Background and Aim : Microbiota-derived metabolites could alter the brain tissue toward the neurodegeneration disease. This study aims to select the genes associated with Propionic acid (PPA) and compromise Alzheimer's disease (AD) to find the possible roles of PPA in AD pathogenesis.
Methods : PPA associated genes and AD genes were corporate from multi-source public databases, Coremine search engine, and text mining. The shared genes screened for diseases relation retrieved from DisGeNet in Enrich database. The String database was applied to Gene Ontology and KEEG pathway analysis. To find hubs, and bottlenecks used the network that provided by Cytoscape. To assess subnetworks and get seed genes, used the MCODE plugin.
Results : Amongst all genes associated with PPA and AD, 284 genes to be shared by searching databases and were subjected to further analysis. AD-PPA genes mainly involved in cancer, bacterial and virus infection, and neurological and non-neurological diseases. Gene Ontology and pathway analysis covered the most AD hallmark, such as amyloid formation, apoptosis, proliferation, inflammation, and immune system. Network analysis revealed hub and bottleneck genes. MCODE analysis also indicated the seed genes represented in the significant subnetworks. ICAM1 and CCND1 were the hub, bottleneck, and seed genes.
Conclusion : PPA interacted genes implicated in AD act through pathways initiate neuronal cell death. In sum up, AD-PPA shared genes exhibited evidence that supports the idea PPA secreted from bacteria could alter brain physiology toward the emerging AD signs. This idea needs to confirm by more future investigation in animal models.
Keywords : Alzheimer's disease, Propionic acid, Microbiota, Bioinformatics, System biology

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 161
Abstract ID: 173
subject: Neural Injuries and Neurodegenerative Disorders: Dementia
Presentation Type: Poster

The effects of soy on scopolamine-induced spatial learning and memory impairments are comparable to the effects of estradiol

Submission Author: Narges Marefati

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Background and Aim : Modulatory effects of soy extract and estradiol on the central nervous system (CNS) have been reported. The effect of soy on scopolamine-induced spatial learning and memory in comparison to the effect of estradiol was investigated.

Methods : Ovariectomized rats were divided into the following groups: (1) control, (2) scopolamine (Sco), (3) scopolamine-soy 20 (Sco-S 20), (4) scopolamine-soy 60 (Sco-S 60), (5) scopolamine-estradiol 20 (Sco-E 20) and (6) scopolamine-estradiol 60 (Sco-E 60). Soy extract, estradiol and vehicle were administered daily for 6 weeks before training in the Morris water maze (MWM) test. Scopolamine (2 mg/kg) was injected 30 min before training in the MWM test.

Results : In the MWM, the escape latency and traveled path to find the platform in the Sco group was prolonged compared to the control group ($p < 0.001$). Treatment by higher doses of soy improved performances of the rats in the MWM ($p < 0.05 – p < 0.001$). However, treatment with both doses of estradiol (20 and 60 μg/kg) resulted in a statistically significant improvement in the MWM ($p < 0.01 – p < 0.001$). Cortical, hippocampal and serum levels of malondialdehyde (MDA), as an index of lipid peroxidation, were increased which was prevented by soy extract and estradiol ($p < 0.001$). Cortical, hippocampal as well as serum levels of the total thiol, superoxide dismutase (SOD) and catalase (CAT) in Sco group were lower than the control group ($p < 0.001$) while they were enhanced when the animals were treated by soy extract and estradiol ($p < 0.01 – p < 0.001$).

Conclusion : It was observed that both soy extract and estradiol prevented learning and memory impairments induced by scopolamine in ovariectomized rats. These effects can be attributed to their protective effects on oxidative damage of the brain tissue.

Keywords : estradiol, oxidative stress, scopolamine, soy, spatial memory

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 162
Abstract ID: 220
subject: Neural Injuries and Neurodegenerative Disorders: Dementia
Presentation Type: Poster

Diagnostic value of clock drawing, cube copying and intersecting pentagons copying tests in identifying different types of degenerative dementia

Submission Author: Bahareh Meschian

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Background and Aim : Dementia is one of the most common diseases of old age. It is a progressive disease that causes severe loss of the ability to perform daily activities, dependence on others, and a significant reduction in survival. Early diagnosis and treatment of this disease can increase the efficacy of treatment and delay the complications, and the way to do that is through screening. Screening tests should be able to assess the visuospatial perception, cognitive and motor function of the patient. We used three visuospatial tests, namely the clock drawing (CDT), cube copying (CCT) and intersecting pentagon copying (IPC) tests.

Methods : This analytical chart-review study was conducted in Tehran's Firoozgar Hospital, in the general neurology clinic, dementia clinic, and the "brain and cognition" memory clinic in 2019. 100 patients were enrolled from the three clinics' databases who matched the inclusion criteria and the ones with the exclusion criteria were removed. The patients had been diagnosed with Alzheimer's disease (n = 51), dementia with Lewy-bodies (n = 14), frontotemporal dementia (n = 13), vascular dementia (n = 7) and mild cognitive impairment (n = 18), by a neurologist based on available criteria, clinical examination, interview and paraclinical findings. The patients' charts were reviewed for their scores in the Addenbrooke's (ACE) and MMSE tests. The CDT, CCT and IPC tests were also scored using modified scoring methods. The patients' age, gender, and education level were also extracted from their clinical records. Finally, the data were analyzed with suitable statistical tests using SPSS, version 22.

Results : The subjects included 65 females (65.0%) and 35 males (35.0%) with a mean age of 69.29 ± 9.43. Groups with different disorders did not differ significantly in terms of age, gender, and level of education (P-Value>0.05). The drawing tests had the highest diagnostic value for DLB and AD, respectively. The CDT was of higher diagnostic value than the CCT, and the CCT higher than the IPC. The CDT and the CCT also had a higher correlation with the ACE results. Above all, the ACE outperformed all the aforementioned tests, where other than DLB (AUC=0.833), it was usable for AD (0.567) and VaD (AUD=0.541), though performing poorly.

Conclusion : The results of this study show that the three drawing tests have the highest diagnostic value for DLB and second highest for AD. Of these tests, the CDT had the highest diagnostic value and correlation to ACE, and as ACE is more time consuming than the CDT, the latter could be a suitable alternative to differentiate DLB or AD from other types of dementia in less time.

Keywords : cube copying test; clock drawing test; intersecting pentagon copying test; Addenbrooke's cognitive examination; dementia; diagnostic value;

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 163
Abstract ID: 266
subject: Neural Injuries and Neurodegenerative Disorders: Dementia
Presentation Type: Poster

Split-day syndrome in a patient with frontotemporal dementia

Submission Author: Homa Pourriyahi

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Background and Aim : FTD is one of the most common forms of primary degenerative dementia, second in prevalence only to Alzheimer's disease.

Methods : We present the case of a 72 year-old man, presenting with a two-year history of behavioral change, and a unique profile of time disorientation, such that he split each 24 hours into two 12 hours and lived each 12 as if a complete day, i.e. he had two sets of breakfast, lunch and dinner through each 24 hours, split in half. Cognitive tests and imaging lead to a diagnosis of frontotemporal dementia (FTD).

Results : To understand the underlying mechanisms that cause the behavioral symptoms of this disease, namely of which this interesting case of disorientation in time, we explore the processes of time perception and its pathology in FTD.

Conclusion : Mechanisms proposed in impaired time perception are applicable in FTD and can provide an explanation for this case.

Keywords : Frontotemporal dementia; time perception; time disorientation; case report;

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 164
Abstract ID: 325
subject: Neural Injuries and Neurodegenerative Disorders: Dementia
Presentation Type: Poster

The effect of ventral tegmentum area DBS on synaptic plasticity, learning and memory in mice model of Alzheimer's disease

Submission Author: Fatemeh Bakhtiarzadeh

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Background and Aim : Alzheimer's disease is responsible for a large number (70%) of dementia in old people. Deep brain stimulation (DBS), a well-established therapeutic modality for the treatment of movement disorders, has recently shown potential beneficial effects on memory in animals and patients with Alzheimer's disease. Here, we test DBS for its ability to improve memory impairments by stimulating the ventral tegmentum area (VTA) in a new mice model of Alzheimer's disease.

Methods : One month after bilaterally intra hippocampal injection of cis- P tau, adult male mice received high-frequency VTA DBS for 30 min/ 5 day, and animals were assessed for changes in learning and memory and synaptic plasticity. Short term and long term memory was assessed respectively by Y maze and Barnes maze and also synaptic plasticity was studied by in vitro evoked- field potential recording.

Results : Hippocampal cis- P tau injection as a new mice model of Alzheimer's disease produced spatial and working memory impairment that was ameliorated by DBS, with no effects in the control group that received DBS. Further, in vitro evoked field potential recording showed a restoration of long term potentiation (LTP).

Conclusion : These results indicate that VTA DBS might mitigate memory dysfunction in mice model of Alzheimer's disease and also have a therapeutic effect.

Keywords : Alzheimer's disease, Cis-P tau, Learning and memory, Synaptic plasticity

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 165
Abstract ID: 178
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Poster

Chrysin attenuates traumatic brain injury-induced recognition memory decline, and anxiety/depression-like behaviors in rats: Insights into underlying mechanisms

Submission Author: Shahab Ghaderi

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Background and Aim : Cortical and hippocampal neuronal apoptosis and neuroinflammation are associated with behavioral deficits following traumatic brain injury (TBI). The present study was designed to investigate the potential protective effects of flavonoid chrysin against TBI-induced vestibulomotor impairment, exploratory/locomotor dysfunctions, recognition memory decline, and anxiety/depression-like behaviors, as well as the verified possible involved mechanisms.

Methods : Chrysin (25, 50, or 100 mg/kg/day; P.O.) was administered to rats immediately after diffuse TBI induction, and it was continued for 3 or 14 days. Behavioral functions were assessed by employing standard behavioral paradigms at scheduled points in time. Three days post-TBI, inflammation status was assayed in both cerebral cortex and hippocampus using ELISA kits. Moreover, apoptosis and expression of Bcl-2 family proteins were examined by TUNEL staining and immunohistochemistry, respectively.

Results : The results indicated that treatment with chrysin improved vestibulomotor dysfunction, ameliorated recognition memory deficit, and attenuated anxiety/depression-like behaviors in the rats with TBI. Chrysin treatment also modulated inflammation status, reduced apoptotic index, and regulated Bcl-2 family proteins expression in the brains of rats with TBI.

Conclusion : In conclusion, the results suggest that chrysin could be beneficial for protection against TBI-associated behavioral deficits, owing to its anti-apoptotic and anti-inflammatory properties.

Keywords : Traumatic brain injury . Chrysin . Behavioral deficits . Anti-apoptosis . Anti-inflammatory

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 166
Abstract ID: 102
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Poster

The effects of atrial natriuretic peptide on the blood-brain barrier permeability, neurological scores and brain edema after severe traumatic brain injury in male rat: the role of MMP-9

Submission Author: Vahid Alivirdiloo

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Background and Aim : ANP The atrial natriuretic hormone, which is released from the heart into the bloodstream in response to increased circulating blood volume or hypoxic conditions, has dilating blood vessels, lowering blood pressure and natriuretic activity, and there are a wide range of receptors for this hormone in the brain. It appears to have neuroprotective properties, but its exact mechanism is not yet known. Therefore, in this study, we investigated the neuroprotective effects of atrial natriuretic peptide after animal model of traumatic brain injury (TBI).

Methods : thirty minutes after traumatic brain injury induction by Marmarou free fall method, the male Albino wistar rats received ANP three different doses (5, 10 and 20mg/kg) were administered intraperitoneally. VCS of animals were recorded prior (pre), after (D0), 24 hours later (D1), 48 hours (D2) and 72 hours (D3) after TBI induction. Vestibulomotor tests were evaluated by Beam Walk (BW) and Beam Balance (BB) tests in similar fashion. To determine permeability of Blood-Brain Barrier (BBB) 4-6 h and brain edema 72 hours after TBI induction, Evans-Blue dye and Wet-Dry methods were employed respectively. Cerebrospinal fluid (CSF) was collected 72 hours after TBI induction to evaluate the levels of a matrix metalloproteinase-9 (MMP-9).

Results : results have shown that inducing TBI can cause decline in VCS, cerebral edema, BBB dysfunction, vestibulomotor impairment, and alteration of cytokines in favor of inflammation in CSF. Nevertheless, i.p, administration of ANP in 5 and 10 mg/kg can attenuate these finding ($P<0.001$). Also, ANP (5, 10 mg/kg) effectively decreased MMP-9 in CSF ($P<0.001$). All findings were more noticeable in 5mg/kg ANP dose.

Conclusion : Single dose of ANP (5, 10 mg/kg) can effectively decrease MMP-9 and attenuate the injury induced by trauma. Although, all effects were more pronounced with 5 mg/kg ANP.

Keywords : ANP, Traumatic brain injury, Neuroprotection, MMP-9, rat

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 167
Abstract ID: 155
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Poster

The effect of Curcumin on the neurological scores, Blood–brain barrier and Evaluation of motor function after severe traumatic brain injury in male rat: a behavioral, biochemical and histological study

Submission Author: Vahid Alivirdiloo

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Background and Aim : Curcumin is a polyphenol nonflavonon antioxidant derived from the rhizomes of Curcuma longa. Curcumin is a proven anti-inflammatory, anti-proliferative and exhibits an antioxidant capacity equal with that of vitamins E and C .Curcumin reduced reperfusion injury in ischemic stroke by preventing neutrophil adhesion to cerebrovascular microcirculation. However, the exact mechanism of this molecule has yet to be elucidated. Therefore, this study is intended to show the neuroprotective activity of curcumin in animal model of traumatic brain injury (TBI).

Methods : thirty minutes after traumatic brain injury induction by Marmarou free fall method, curcumin three different doses (25, 50 and 100mg/kg) were administered intraperitoneally. VCS of animals were recorded prior (pre), after (D0), 24 hours later (D1), 48 hours (D2) and 72 hours (D3) after TBI induction. Vestibulomotor tests were evaluated by Beam Walk (BW) and Beam Balance (BB) tests in similar fashion. To determine permeability of Blood-Brain Barrier (BBB) and brain edema 4-6 hours after TBI induction, Evans-Blue dye and Wet-Dry methods were employed respectively. Cerebrospinal fluid (CSF) was collected 72 hours after TBI induction to evaluate the levels of a proinflammatory cytokine (IL-1β) and anti-inflammatory cytokine (IL-10) and brain removed for H and E staining.

Results : results have shown that inducing TBI can cause decline in VCS, cerebral edema, BBB dysfunction, vestibulomotor impairment, and alteration of cytokines in favor of inflammation in CSF. Nevertheless, i.p administration of curcumin in 25 and 50mg/kg can attenuate these finding ($P<0.01$). All findings were more noticeable in 25 mg/kg curcumin dose ($P<0.001$).

Conclusion : Single dose of Curcumin (25 or 50mg/kg) can effectively increase the activity of anti-inflammation cytokines and attenuate the injury induced by trauma. Although, all effects were more pronounced with 25mg/kg curcumin.

Keywords : Curcumin, Traumatic brain injury, Neuroprotection, neuroinflammation

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 168
Abstract ID: 46
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Poster

The Effect of Estrogen on Inflammatory and Oxidative Stress Factors in Diffuse Axonal Injury: A Clinical Trial

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Background and Aim : Neuroprotective effect of estrogen in traumatic brain injury (TBI) has been shown in many animal studies. This clinical trial was designed to investigate the effect of estrogen on inflammatory and oxidative stress factors in diffuse axonal injury (DAI).

Methods : Frothy- eight male patients 18-60 years with moderate to severe DAI admitted within the first 4 hours of injury were randomly divided into control and estrogen groups. The estrogen group received orally 1.25 mg conjugated estrogen within four hours of brain injury and four days consecutive in addition to standard treatment. Serum concentrations of proinflammatory (Interleukin-1β (IL-1β), Transforming growth factor (TGF-β)) and oxidative stress (Malondialdehyde (MDA), Protein carbonyl (PC), Total antioxidant capacity (TAC)) factors were evaluated immediately, and one and six days post-injury.

Results : There was no significant difference in serum MDA level between the control and estrogen groups at 1 and 6 days post injury, There was an increase in serum IL- 1β level in the estrogen group compared to the control group at 1 and 6 days after DAI ($P < 0.001$). Also, an increase in serum TGF-β level was observed in the estrogen group compared to the control group at 1 and 6 days after injury ($P < 0.001$). There was an increase in serum protein carbonyl level in the estrogen group compared to the control group at 1 and 6 days after DAI ($P < 0.001$).This factor increased between the estrogen group at six days after injury compared to one days after injury ($P < 0.05$). Serum TAC level increased in the estrogen group compared to the control group at 1 and 6 days after injury ($P < 0.01$).

Conclusion : The findings of this study showed the treatment of estrogen increases the ratio of antioxidant to oxidant and also anti-inflammatory to inflammatory factors in DAI patients. Therefore could be neuroprotective through antioxidant and anti-inflammatory effects .A study with larger sample size is needed to confirm the efficacy of estrogen in DAI.

Keywords : Estrogen; Diffuse axonal injury; Protein carbonyl; Malondialdehyde; Total antioxidant capacity; Interleukin1-β; Transforming growth factor

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 169
Abstract ID: 274
subject: Neural Injuries and Neurodegenerative Disorders: Spinal Cord Injury
Presentation Type: Poster

Neuroprotective effects of graphene-based materials on spinal cord injury

Submission Author: Ayda Yari Ilkhchi

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Background and Aim : Spinal cord injury (SCI) is recognized as a significant unsolved disease with elevated death and disability rates. Globally, it poses serious problems not only in the quality of patients life, but also in the economic and social pressure. Following spinal cord injury also induces eternal changes in the activities of sensation and motion below the origin of the lesion due to demyelination and axon damage. Because of the microenvironment inhibition and the lack of sufficient neurotrophic help in the injury situation, multiple methods need to be fulfilled to ensure functional recovery and regeneration of axons. Design of novel biomaterials that can bridge the lesion hole and stimulate cell regeneration, and also perform as a carrier for the delivery of biomolecules and stem cells to favor microenvironmental alteration at the damaged location. In recent years, the great characteristics of graphene-based materials, such as ductility, electrical conductivity and hardness, have strongly motivated their application in biomedicine.

Methods : Here we design the novel graphene-based nanomatherials through the self-assembly method. After the determination of physicochemical and structural properties, we analyze the SCI mice model for 14 days.

Results : The resulting nanomaterials were thoroughly characterized by FTIR, XRD, TGA, SEM, then tested their toxicity by MTT assay. Using on SCI model showed a good recovery compared to control group after 2 weeks.

Conclusion : In this study, we report the manufacture of novel biomaterials has no local and systemic toxic reactions, providing more effective platforms for the SCI treatment.

Keywords : spinal cord injury; central nervous system; graphene-based materials

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 170
Abstract ID: 340
subject: Neural Injuries and Neurodegenerative Disorders: Spinal Cord Injury
Presentation Type: Poster

Evaluation of combination therapy of nanofingolimod and three dimensional transplantation of NS/PCs in spinal cord injury in mouse

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Background and Aim : Complex pathophysiology of spinal cord injury (SCI) is the key challenge for SCI treatment. Modulation of inflammation in combination with neural stem/precursor cells (NS/PCs) transplantation is one of the promising approaches. Immune-modulating and anti-inflammatory effects of fingolimod encourage researchers to use it in nervous system injuries. The purpose of this study was to examine the effect of local delivery of nanofingolimod and transplantation of NS/PCs embedded in the PuraMatrix (PM) on motor function improvement and tissue damage in a contusion model of SCI in mouse.

Methods : In the first part of the study, neurosphere culture was done to expand NS/PCs expressing green fluorescent protein (GFP). The emulsion method was used to encapsulate the fingolimod in polylactic-co-glycolic acid polymer (PLGA), and nanofingolimod particle characterization was evaluated. In the second part, forty young adult male Balb/c mice were randomly divided into six groups, including sham (no injury), PBS (intrathecal and intralesional injection of PBS), PM (intrathecal injection of PM and intralesional injection of PBS), NS/PCs (intrathecal injection of PBS and intralesional injection of NS/PCs embedded in PM), nanofingolimod (intrathecal injection of PM loaded with nanofingolimod particles and intralesional injection of PBS), and NS/PCs+nanofingolimod (intrathecal injection of PM loaded with nanofingolimod particles and intralesional injection of NS/PCs embedded in PM). Behavioral tests were performed before SCI induction and then after treatment, the tests were performed every week until the fourth week. Cavity size was evaluated by Nissl staining. The fate of the transplanted cells was determined by immunofluorescence assay.

Results : The mean diameter of nanofingolimod particles was 225.5 nm. Encapsulation efficiency was approximately 90% and drug loading was 13%. According to the drug release study, 70% of fingolimod was slowly released from PLGA nanoparticles within 240 hr. The results of the in-vivo study showed that recovery of motor function in SCI mice treated with nanofingolimod alone and in combination with NS/CPs was significantly increased compared with other groups. However, local delivery of nanofingolimod in combination with NS/PCs

transplantation led to a stronger improvement in neurological function. The cavity size significantly reduced in nanofingolimod and NS/PCs +nanofingolimod groups. Moreover, the number of survived transplanted cells in the NS/PCs+Nanofingolimad group was 2.4-fold higher than in mice treated with NS/PCs. Furthermore, local delivery of nanofingolimod significantly increased the expression of oligodendrocyte marker and decreased the astrocyte marker expression in transplanted cells.

Conclusion : In light of our findings, a combination of a local delivery system for nanofingolimod and three-dimensional transplantation of NS/PCs can be considered as a promising approach for the treatment of SCI.

Keywords : Spinal cord injury; neural stem/precursor cells, fingolimod; neural tissue engineering; mouse

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 171
Abstract ID: 324
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Alteration of hypothalamic neuron dynamic following resveratrol administration in animal model of obesity

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Background and Aim : Recently, adult hypothalamic neurogenesis has been considered as a central regulator of energy balance circuit. Resveratrol (RSV) as a natural polyphenol influences the body fat mass and reduces the amount of adipose tissue. The present study was designed to evaluate the effect of RSV on dynamic of hypothalamic neurons in a diet-induced obesity model of mice.

Methods : In this study, 60 animals were divided into 6 groups as 50 mice received HFD for 4 weeks, then their diet was switched to chow, HFD, HFD+RSV or Chow+RSV or calorie restriction diet (CR) for 6 weeks. The remaining animals ate chow diet for 10 weeks. Body weight and food intake were evaluated regularly once per week during the study. At the end of study, adipogenesis, hypothalamic apoptosis, cell damage, astrogliosis, neurogenesis, distribution of neural stem cells, the expression of the main trophic factors and the fate of new born cells in the arcuate nucleus (ARC) were evaluated.

Results : The findings of the study revealed that 10 weeks consuming of HFD increased body weight, fat pad, percentage of dark cells and apoptosis in all areas of hypothalamus. In addition, HFD reduced nestin-positive cells but, increased astrogliosis in ARC. Moreover, HFD increased neurogenesis in dorsomedial hypothalamus (DMH) but didn't any considerable effect on the fate of newborn cells in ARC. These effects were seen parallel to increase in expression of hypothalamic BDNF. On the other hand, adding RSV to HFD from the 5th weeks of the study decreased weight gaining. In addition, foods containing RSV reduced astrogliosis in medial hypothalamus (MH) and ARC as well as percentage of dark cells and apoptosis in all areas of hypothalamus. Moreover, adding RSV to HFD and chow diet increased the percentage of nestin-positive cells in all areas of hypothalamus. Likewise, adding RSV to HFD increased neurogenesis in ARC and LH, although chow+RSV diet increased neurogenesis in ARC and ventromedial hypothalamus. These effects were coincidence with increase in expression of CNTF in hypothalamus. It is worth to point out that foods containing RSV

changed the fate of newborn cells toward production of POMC+ neurons. In comparison, CR diet prevented weight gaining and reduced hypothalamic apoptosis, astrogliosis and percentage of dark cells similar to foods+RSV. In addition, CR increased the percentage of nestin+ cells just in MH. What was interesting is that, CR decreased neurogenesis specifically in DMH. Although, the expression of CNTF in hypothalamus increased following CR consumption. Likewise, CR increased the generation of POMC+ neurons in ARC similar to RSV-containing foods.

Conclusion : Diets rich in fat changed hypothalamic neuronal balance toward orexigenic vs anorexigenic neurons. Administration of RSV to HFD reversed this balance toward generation of anorexigenic neurons similar to CR. These data point to the potential for RSV in regulation of body weight, possibly via modulation of hypothalamic neurogenesis.

Keywords : Resveratrol, Hypothalamus, Neurogenesis, High-fat diet, obesity

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 172
Abstract ID: 312
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

The effect of FTY720 on survival, proliferation and migration of neuronal stem/progenitor cells in two-dimensional and three-dimentional environments

Submission Author: Fatemeh Shamsi

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Background and Aim : Dysfunction and loss of neural cells are the main pathological features of acute or chronic neurodegenerative disorders. Although chronic activation of the immune system in the central nervous system (CNS) contribute to neuronal damage, the microglia activity as an immune response can be effective for restoration in the CNS by cleaning debris and necrotic cells after myelin damage. Therefore, supervising the interaction between the immune system and CNS to modulate the inflammation has been considered. FTY720 (Fingolimod) is a new drug that has been proposed in recent years to modulate the immune system. Besides, stem cell therapy has been a promising strategy to repair damaged neuronal circuits in neurodegenerative diseases. This study aimed to evaluate the effects of different doses of FTY720 on survival, proliferation, and migration of mouse embryonic neural stem/progenitor cells (NS/PCs) in both two-dimensional (2-D) and 3-D cultures using neurosphere assay.

Methods : The specimens harvested from the ganglionic eminence of the 13.5-day old embryo were cultured based on the protocol of free-floating clusters, and after the second passage, the single cells were used for the rest of the study. The behavior of NS/PCs, including survival, proliferation, and migration were measured in the presence of 0 (control), 10, 50, or 100 nanomolar concentrations of FTY720 in cell culture without any scaffold (2-D) or containing PuraMatrix (3-D). MTT assay was used for the assessment of cell survival. The number and diameter of neurospheres were measured as indicators of NS/PCs proliferation. The migration of NS/PCs was assessed based on the distances passed by the three cells located in the farthest distance to the margin of the neurosphere.

Results : Immunofluorescence assay indicated that more than 85% of cells obtained from the second passage expressed NS/PCs marker nestin. Five days after exposure of NS/PCs to FTY720, the number of neurospheres increased significantly in the groups treated with the 10, 50, or 100 nanomolar concentrations of drugs compared to that control group. Further, in 2-D culture, 50 and 100 nanomolar concentrations of FTY720 had a significant proliferative effect on the diameter of neurospheres compared to untreated cells. Moreover, a dose-dependent increasing trend in migration capacity of the NS/PCs was observed following exposure to different concentration of FTY720 in both cultures (with and without scaffold), so that the NS/PCs treated with 100 nanomolar of FTY720 traveled more distances than that of other groups in 2-D culture.

Conclusion : Based on the results of this study, FTY720 promotes survival, proliferation, and migration capacities of NS/PCs in a dose-dependent manner. In vivo studies using FTY720 and NS/PCs in animal models of different neurodegenerative diseases can provide important evidence for the effectiveness of FTY720 as an immune modulator in combination with NS/PCs for the recovery of CNS damages.

Keywords : Fingolimod, neural stem cells, neurodegenerative disease

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 173
Abstract ID: 292
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

The protective effect of Quercus brantii fruit methanolic extract on histological structure of sciatic nerve in type II diabetic rats by inhibition of TNF-α

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Background and Aim : Almost 12% of all diabetic patients are affected with symptomatic painful diabetic neuropathy (DN). Peripheral neuropathy is one of the most common long-term complications of diabetes mellitus, which affects all peripheral nerves, such as sciatic nerve. Fruit of Iranian oak (Quercus brantii) possesses many biological and pharmacological activity including hypoglycemic, anti-inflammatory and anti-oxidative effects which is used widely in Iranian traditional folkloric medicine for treatment of several diseases. As the pathogenesis of DN is characterized by increased levels of reactive oxygen species as well as free radicals and an associated inflammatory response, we hypothesized that the antioxidative effect of oak fruit methanolic extract may function as an anti inflammatory therapy to ameliorate sciatic nerve tissue damage in type II diabetic rats.

Methods : In this study, 20 adult male wistar rats were divided into 4 groups including: control, sham, diabetic, and treatment. Type II diabetes was induced by 4 weeks high fat diet and 35 mg/kg streptozotocin in diabetic and treatment groups. One week after streptozotocin injection, sham and treatment groups received 100 mg/kg/day total methanolic extract of Q. brantii by oral gavage for 40 consecutive days. Finally, animals were euthanized and left and right sciatic nerves were removed and fixed in 10% neutral buffered formalin. The samples were processed by routine and standard paraffin embedding and serially sectioned by a rotary microtome. The sections were selected through systematic random sampling and stained by H&E and Mallory trichrome. Stereological studies were performed by unbiased stereological technique using optical fractionator method and expression of TNF-α was determined by immunohistochemical technique which quantified by ImageJ software. Finally, data were analyzed by one-way ANOVA and Tukey's post hoc, with the significant difference being set at $P<0.05$.

Results : Our histological and stereological results showed that diabetes caused severe structural changes in the sciatic nerve and many myelinated fibers presented degeneration at different stage of severity compared to control groups. In this group, the amount of extra-fascicular connective tissue markedly increased, highly extended inside the fascicles and perineurium had crumpled outline in most fascicles. Stereological analysis indicated that

diabetes decreased the number of axons, axonal diameter and cross-sectional area and myelin sheath thickness but increased g ratio compared to control groups significantly (P<0.001). Our histopathological and stereological results revealed that methanolic extract of Q. brantii could inhibit diabetic induced structural damages of sciatic nerve significantly (P<0.001). Immunohistochemical study revealed that extract could significantly reduce expression of TNF-α in sciatic nerve of diabetic animals (P<0.001).

Conclusion : It can be concluded that Q. brantii fruit methanolic extract improved the histological structure of sciatic nerve in type II diabetic rats by inhibition of TNF-α and can be considered as a therapeutic strategy for improvement of the neuropathy in diabetic people.

Keywords : Sciatic nerve; Quercus brantii; Diabetes; TNF-α; Stereology

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 174
Abstract ID: 203
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Cinnamaldehyde Enhanced Functional Recovery after Sciatic Nerve Crush Injury in Rats

Submission Author: Zohreh Jahromi dastjerdi

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Background and Aim : Peripheral nerve injury is a common clinical issue induced by trauma, tumor, and damage caused by treatment. Such factors create chemical and inflammatory alterations at the injury site, which increase nerve deterioration. Thus, minimizing these modifications can lead to nerve protection after injury. The present study sought to evaluate the possible improvement in nerve regeneration and enhancement of functional outcomes by cinnamaldehyde (Cin) administration following sciatic nerve crush in a rat model.

Methods : Rats (n = 48) were distributed into 6 groups, including sham, injury, DMSO (vehicle group), and Cin groups (10, 30, and 90 mg/kg/day). Using small hemostatic forceps, crush injury was induced in the left sciatic nerve. Thereafter, Cin was administered for 28 successive days. Weekly records were taken for sciatic functional index (SFI) measurements. Further assessments including electrophysiological and histomorphometric evaluations, gastrocnemius muscle wet weight measurements, and estimation of the serum total oxidant status were performed.

Results : According to the results, Cin could accelerate sciatic nerve recovery after crush injury, and the dose of 30 mg/kg/day of Cin had better impacts on SFI recovery, muscle mass ratio, and myelin content.

Conclusion : The current research demonstrated that Cin positively affects peripheral nerve restoration. Therefore, Cin therapy could be considered as a potential treatment method for peripheral nerve regeneration and its functional recovery. However, more investigations are required to further validate the study results and evaluate the optimal dose of Cin.

Keywords : Sciatic nerve · Cinnamaldehyde · Cinnamon · Regeneration · Nerve injury

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 175
Abstract ID: 150
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Oral

Evaluation of combinational treatment of epicathechine and edaravone in Parkinson model induced by 6 -Hydroxydopamine in male rats.

Submission Author: Ramin Ataee

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Background and Aim : Parkinson's disease is a common neuropathological disorder caused by degeneration of dopaminergic neurons. The aim of this study was to investigate the evaluation of combinational treatment of epicathechine and edaravone with Madopar on behavioral effects of prkinson model induced by 6 -Hydroxydopamine in male rats.

Methods : In this study, 40 male Wistar rats weighing 200-250 g randomly divided into 5 groups of 8. Sham group did not receive any lesions or treatments;the Parkinson's group received unilateral injection of 4 micrograms of neurotoxin 6-hydroxy dopamine,the third group received epicatechin (50 mg / kg, ip) and edaravone (10 mg / kg, ip) for 14 days after brain lesions , the fourth group Madopar (50 mg / kg, gavage) and the fifth group epicathechine -edarvon-madopar .after 14 days of treatments, behavorial tests including balance test (narrow beam test), apomorphine-induced rotational test and open field test were performed.

Results : Injection of 6-hydroxy dopamine cerebroventcularly caused a significant increase in number of rotations induced by apomorphine, total balance test times and change in open field test compared with the control group ($p < 0.001$). Treatment by epicatechin-edaravone, madopar alone and in combination significantly reduced number of rotations of apomorphine test, increased time of (narrow duct test) and improved movement in open field test compared with Parkinson groups

Conclusion : Based on the results of this study, combinational therapy of epicatechin-edaravone with Madopar improved the behavioral changes in Parkinson's model in rat.

Keywords : Parkinson's disease, Epicatechin, Edaravone, Behavioral tests

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 176
Abstract ID: 194
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

COMPARISON OF MELATONIN AND CURCUMIN EFFECT AT THE LIGHT AND DARK PERIODS ON REGENERATION OF SCIATIC NERVE CRUSH INJURY IN RATS

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Background and Aim : Being one of the acute clinical problems, peripheral nerve injury can bring about a number of consequences including severe disability, reduced Quality of life (QOL) and immense costs. Currently, melatonin and curcumin are widely applied because of their immunomodulatory, anti-inflammatory, neuro-protective and antioxidant properties. The present study aims to compare the effects of melatonin and curcumin during light and dark periods on sciatic nerve crush injury repair.

Methods : Accordingly, rats received IP injections of curcumin (100 mg/kg) and melatonin (10 mg/kg) over two periods of light (9:00 a.m.) and dark (9:00 p.m.) for 4 weeks. In order to evaluate rats, functional (walking track analysis and electrophysiological measurements), histomorphometric and gastrocnemius muscle mass investigations were administered.

Results : No statistically significant difference was identified between dark and light curcumin groups while curcumin groups displayed better results than did melatonin groups. In addition, dark melatonin group displayed better results than the light melatonin.

Conclusion : On the whole, this study found that melatonin and curcumin can be used to quicken neural recovery and help treat nerve injury. It was also found that better neuroregeneration or nerve regeneration was induced when rats were treated by melatonin during the dark period while effects and injection time did not correlate in curcumin application.

Keywords : Melatonin, curcumin, nerve injury, anti-inflammatory, antioxidant, crush

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 177
Abstract ID: 157
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Preparation of sumac coated cobalt ferrite nanoparticles and evaluation of its properties for use in nerve regeneration

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Background and Aim : Aims: Given the importance of the nervous system and the increasing number of nerve lesions that lead to short-term and long-term disabilities, hence it requires that we seek for faster and more effective treatments. In this regard, the integration of nanotechnology with neuroscience is one of the most important areas.

Methods : Physical and chemical properties and biological behavior of nanoparticles are mainly influenced by the synthesis method. In this research cobalt ferrite (CoFe2O4) nanoparticles produced by the magnetic stirring of aqueous solution of iron chloride (III) and cobalt (II) at 70°C.Then, sprayed with sumac extract and its propertieswere evaluated by XRD and TEM.

Results : Evaluation of nanoparticle size by XRD and TEM showed that the nanoparticle size was less than 50 nm. There is also no aggregation and compaction between the nanoparticles and the size distribution of the nanoparticles is the same.

Conclusion : According to the obtained results, the use of cobalt-coated ferrite nanoparticles, considering its size and its structural properties, can have positive effects in repairing nerve lesions.

Keywords : Regeneration, Nerve, Cobalt ferrite, Nanoparticles

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 178
Abstract ID: 153
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Preparation of omega-3 coated iron oxide nanoparticles for use in repairing nerve lesions

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Background and Aim : Aims: Following peripheral nerve injuries, the peripheral nervous system has an innate ability to repair and regenerate, but this ability is limited. And peripheral nerve regeneration is slow and spontaneous. The aim of this study was to prepare omega-3 coated iron oxide nanoparticles for use in repairing nerve lesions.

Methods : Magnetite nanoparticles were prepared by co-precipitation method. And to study the structural properties of these nanoparticles, X-ray diffraction (XRD) and electron microscope (TEM) images were used, respectively.

Results : Iron oxide nanoparticles are of particular importance in the diagnosis and treatment of diseases related to the central nervous system. To investigate the application of this nanoparticle in nerve repair, it was prepared by co-precipitation method. By examining the structural properties of this nanoparticle through X-ray diffraction (XRD) design, the average calculated size of crystals of iron oxide nanoparticles is 7 nm. And Electron microscopy (TEM) images showed that the nanoparticles were smaller than 20 nanometers in size and had a uniform size distribution. The shape of the particles is almost spherical or cubic. The resulting accumulation can also be due to magnetic interaction between nanoparticles.

Conclusion : The use of omega-3 coated iron oxide nanoparticles, considering its size and structural properties, can have positive effects on the repair of nerve damage.

Keywords : Nanoparticles, iron oxide, omega 3, repair, nerve

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 179
Abstract ID: 9
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

A novel pharmacological role for safranal: Protective Effects in Animal Model of Huntington's Disease

Submission Author: Esmael Izadpanah

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Background and Aim : Huntington's disease (HD) is a progressive, neurodegenerative and inherited disease and recent years have witnessed the understanding of the cellular and molecular mechanisms related to HD. Safranal, an organic compound isolated from saffron, has been reported to have anti-apoptotic, anti-inflammatory and antioxidant activity and has studied in chronic and neurodegenerative disease. Therefore, this study was aimed to investigate the effect of safranal on 3-NP induced locomotor activity and biochemical alterations in rats.

Methods : To this aim, 40 male Wistar rats weighting 250-300 g were divided into 5 groups (n=8) including sham, 3-NP group (10 mg/kg) as control and treatment groups (3-NP+ safranal 0.75, 1.5 and 3 mg/kg) in two weeks duration of treatment. Behavioral/movement assessments in addition to oxidant/antioxidant markers in rat cortex and striatum were evaluated in control and treatment groups.

Results : Here, we found that safranal significantly alleviated 3-NP-induced changes of body weight, rotarod activity, number of vacuous chewing movements (VCMs), and locomotor activity. In addition, brain tissue assessments in cortex and striatum revealed that Safranal could prevent the elevation of nitrite and malondialdehyde (MDA) levels as well as decrease of superoxide dismutase (SOD), catalase activity and glutathione (GSH) induced by 3-NP.

Conclusion : In conclusion our results indicated the beneficial effects of safranal in animal model of Huntington's disease, that might be due to its interference in oxidative pathways induced by 3-NP.

Keywords : Huntington’s Disease, Locomotor Activity, Saffron, 3-Nitropropionic Acid

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 180
Abstract ID: 94
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

The Effects of swimming exercise and Nepeta menthoides on hippocampal neuron loss associated with reserpine induced depression in male rats

Submission Author: Faezeh Rezaei

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Background and Aim : Neurodegenerative disorders are by far, some of the toughest diseases to cure with debilitating outcomes. The underlying pathogenesis of depression as a prevalent mental disorder, frequently overlaps with that of other neurodegenerative disorders, which brings the possibly therapeutic role of neuroprotective agents into focus. An Iranian native plant called Nepeta menthoides and exercise allegedly provide us with such neuroprotective qualities. This study investigates and compares the effects of Nepeta menthoides and exercise, on hippocampal neuron loss associated with reserpine induced depression in male rats for the very first time.
Methods : Male rats (n=80) were randomly divided into 8 groups: 1-saline, 2-reserpine (0.2 mg/kg, i.p for 14 days) , 3-swimming exercise (30 min swimming sessions daily for 2 weeks) , 4-Nepeta (200 mg/kg) , 5-Reserpine+Nepeta, 6-reserpine+ swimming exercise,7- reserpine + Nepeta + swimming exercise, 8- reserpine + fluoxetine . After the trial, the brains were ejected and fixated to go through section procedure and nissl staining. Ultimately, the slides were photographed under microscope from which the hippocampal neurons were counted in the CA1 region.
Results : Obtained data showed that reserpine had efficiently reduced the number of neurons in the CA1 region compared to the control, Nepeta and exercise groups, which confirms neurodegeneration in depressed rats .The groups which were treated with exercise, Nepeta or both showed great improvement in the number and organization of the neurons. However, the improvement was not statistically significant.
Conclusion : Exercise, Nepeta and their combination did not prove statistically efficient in improving or preventing the damage made by reserpine to the neurons of CA1 region, however their neuroprotective properties were quite detectable suggesting their value as safe supportive treatments.
Keywords : Neurodegeneration; Reserpine; Swimming Exercise; Nepeta menthoides

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 181
Abstract ID: 34
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Neuroprotective Effect of crocin via suppression of TNF-α Against Nicotine in The Hippocampus Dentate Gyrus of Wistar Rats

Submission Author: Seyran Kakebaraei

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Background and Aim : Nicotine is a major pharmacologically active substance in cigarette smoke. Each cigarette has an average of 10-14 mg nicotine. Nicotine in the cigarette is an alkaloid that rapidly passes through the blood-brain barrier and reduces the activity of superoxide dismutase, glutathione peroxidase, and glutathione reductase in the hippocampus and induces oxidative stress in some organs including the brain. Medicinal plants have potent protective effects against chronic neurodegenerative diseases. It has also been shown that the spice saffron, which contains powerful antioxidants such as crocin, protects nigral and retinal dopaminergic cells in an acute MPTP mouse model of Parkinson's disease. Pharmacological effects of crocin have been shown in the several novel studies, including anticancer , anti-depression , anti-anxiety, anti-inflammatory , memory improvement , anti-Parkinson. The protective effects of crocin have been proved in the central nervous system (CNS) with the abundant animal and human studies. The present study was designed to evaluate the antioxidant and anti-inflammatory effect of crocin against nicotine-induced oxidative damage in hippocampus CA1 region of rats.

Methods : Male Wistar rats weighing 220 ± 20 g were randomly divided into eight groups: control, nicotine (0/5 mg/kg,IP), nicotine (0/5 mg/kg, IP) plus crocin (12.5, 25, 50 mg/kg, IP) and crocin groups (12.5,25,50 mg/kg,IP) for 4 weeks. The neuroprotective effects of crocin were evaluated by Golgi staining technique investigated the number of dendritic spines and Cresyl violet staining method was used to determine the number of neurons in hippocampal region CA1, determination of malondialdehyde (MDA),nitric oxide (NO), total antioxidant capacity (TAC) levels and Pro-inflammatory cytokines (TNFα and IL-1β)analysis.

Results : Nicotine administration significantly increased nitrite oxide and MDA levels and decreased TAC as well as the number of neuronal dendritic spines and neurons compared to the normal control group ($P < 0.01$). Additionally, interleukin (IL) -1β and tumor necrosis factor α (TNFα) levels in the nicotine group were significantly increased at four weeks but was significantly decreased in the crocin and Nicotine plus crocin groups.In all Crocin and Nicotine + crocin groups, the number of neurons, neuronal dendritic spines, and total antioxidant capacity increased significantly compared to the nicotine control group, while nitrite oxide level decreased significantly compared to the nicotine control group ($P < 0.01$).

Conclusion : It could be concluded that the crocin administration can improve hippocampal CA1 region injury induced by nicotine through anti-oxidative properties which finally can suppress brain pro-inflammatory mediators (IL-1β, TNF-α) formations and increase total antioxidant capacity activity.

Keywords : crocin, nicotine, TNF-α, IL-1B, nitric oxide, TAC

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 182
Abstract ID: 82
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Effects of administration ghrelin on hypoxic-ischemic brain injury

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Background and Aim : Previous experimental studies have reported that increasing inflammatory factors cause brain edema in the hypoxic-ischemic condition. Many studies showed that ghrelin has neuroprotective effects. But, the effects of ghrelin have not been investigated in the hypoxic-ischemic brain model. Therefore, the present study was conducted to determine the effects of post-ischemic treatment ghrelin on brain water context and in its effect on tumor necrosis factor-alpha (TNF-α) levels in the model of the hypoxic-ischemic brain.

Methods : Adult male Wistar rats were divided into control, hypoxic-ischemic groups, and ghrelin-treated hypoxic-ischemic groups. Ghrelin at dose 80 µg/kg IP administered for 2 consecutive days. Focal brain ischemia induced by blocking the right common carotid artery then rats were kept in the normobaric hypoxic chamber (O2 10%) for two days.

Results : The findings of the present study showed that the brain water content increased in the hypoxic-ischemic condition and administration ghrelin significantly decreased it. Tumor necrosis factor-alpha (TNF-α) levels significantly increased in hypoxic-ischemic conditions and administration ghrelin significantly decreased tumor necrosis factor-alpha (TNF-α) levels in the hypoxic-ischemic condition.

Conclusion : It seems that at least part of the neuroprotective effects of ghrelin is by decreasing tumor necrosis factor-alpha (TNF-α) levels in the hypoxic-ischemic situation.

Keywords : Hypoxia, TNF-α, hypoxic-ischemic

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 183
Abstract ID: 270
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

The effect of long-term oral rifampin on the amplitude of seizure activity in male rats

Submission Author: Soodeh Tavakoli

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Background and Aim : Rifampin is widely used as an antibiotic in the treatment of various bacterial infections and in addition it induces hepatic microsomal enzymes. Therefore, the aim of this study was to investigate the effects of long-term use of rifampin in preventing lidocaine-induced neurotoxicity

Methods : In this study, 12 male Wistar rats weighing 250-300 g were used in two groups of control (without rifampin) and treatment (with rifampin). In the treatment group, animals were gavaged with rifampin 30 mg/kg for one week and anesthetized with ketamine-xylazine at day eighth. Brain activity was recorded using electrophysiological technique and recording electrode from CA1 hippocampus. In this way, baseline recording was performed for 10 minutes and then lidocaine (20 mg/kg) was injected intravenously. After monitoring its effects for 30 minutes, PTZ (80 mg/kg) was injected to induce seizure activity, and after 10 minutes, diazepam (10 mg/kg) was used intraperitoneally to inhibit seizure activity

Results : Comparison of the results obtained from the present study showed that the amplitude of brain activity recorded in the treatment and control groups was not statistically significant

Conclusion : Long-term use of rifampin has no protective effect on PTZ-induced seizure activity and does not reduce the amplitude of these activities.

Keywords : Rifampin, Rat, Seizure and Pentylenetetrazol

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 184
Abstract ID: 148
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

The effect of long-term use of rifampin on the number of field action potentials due to lidocaine neurotoxicity

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Background and Aim : Rifampin is one of the antibiotics that induces liver enzymes. The aim of this study was to investigate the protective effects of long-term use of rifampin in preventing lidocaine-induced toxicity.

Methods : In this study, 12 adult male Wistar rats weighing 200-250g in the control group received lidocaine at a dose of 18 mg/kg and the treatment group received rifampin at a dose of 30 mg/kg were received by gavage for one week. Electrophysiological and intracellular recording techniques were used to evaluate the protective effects of rifampin on the neurotoxicity of lidocaine. In this way, after anesthetizing the animal with a combination of ketamine-xylazine and placing the recording electrode in the CA1 region of the hippocampus, field action potentials were recorded. Thus, after recording baseline brain activity, lidocaine was injected intravenously and its effects were monitored for half an hour and seizure activities were induced intraperitoneally using pentylenetetrazol (80 mg/kg). Diazepam 10 mg/kg was used to suppress seizure activity.

Results : The results showed that the number of field action potentials in the group that received rifampin by gavage for one week did not show a significant difference ($p < 0.05$) compared to the control group.

Conclusion : Long-term use of rifampin dose no effect on lidocaine-induced neurotoxicity.

Keywords : Rifampin, Lidocaine, Neurotoxicity, Rat

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 185
Abstract ID: 38
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

Evaluation of performance of SAMA prehospital notification in time delay to thrombolytic therapy in acute ischemic strokes

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3. Qom University Of Medical Sciences

Background and Aim : Time is a critical factor in effectiveness of thrombolytic therapy in ischemic stroke. Therefore health care systems are trying to establish prehospital and hospital plans in order to reduce delay from stroke symptom onset to injection of thrombolytic drug. In Iran, SAMA prehospital notification and 724 code as a national acute stroke treatment plan have been developed to manage time and to reduce delay of thrombolytic therapy. This study aimed to assess performance of SAMA prehospital notification in time management of thrombolytic therapy in acute ischemic stroke patients in Shahid Beheshti hospital of Qom, Iran from 2016 to 2020.

Methods : This cross-sectional study gathered data from 185 files of acute ischemic stroke patients who were transported through SAMA code or self-transported patients. Times including onset to needle time (ONT) and door to needle time (DNT) were assessed in SAMA-transported and self-transported patients. Data analysis was done through the descriptive and inferential statistics using SPSS version 20. p-value <0.05 was statistically significant.

Results : The results showed that the mean of ONT time in SAMA- transported patients (153 ±56 min) reached standard time (less than 270 min). However the mean of DNT time in SAMA-transported patients (86 ±37 min) was longer in comparison to standard DNT (less than 60 min). There was a significant difference in ONT time between SAMA- transported patients (153 ±56 min) and self-transported patients (185±64) (p<0.001). Also DNT was shortened in SAMA transported patients in comparison to self-transported patients (86 ±37 min VS 112 ±58) (p<0.00).

Conclusion : The results showed that performance of SAMA prehospital notification in reduction of treatment delay in acute ischemic strokes was acceptable to some extent. Since time is a determining factor in effectiveness of thrombolytic therapy in acute ischemic strokes therefore stabilization of prehospital notification plans such as SAMA code could be advantageous to decrease ischemic stroke complications.

Keywords : prehospital notification; SAMA code; ischemic stroke; time delay

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 186
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subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

Bumetanide and stroke-induced cortical spreading depression

Submission Author: Ebrahim Behzad

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Background and Aim : Cortical spreading depression (CSD) is a sudden-onset, prolonged, spreading decrease in the function of brain cortex, resulting from a sustained abnormal depolarization of neural cells associated with diffuse imbalance of ions and neurotransmitters in the tissue. The phenomenon occurs frequently in some important neurological diseases including epilepsy, stroke, migraine with aura and traumatic brain injury, leading to extension of the lesion, e.g. in stroke, or sustaining the problem, like in epilepsy. Large increases in the extracellular potassium concentration is the triggering factor in the biochemical cascade of CSD. Since the astrocyte-specific potassium channels kir4.1 are the main tool of the tissue in spatial buffering of potassium, we aimed to assess the role of these channels in ischemic stroke-induced CSD and in the size of the resulting lesion. We used bumetanide, a potent loop diuretic with documented effects on ischemic lesion and edema volume, to see whether its anti-ischemic effects are mediated by CSD inhibition and changes in Kir4.1 channel expression.

Methods : Adult male Wistar rats (weighing 250-300 grams) were randomly assigned to either the experiment or the control groups. Fresh bumetanide solution was made by dissolving 15.2 mg/kg bumetanide powder (Sigma-Aldrich, B3023-250MG) in 50 µl ethanol and then in 3ml of normal saline. The effect of intraperitoneal injection of bumetanide 20-40 minutes before intraluminal filament occlusion of middle cerebral artery was assessed on depolarization waves, lesion size, edema volume, 18-score modified neurological severity score and Kir4.1 channel mRNA compared to the control.

Results : Bumetanide injection resulted in significant increase (P:0.018) in the duration and a trend of increase in amplitude of CSD waves. The amount of Kir4.1 channel's mRNA and the edema volume were significantly decreased (P values: 0.0004 and 0.002, respectively) in bumetanide group compared to the control. We were not able to find any changes in stroke lesion size or behavioral score.

Conclusion : The resulted change in the amount of Kir4.1 channel's mRNA was inversely associated with alterations in cortical spreading depression waves, which confirms our major hypothesis: Kir4.1 channel manipulation changes the propagation of stroke-induced CSD waves. Loss of changes in stroke lesion size might be the result of need to pass a threshold for the wave changes or requiring alterations in multiple properties of the waves. Bumetanide has inhibitory effects on both NKCC1 and Aquaporin4 channels. The former is a cotransporter with K+ buffering roles and the latter is a channel with linked functions to the Kir4.1. So, using the drug seemingly increases the K+ concentration by inhibiting NKCC1 and Kir4.1 channels' function. Anti-edema effects of bumetanide could be the result of both loop diuresis and NKCC1 inhibition. Astrocytic Kir4.1 channels could be a new therapeutic target in CSD-related neurological diseases like seizure, brain trauma, migraine with aura and stroke. The next step can be discovering new approaches to increase the channel's activity.

Keywords : Cortical spreading depression; Kir4.1; Bumetanide; Stroke; Epilepsy; Migraine

Iranian Neuroscience Society
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Iran University of Medical Sciences

BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

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subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

A review of examining executive function in individuals with aphasia after stroke

Submission Author: Nasrin Shahouzaei

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Background and Aim : Aphasia is a complex language and communication disorder resulting from damage to the language centers of the brain. While stroke isn't the only cause of aphasia, it's by far the biggest. Around a third of people who have a stroke will experience aphasia. People with aphasia as a result of a stroke may show cognitive impairments as well as language and communication impairments. One of these shortcomings is the shortcomings in executive functions. There is evidence that the success of individuals' communication with aphasia is strongly correlated with the integration of their executive functions. In fact, executive functions play a role when people participate in a complex and new activity, and these functions allow us to plan, sequence, organize and change the environment. Since executive functions have a special role in the communication of people with aphasia and communication is an important component in people's lives, so we decided to review the executive functions in people with aphasia in the following article.

Methods : : In this review study conducted in 2020, articles indexed in google scholar, PubMed, science direct databases with the keywords voice disorder, and amyotrophic lateral sclerosis were used. Inclusion criteria in this study were selected in such a way that only articles that were in English were used, articles that were published from 2000 to 2020, and finally, only articles that examined the executive function problems of aphasia patients were selected. Studies that had unclear implementation or examined other problems in aphasia patients were excluded from the study process. The collection of review articles included 89 articles from different countries, and finally, 14 articles were selected and used.

Results : After reviewing the selected articles, we found that in almost all of them, the presence of executive function problems such as Changes in executive functions, problems in planning, organizing, and sequencing have been reported. There was also a strong correlation between the results of performance appraisal tests and language ability in people with aphasia.

Conclusion : According to the studies that have been done in this field, it can be concluded that almost all aphasia patients experience defects in executive functions, and These problems to some extent predict the communication success of these people.

Keywords : aphasia - stroke - exectution function - rehabilitation - communication

BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

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subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

Chitosan-based nanoparticles for noninvasive drug delivery to the brain

Submission Author: Abbas Ebrahimi kalan

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Background and Aim : Multiple sclerosis (MS) is an autoimmune, heterogeneous, multifactorial, and neurodegenerative disease that affects the central nervous system (CNS). The exact etiology of this progressive disease is not well understood, but the interaction of genetic and environmental factors assumes as initiation factors. The delivery of biological drugs to the brain is limited by an impermeable barrier which is called, Blood-Brain Barrier. Neurotrophic factors play a central role in many procedures like plasticity, regeneration, and growth in the nervous system. Multiple surveys have depicted that NTFs are meaningfully involved in MS pathogenesis because minor variations in their plasma levels interrupt the interactions of the neuroendocrine-immune system. Main NTFs such as brain-derived neurotrophic factor (BDNF), nerve growth factor (NGF), and ciliary neurotrophic factor (CNTF) are critical in regenerative medicine. therefore, there is an urgent need for developing new strategies for the delivery of these agents. Nanotechnology-based drug delivery systems opened new avenues for the efficient delivery of different types of therapeutic agents, including drugs, biological agents, biotechnological products, and genetic materials. In this regard, numerous types of nanoparticles with natural, synthetic, and semi-synthetic sources have been used to tackle BBB limitations. Chitosan is a natural polysaccharide containing copolymers of glucosamine, and N-acetylglucosamine is extracted from chitin. Chitosan polymers can be formulated into nanoparticles by different methods like the ionic gelation procedure.

Methods : In this technique, positively charged chitosan polymers can attach by using a negative charge linker like TPP to the formation of the nanosphere. A wide range of studies has been shown, that hydrophilic drugs can entrap in the matrix of these nanospheres during the synthesis process.

Results : In the present study, we aim to create Cerebrolysin-loaded chitosan nanoparticles to improve its pharmacokinetic features and the crossing capability to the brain. Also, we want to show the ability of this formulation to decrease the ED50 of this drug.

Conclusion : We confirmed the appropriate size and zeta potential as primary characterizations for our nanoparticle. In the following, we will explore the effects of this new formulation in the experimental model of multiple sclerosis to study the therapeutic effects.

Keywords : Multiple sclerosis, Autoimmune, Nanoparticle, Chitosan, Neurotrophic factors

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 189
Abstract ID: 48
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

Piperine ameliorated memory impairment and myelin damage in lysolecithin induced hippocampal demyelination

Submission Author: Hannaneh Roshanbakhsh

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Background and Aim : We still do not have effective treatment for hippocampal demyelination and memory deficit, the two common comorbidities in multiple sclerosis (MS). This study aimed to assess the therapeutic effect of Piperine (the main alkaloid of black pepper) in an experimental model of demyelination.

Methods : Demyelination was induced in male Wistar rats by bilateral injection of lysolecithin (LPC) into the CA1 region of the hippocampus. Piperine (5, 10, 20 mg/kg) was daily injected intraperitoneally three days post LPC injection for ten days. The spatial memory was examined by the Morris water maze task. Demyelination and astrocyte activation were assessed by an immunohistological study. The gene expression analysis of TNF-α, IL1-β, NF-κB, IL-10, Foxp3, iNOS, Nrf2, HO1, MBP, and BDNF was done using qPCR. The total antioxidant capacity of hippocampal tissue was measured using FRAP assay.

Results : Our results showed that piperine improved the memory performance and myelin repair in the hippocampal demyelination model. Piperine inhibited iNOS expression concomitant with enhanced expression levels of Nrf2, HO1 and the total antioxidant capacity in the hippocampal tissue. Piperine treatment significantly reduced the gene expression level of TNF-?, IL1-?, NF-?B, and glial activation in the injured area; however, the mRNA level of IL-10, Foxp3, BDNF and MBP were significantly increased.

Conclusion : We found piperine to be an effective treatment for spatial memory impairment and myelin repair in the hippocampal demyelination model.

Keywords : Piperine, Demyelination, Inflammation, Spatial memory, Glial activation, Neuroprotection.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 190
Abstract ID: 8
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

Direct conversion of mouse embryonic fibroblasts to oligodendrocyte precursor cells

Submission Author: Maryam GhasemiKasman

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Background and Aim : In recent years, direct reprogramming of somatic cells toward oligodendrocyte precursor cells (OPCs) has been introduced as an ideal strategy in regenerative medicine. Here we have investigated the effect of miR-7a mimic on conversion of mouse embryonic fibroblasts (MEFs) to OPC like cells in vitro.

Methods : To this end, cultured MEFs were transfected with miR-7a mimic at concentrations of 10 and 20 pmol using RNAiMax. Then, fresh MEFs culture medium was added and transfected cells were cultured in this medium for 3 days. After that, cells were harvested and the relative gene expression level of miR-7a was assessed using real time PCR. In order to investigate the effect of miR-7a overexpression on conversion of MEFs to OPC like cells, transfected cells were cultured in OPC specific culture medium for 1 or 2 weeks after transfection. Immunotsianing against NG2 as OPC specific marker was used to assess the number of OPC positive cells. Additionally, OPC like cells were cultured in oligodendrocyte differentiation medium.

Results : Our data showed the gene expression level of miR-7a significantly increases in transfected cells following miR-7a mimic administration. NG2 immunostaining demonstrated that some transfected MEFs were successfully converted to OPC like cells at days 7 or 14 post culture in OPC specific medium. Immunostaining against MBP as mature oligodendrocyte marker also showed that some transfected MEFs are positive for this marker.

Conclusion : In conclusion, the results of present study indicate that miR-7a mimic could successfully convert MEFs to OPC like cells in vitro.

Keywords : Mouse embryonic fibroblasts; miR-7a, direct conversion; oligodendrocyte precursor cells

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 191
Abstract ID: 123
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

The Effect of Levothyroxine on Serum Levels of Interleukin 10 and Interferon-gamma in Rat Model of Multiple Sclerosis

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Background and Aim : There is an increase in inflammatory and a reduction in anti-inflammatory cytokines in multiple sclerosis (MS). Considering the role of thyroid hormones in the development and regulation of both neural and immune systems, the aim of this study was to evaluate the effects of levothyroxine on serum concentrations of interleukin-10 (IL-10) and interferon gamma (IFN-γ) in animal models of MS.

Methods : Materials and Methods: To induce demyelination in male Wistar rats, lysolecithin was injected into the optic chiasm. Then levothyroxine was injected intraperitoneally (20, 50, and 100 µg/kg) for 21 days. Serum levels of cytokines were measured by enzyme-linked immunosorbent assay at 7, 14, and 21 days after that

Results : Results: The results showed that injection of lysolecithin to the optic chiasm only increased serum concentrations of IL-10 compared to the sham group ($P < 0.05$) at 7th day, but this increase was prevented by all doses of levothyroxine. IFN-γ was decreased significantly ($P < 0.001$) 21 days after. Comparing to the sham group at all sampling time and with respect to the MS group at the days 7 and 21, levothyroxine decreased serum concentrations of IFN-γ significantly

Conclusion : Conclusion: The results showed that thyroid hormones probably could produce protective effects against induced demyelination through affecting immune responses

Keywords : Keywords: Interferon-gamma, interleukin-10, levothyroxine, multiple sclerosis

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 192
Abstract ID: 43
subject: Neural Injuries and Neurodegenerative Disorders: Other
Presentation Type: Poster

Effect of sumac extract-loaded Nanophytosome on oxidative stress alteration in the Valproic acid-induced animal model of autism

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Background and Aim : Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by impairments in communication and social interaction and repetitive or stereotyped behavior .prenatal VPA treated rats have shown higher levels of oxidative stress and inflammation in the prefrontal cortex. Rhus coriaria L. (R. coriaria) is a medicinal herb native to Middle East and Mediterranean region and well-known as sumac. Sumac extract, has been shown many pharmacological effects, but it is limited using in clinical due to low bioavailability. In this study, we evaluated the neuroprotective effect of phytosome sumac on VPA-induced oxidative damage in rat.

Methods : Offspring male rats were segregated into seven groups; Group-1 served as control, received a single intraperitoneal injection of saline maternally on E12.5. Group-2 received sodium valproate (500 mg/kg in 0.9 % saline, i.p) maternally on E12.5 was considered as VPA-exposed group, Group-3 to 4 were VPA-exposed which received sumac and sumac Nano-phytosome (40 mg/kg/day) for 4 weeks respectively.

Results : VPA-exposed rats exhibited significantly increased MDA level ($p < 0.001$) compared with in the control rats. Treatment with SNP (40mg/kg) decreased in MDA levels were observed significantly in group of SNP 40 ($p<0.001$).

Conclusion : In conclusion, we suggest that SNP has stronger neuroprotective effect compared to SE. Administration of SNP effectively suppressed VPA-induced oxidative stress evidenced by a reduction of lipid peroxidation level in rat model of autism.

Keywords : Nano phytosome, Sumac, Autism, Valproic acid, Oxidative stress.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 193
Abstract ID: 233
subject: Neural Injuries and Neurodegenerative Disorders: Other
Presentation Type: Poster

Effect of berberine chloride on caspase-3 dependent apoptosis and antioxidant capacity in the hippocampus of the chronic cerebral hypoperfusion rat model

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Background and Aim : The main goal of the current research was to examine the effects of Berberine (BBR) on apoptotic signaling and hippocampal oxidative stress induced by common carotid artery occlusion.

Methods : Chronic cerebral hypoperfusion (CCH) model was created by occluding the two common carotid arteries (two-vessel occlusion [2VO]) permanently. BBR (50 and 100 mg/kg/daily) was intra-gastrically administered to ischemic rats. Neuronal survival was evaluated by Nissl staining. The levels of malondialdehyde (MDA) and antioxidant enzymes, including catalase (CAT) and superoxide dismutase (SOD), along with the activities of caspase 3 were estimated in the hippocampus 2 month after treating the rats with 2VO.

Results : According to findings of the present research, the BBR therapy inhibited the neurodegeneration of hippocampus. BBR also significantly decreased the amount of MDA and activity of caspase 3 in the hippocampus. Furthermore, the administration of BBR alleviated the lowered activities of SOD and CAT after 2VO surgery.

Conclusion : The antioxidant and antiapoptotic properties of BBR might play important roles in improving functional outcomes and might have significant neuroprotective effects on the CCH damage.

Keywords : Antioxidant enzymes ; Berberine Chronic cerebral ; hypoperfusion Common carotid artery; MDA

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 194
Abstract ID: 293
subject: Neural Injuries and Neurodegenerative Disorders: Other
Presentation Type: Poster

Methanolic extract of Avocado seed repair regeneration of the sciatic nerve in type II diabetic mice: A stereological study

Submission Author: Azindokht Babapour

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2. Department of Basic Sciences, Faculty of Veterinary Medicine, University of Tabriz, Tabriz, Iran.

Background and Aim : In recent decades, global prevalence of diabetes has increased markedly due to changes in human behavior and life style and is predicted to raise more than 439 million people by the year 2030 throughout the world. Diabetes is one of the most important metabolic disorders and can gradually cause damage to the structure and function of many organs. Peripheral nerve involvement is highly frequent in diabetes mellitus and it has been documented that one third of diabetic patients have peripheral neuropathy. Progression of diabetic neuropathy is related to glycaemic control in both type 1 and type 2 diabetes. Avocado (Persea americana) has traditionally been used due to its anti-oxidant, anti-inflammatory, anti-hyperglycemic effect but there is no data about the effect of Avocado seed extract on regeneration and remodeling of the micro-structure of the sciatic nerve in type II diabetic mice.

Methods : : In this study, 25 adult male mice were divided into five groups including: control, diabetic and three treatment groups. Type II diabetes was induced by high fat diet and low dose of streptozotocin injection. Treatment groups received 50, 100 and 150 mg/kg methanolic extract of Avocado seed via oral gavage for 40 consecutive days respectively. After the end of experiment, animals were euthanized by 40 mg/kg of ketamine 5% and 5 mg/kg of xylazine 2% via intraperitoneal injection and left sciatic nerves were removed and fixed in 10% neutral buffered formalin. Tissue samples were processed by routine and standard paraffin embedding and serially sectioned by a rotary microtome. The sections were selected through systematic random sampling and stained by H&E and Mallory trichrome. Stereological studies were performed by unbiased stereological technique using optical fractionator method in stereo-investigator system to estimate axon numbers, surface area, myelin thickness, the myelin thickness/axon diameter ratio, g ratio and area of epineurium and perineurium connective tissue for each group. Finally, one-way analysis of variance followed by Tukey's post hoc was used to compare the groups. Significance was set at $P<0.05$.

Results : Our microscopical studies showed that diabetes caused severe changes and injuries in microstructure of the sciatic nerve. Stereological results revealed that induction of diabetes reduced the total number of axon, surface area of nerve fiber, diameter of nerve fiber and axon, myelin thickness, the myelin thickness/axon diameter ratio significantly compared to control ($P<0.01$). Diabetes also increased g ratio and area of epineurium and perineurium connective tissue in sciatic nerve significantly ($P<0.001$). Histopathological and stereological results

indicated that methanolic extract of Avocado seed treatment in diabetic mice could inhibit diabetic induced structural damages and remodeling of sciatic nerve significantly and improve many stereological indices of sciatic nerve in treated animals in a dose-dependent manner. The highest protective effect was observed in high dose (150 mg/kg) treated animals.

Conclusion : It can be concluded that methanolic extract of Avocado seed can protect the histological structure of sciatic nerve in type II diabetic mice and can be considered as a therapeutic strategy for improvement of the neuropathy in diabetic people.

Keywords : Sciatic nerve; Diabetes; Avocado; Stereology; Diabetic neuropathy

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 195
Abstract ID: 294
subject: Neural Injuries and Neurodegenerative Disorders: Other
Presentation Type: Poster

Methanolica extract of Persea americana seed improve antioxidant status in the sciatic nerve of type II diabetic mice

Submission Author: Azindokht Babapour

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Background and Aim : Diabetic neuropathy (DN) is one of the major complications associated with diabetes. A previous clinical study indicated that DN affects 15 25% of type 1 and 30 40% of type 2 diabetic patients. Oxidative stress has been suggested as a potential patho¬physiological mechanism underlying DN. Increased oxidative stress after hyperglycemia is caused mainly due to auto-oxidative glycosylation, advanced glycation end-product formation, and increased polyol pathway activity. Furthermore, hyperglycemia has been demon-strated to activate lipid peroxidation and induce the overproduction of reactive oxygen species in the sciatic nerve. Therefore, it has been postulated that the use of antioxidant supplements may offer some protection against this complication through scavenging of the free radicals. In recent decades, a rapidly growing number of natural phenolic compounds with free radical scavenging properties have been described. Avocado (Persea americana) is a native tree of Central and South America that has traditionally been used due to its anti-oxidant, anti-inflammatory, anti-hyperglycemic, anti-hyperlipidemic and anti-hypertensive effect. Thus, this study was conducted to the effect of the methanolica extract of Persea americana seed on oxidative stress status of the sciatic nerve in type II diabetic mice.
Methods : In this study, 25 adult male mice were divided into five groups including: control, diabetic and three treatment groups. Type II diabetes was induced by high fat diet and low dose of streptozotocin injection. Treatment groups received 50, 100 and 150 mg/kg methanolic extract of Avocado seed via oral gavage for 40 consecutive days respectively. After the end of experiment, animals were euthanized by 40 mg/kg of ketamine 5% and 5 mg/kg of xylazine 2% via intraperitoneal injection and right sciatic nerves were removed and rapidly frozen in liquid nitrogen and stored at -80 ºC to measure glutathione peroxidase (GPx), superoxide dismutase (SOD), malondialdehyde (MDA) and total antioxidant capacity (TAC). Data were statistically analyzed by SPSS 22.0 using one-way ANOVA and Tukey's post hoc to compare the groups.
Results : Results showed that diabetes increased MDA level and reduced GPx, SOD and TAC level of the sciatic tissue significantly ($P<0.001$). It was revealed that methanolic extract of Avocado seed treatment in diabetic mice could decrease MDA level in a dose-dependent manner compared to diabetic mice ($P<0.01$). Extract could increase SOD level in the sciatic nerve of treated animal but it was significant only in high dose treated animals compared to diabetic mice ($P<0.01$). A noticeable increasing with a dose-dependent mode was observed in GPx and TAC level of sciatic nerve of treated animals compared to diabetic group ($P<0.001$).

Conclusion : It can be concluded that administration of methanolic extract of Persea americana seed attenuates criteria of neuropathy in type II diabetic mice and its preventive and curative effect may be due to its anti-oxidant effect in sciatic tissue of diabetic patients.

Keywords : Sciatic nerve; Diabetes; Avocado; Persea Americana; Oxidative stress

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 196
Abstract ID: 211
subject: Neural Injuries and Neurodegenerative Disorders: Other
Presentation Type: Poster

Development of a Modified Protocol for Decellularization of Peripheral Nerve Grafts: Acellular Nerve Xenograft in a Rat Sciatic Nerve Injury Model

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3. Neuroscience Research Center, Guilan University of Medical Sciences, Rasht, Iran.

Background and Aim : Peripheral nerve injuries (PNIs) affect a large proportion of the global population, often causing significant morbidity and loss of function. The current "gold" standard for the treatment of PNI is the autograft, which poses some disadvantages. Allografts have therefore become a valid alternative option. In particular, acellular nerve allografts (ANAs) rather than fresh allografts do not need immunosuppression and appear to be safe and effective based on recent studies. However, the source of the allogeneic donor is restricted in clinical treatment. To explore sufficient substitutes for acellular nerve allografts (ANA), we investigated the effectiveness of acellular nerve xenografts (ANX) on repairing PNIs. On the other hand, no standard chemical decellularization method that is widely accepted exists to date. The objective of this study was to propose a modified chemical protocol of nerve decellularization.

Methods : The acellular nerves derived from bovine were prepared by the modified protocol. After decellularization, efficiency of protocol was tested in vitro by conventional staining, immunohistochemistry, and biochemical assays. Furthermore, a pilot in vivo study was performed; all the grafts were employed to bridge 7 mm rat sciatic nerve gaps. After eight weeks of transplantation, electrophysiological and functional tests were performed and the regenerated nerves were assayed morphologically.

Results : The decellularization method proved to be effective in vitro; the treatment removed axons, myelin, and cells, without altering nerve architecture. The in vivo study did not reveal any adverse effects. The functional analysis showed no statistical differences after 8 weeks in the sciatic functional index (SFI) in the autograft group, compared to the xenograft.The morphological analysis showed regenerated fascicles and bundles, and Schwann cells in xenograft were comparable with the autograft.

Conclusion : Based on these results, this decellularization protocol offers a reliable and encouraging approach for repairing peripheral nerve defects and deserves deeper investigations with further preclinical and clinical studies.

Keywords : sciatic nerve, bovine, detergent, Rat, xenograft, acellular scaffold

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 197
Abstract ID: 237
subject: Development: Evolution of Developmental Mechanisms
Presentation Type: Poster

The effect of play therapy and its relationship with neurodevelopment in hospitalized Children

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Background and Aim : The hospitalization is a traumatic experience for physical and neuropsychological health in children which can impair brain health, mental integrity, emotional health and development. While it is an important part of brain development occurs during the short period of childhood. Therefore, paying attention to playing as a therapeutic approach can reduce the destructive burden on the neurodevelopment of hospitalized children and ensure their nervous health. In this regard, the present study aimed to review the results of studies on play therapy and neurodevelopment in hospitalized children.

Methods : In this review study, information was collected from 2010 to 2020 through a review of related literature and articles and a targeted search for information sources in English and Persian articles and databases. The keywords were neurodevelopment, play therapy, hospitalized children. Just 11 were eligible from 24 articles found.

Results : Clinical reports demonstrate the importance of playing in children's health and it can dramatically support brain development. Playing stimulates the growth of the cerebral cortex and improves neuroplasticity of the brain, for better function, and promotes unique human abilities such as thinking and reasoning, speaking and communicating, alertness and imagery. Hospitalization is an important factor of stress and tension in these children, which is a very destructive situation in terms of neurodevelopment. Neuroscientists believe that playing is the most important tool for regulating arousal and coping with fear and an opportunity to express emotions, understand the situation and change behavior. This is especially important in children with autism. Because the more an autistic children engages in complex games and their details, the better they cope with their inner feelings, and encourages them to continue treatment and improve ability and verbal comprehension. In children with cancer, in addition to their adaptation to unpleasant conditions, it leads to an increase in the feeling of well-being and strengthens the immune system. Also playing in traumatized children, is known as an important tool for assessing post-traumatic adjustment. In fact, it is an opportunity to express their mental experience and can enhance their resilience. Playing is an important and necessary

pastime to improve cognitive, physical, social and emotional skills and gain positive experience in children who have been deprived of normal conditions due to hospitalization. It is so important for the proper neurocognitive development of children that it is recognized by the United Nations Commission on Human Rights as the right of every child. Because each child has a unique opportunity for development, caregivers must consider all the factors that contribute to their optimal development. Because each child has a unique opportunity for development, caregivers must consider all the factors that contribute to their optimal development.

Conclusion : The game reflects neurocognitive-emotional development. Playing in hospitalized children helps them to master fears and challenging situations, and this contributes significantly to their neurodevelopment and prevents possible neurocognitive complications in later years. According to the results, play therapy should be considered as a therapeutic strategy in pediatric wards.

Keywords : Neurodevelopment, Play therapy, Hospitalized children

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 198
Abstract ID: 64
subject: Development: Evolution of Developmental Mechanisms
Presentation Type: Poster

Chronic fluoxetine treatment during adolescence enhances BDNF mRNA expression in the hippocampus and prefrontal cortex of adult rats in a sex-dependent manner

Submission Author: Hakimeh Saadati

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Background and Aim : Fluoxetine, a common selective serotonin reuptake inhibitor, is used in adolescents with psychiatric disorders and there are controversial results in different studies about the effects of fluoxetine on the brain-derived neurotrophic factor (BDNF) level in the central nervous system. The present study was designed to examine the effects of adolescent fluoxetine exposure on hippocampal and prefrontal cortex BDNF mRNA expression in adult male and female rats.

Methods : We examined the sex-dependent effects of adolescent (postnatal days21-60) administration of fluoxetine (5mg/kg/day, gavage) on the BDNF level in the hippocampus and prefrontal cortex. After treatment with fluoxetine, the hippocampi and prefrontal cortex of the rat's brain were removed under deep anesthesia for the determination of BDNF mRNA expression. The expression of BDNF mRNA was evaluated by quantitative reverse transcriptase-polymerase chain reaction (RT-PCR).

Results : Our findings showed that adolescent fluoxetine treatment significantly increased hippocampal mRNA expression of BDNF in males, meanwhile this treatment up-regulates the BDNF in the prefrontal cortex in adult female animals . Therefore, adolescent fluoxetine administration has different effects on different areas of the brain.

Conclusion : These findings indicate that the BDNF level as an important synaptogenesis factor alters following adolescent manipulation of the serotonergic system.

Keywords : Fluoxetine, Gender differences, Brain-derived neurotrophic factor (BDNF),Hippocampus, Prefrontal cortex

BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 199
Abstract ID: 65
subject: Development: Evolution of Developmental Mechanisms
Presentation Type: Poster

Influences of the adolescent exposure to an enriched environment on cognitive function and hippocampal and prefrontal cortex BDNF level in adult male and female rats

Submission Author: Hakimeh Saadati

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Background and Aim : A growing body of evidence demonstrated that an enriched environment (EE) exposure improves cognitive functions, synaptic plasticity, neurogenesis, and induction of brain-derived neurotrophic factor (BDNF) in multiple brain regions of laboratory animal models. Also, studies on the sex-dependent effects of exposure to EE during adolescence on adult cognitive functions are less. This is important since the beneficial effects of EE may be predominant in the adolescence stage. Therefore, the present study was designed to compare the effects of EE during adolescence (PND21-PND60) on novel object recognition memory and hippocampal and prefrontal cortex BDNF mRNA level in the adult male and female rats.

Methods : Assessment of novel object recognition memory has been done by novel objective recognition tasks. The expression of BDNF mRNA level was also evaluated by quantitative RT-PCR.

Results : Our findings demonstrated that housing in the EE during adolescence improves novel object recognition memory in adult male rats. Additionally, our results indicated an augmented BDNF level in the hippocampus of adult male and female rats following adolescent EE exposure, meanwhile BDNF mRNA expression up-regulates only in the prefrontal cortex of female animals.

Conclusion : BDNF is an important factor that can mediate the beneficial effects of EE and running exercise on cognitive functions. Further research concerning the precise mechanisms underlying the sex hormone-dependent production of BDNF is critical.

Keywords : Enriched environment, Sex differences, Brain-derived neurotrophic factor (BDNF), Recognition memory, Hippocampus, Prefrontal cortex

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 200
Abstract ID: 146
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

The Effect of Transcranial Direct Current Stimulation On The Theory of Mind and Empathy in The Attention-Deficit/Hyperactivity Disorder : A Case Study

Submission Author: Neda Rafieetari

Neda Rafieetari [1]

1. candidate of Phd cognitive psychology- social cog in Shahid Beheshti University

Background and Aim : ADHD is one of the most common neurodevelopmental disorders in children and adolescents, affecting approximately 7% of children worldwide ADHD is associated with a considerable negative impact on socialcognition and children with ADHD suffer from peer rejection and & social cognition impairment (thory of mind(ToM) &empathy).These difficulties are very significant as poor social relationships in children with ADHD have been found to predict negative adult outcomes.Impairments in TOM &empathy have been linked in previous studies to poor interpersonal relationships in children with ADHD. Transcranial Direct Current Stimulation (tDCS) is a noninvasive neuromodulation technique that stimulates specific brain regions .Its effectiveness on TOM & empathy has been measured.
Methods : The authors present a case of 10 year old,male with ADHD treated with tDCS on theory of mind ; 1 mA of tDCS was applied once a day for 10 minutes for 8 consecutive days with the anode electrode over right dorsolateral perfrontal cortex (r-DLPFC)(in the 10/10 electroencephalogram system) and the cathode electrode placed on the left Shoulder.Theory of mind was assessed using the ADHD Evaluation by (pretest strenmens theory of mind test & Reading of the mind in the eyes base of computer and empathy was assessed child EQ_SQ Parent reported on empathy questionnaires children (Baron-Cohen & Wheelwright,2009) prior to tDCS, with post test after the final tDCS session ,and after 3mount In the present study we tested effects of tDCS on the TOM & empathy in a case of ADHD.
Results : The effectivness of tDCS stimulation on empathy and theory of mind is shown raw scores: Empathy (before tDCS=25;post tDCS=34;3mon;33) .TOM(before tDCS=30;post tDCS=38;3mon;38) . Reading of the mind in the eyes(before tDCS=39;post tDCS=54;3mon;50) .
Conclusion : In this case study, Anodal stimulation on r-DLPFFC & cathodal on the left shouder seems to be effective on theory of mind and empathy. The current study improves to social cognitive for example TOM and empathy in children with ADHD. According to the parent report, the components of social cognition have been improved. TDCS Recommendation for social cognition may be beneficial. More research is needed to generalize the result. These preliminary results indicate that tDCS is a potential adjuvant therapeutic tool for social cognition .

Keywords : Attention deficit hyperactivity disorder ; Empathy ; Theory of mind ; Transcranial direct current stimulation

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 201
Abstract ID: 145
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

The Effect of Transcranial Direct Current Stimulation On The Behavior problems in The Attention-Deficit/Hyperactivity Disorder : A Case Study

Submission Author: Neda Rafieetari

Neda Rafieetari[1], Mahya Abdiyan[2]

1. candidate of Phd cognitive psychology- social cog in ICSS , Shahid Beheshti University
2. student of Phd general psychology in IAU

Background and Aim : Children occasionally act angry or defiant around adults or respond aggressively when they are upset. When these behaviors persist over time, or are severe, they can become a behavior disorder. Children with ADHD are more likely than other children to be diagnosed with a behavior disorder such as Oppositional Defiant Disorder or Conduct Disorder. Therefore, behavioral problems can cause many problems for these children and others. Given the importance of this issue, this study focused on the effectiveness of tDCS on behavioral problems.

Methods : The authors present a case of 10 year old,male with ADHD treated with tDCS on theory of mind ; 1 mA of tDCS was applied once a day for 10 minutes for 8 consecutive days with the anode electrode over right dorsolateral perfrontal cortex (r-DLPFC)(in the 10/10 electroencephalogram system) and the cathode electrode placed on the left Shoulder.Behavior problems were assessed using the ADHD Evaluation by canners parent reported First pre-test and after post-test intervention and follow-up three months later .This tDCS was made by mindalive Company.

Results : Behavior problem (pre=24,post=19,3months=20).Social problem(pre=16,post=12,3mon=13). Psychosomatic problem (pre=17,post=11,3mon=11).Anxiety(pre=1,post=12,3mon=14)

Conclusion : In this case study, Anodal stimulation on r-DLPFFC & cathodal on the left shouder seems to be effective on behavior problem . According to the parent report, the components of behavior problems have been decreased and clinical observations behaviors have improved. tDCS Recommendation for behavior problems may be beneficial. More research is needed to generalize the result.

Keywords : Attention-deficit/hyperactivity disorder ; Behavior problems ;Transcranial direct current stimulation

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 202
Abstract ID: 98
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

The Relationship Between Visual Spatial Attention and Reading Abilities Among Persian Students

Submission Author: Leila Ebrahimi

Leila Ebrahimi[1], Hamidreza Pouretemad [2], Ebrahim Alizadeh [3], Ali Khaibi[4], John Stein[5]

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2. Institute for Cognitive & Brain Sciences, Shahid Beheshti University, Tehran, Iran.
3. Department of Psychology, Shahid Beheshti University, Tehran, Iran
4. Centre of precision rehabilitation for spinal pain, university of Birmingham, Birmingham, UK
5. Department of Physiology, Anatomy & Genetics, Oxford University, Oxford, UK

Background and Aim : Recent studies suggest that deficit in visual spatial attention may be one of the important factors in reading difficulties. in this study, we aimed to investigate this hypothesis in Persian dyslexic students and matched controls.

Methods : For this purpose, twenty dyslexic and fifteen normal reading students were selected randomly. They were matched in age, sex and educational level. Assessment of Persian Reading Ability (APRA) was used to measure reading abilities. A Posner's cueing task was conducted to measure the covert orienting of visual spatial attention.

Results : Results showed that relative to normal reading students, dyslexic ones had slower reaction time both in valid and invalid conditions, suggesting an overall impairment in covert orienting of visual spatial attention in poor readers.

Conclusion : This finding supports a relationship between reading difficulties and deficit in covert orienting of visual spatial attention in Persian speaking students.

Keywords : Dyslexia, Covert Orientation, Visual spatial attention

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BOOK of Abstracts

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Count: 203
Abstract ID: 254
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Develop a Child Earthquake Preparedness Program Especially Designed for Children with High-functioning Autism Spectrum Disorder

Submission Author: Maliheh Eskandari

Maliheh Eskandari[1], Leila Kashani Vahid[2], Hadi Moradi[3], Kambod Amini Hosseini[4]

1. -
2. Assistant Professor, Science & Research Branch, Islamic Azad University
3. Associate Prof, Chair of Machine Intelligence and Robotics Group School of Electrical and Computer Engineering University of Tehran
4. Associate Professor, International Institute of Earthquake Engineering and Seismology, IIEES

Background and Aim : Many reports indicate that children with autism spectrum disorder are affected by different crises, especially natural crises in their country including earthquakes. Considering the seismicity of the country and the experience of large earthquakes such as Rudbar and Manjil, Bam, Kermanshah, ..., the issue of earthquake preparedness has a special importance and necessity in the country that should be considered and the necessary planning in Earthquake and safety, in the preparation phase, for all groups in the community to be able to acquire the necessary skills to take care of themselves.

Methods : Accordingly, this study was conducted with the aim of developing a children's earthquake preparedness program for children with high-functioning autism spectrum disorder. After preliminary studies and considering the special characteristics of these children and the abstraction of the concept of earthquake and safety, a program based on educational games and visual support for earthquake and safety education was developed.

Results : Then, in order to make it appropriate for the special education, the program was provided to experts in the field of children with autism, earthquake and safety, and its content validity was confirmed.

Conclusion : As a result, this program can be used to increase the level of earthquake preparedness of children and improve their self-care skills in dangerous situations, especially for reducing negative impacts of the earthquakes and psychological adaptation afterwards.

Keywords : Autism; earthquake preparation; child Program; self-Care in crises

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 204
Abstract ID: 234
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Decreasing disruptive behavior in children with autism spectrum disorder: effect of behavioral intervention on neural asymmetry in frontal lobe

Submission Author: Mohammad Rezaei

Mohammad Rezaei[1], Gohar Lotfi[2]

1. Autism Spectrum Disorders Research Center, Hamadan University of Medical Sciences, Hamadan, Iran
2. Autism Spectrum Disorders Research Center, Hamadan University of Medical Sciences, Hamadan, Iran

Background and Aim : Autism is a neuro-developmental disorder that impresses on social interaction, communication and stereotyped behavioral patterns. The aim of this study was evaluating the effectiveness of pivotal response treatment on reduction of disruptive behavior in children with autism spectrum disorder and also investigating the efficacy of this intervention on neural asymmetry of frontal lobe.

Methods : The research method was a semi-experimental study. Seventeen children diagnosed with ASD according to Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) received intervention for three months. Behavioral problems and also neural asymmetry of the frontal lobe were evaluated in two phases, before treatment and after treatment.

Results : Findings showed ABC scores was decreased after 3 months intervention compared with the scores prior to treatment ($p < 0.05$). Also during the intervention, the asymmetry of theta band was transferred from the right to the left hemisphere.

Conclusion : Behavioral intervention not only may lead to reducing disruptive behaviors in children with ASD also may cause improving communicational, speech and social problems for children with autism. This change was also showed in neural function of the frontal lobe

Keywords : Autism spectrum disorder, Social problems, , Pivotal response treatment, Neural asymmetry.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 205
Abstract ID: 289
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Evaluation of the effect of "daily attention for children" test on sustained attention, selective attention, control and transfer of attention in fourth grade primary school children with math learnin

Submission Author: Mina Ghaffarzadeh

Mina Ghaffarzadeh[1]

1. Department of Psychology and Educational Science, Tabriz University , Tabriz, Iran

Background and Aim : Math learning disorder can be recognized as one of the developmental neurological disorders with three defects of working memory, strategic and spatial visual problems. Limited attention span and countless environmental stimuli have made it difficult for children with learning disabilities. Since attention is one of the main cognitive functions in the development of learning mathematics, it is important to recognize and examine the types of attention deficits in this group of disorders. Therefore, the aim of this study was to investigate the effect of "daily attention for children" test on sustained attention, selective attention, control and attention transfer in fourth grade primary school children with math learning disabilities.
Methods : The method of the present study as a descriptive-analytical study was performed on fourth grade students in Tabriz with learning disabilities. After referral to a psychiatrist based on the initial diagnosis of math learning disability, sampling was performed and Wechsler test normative intelligence scores were examined in the academic record. Using available sampling method, 15 fourth grade female students with math learning problems were selected from 4 government centers for learning disabilities in Tehran. Also, 15 normal children were matched in terms of age and gender. Families first completed a demographic information questionnaire. The researcher then took the students' edition A of the daily attention test for children during the standard time in a quiet place with adequate lighting from the students. Accordingly, the two groups with math learning disabilities and healthy counterparts in the three areas of sustained attention, selective, control, and attention transfer were compared with each other.
Results : The results of Shapiravilk test show that the distribution of values of all variables except the dual task of searching the sky (stable attention) and the speed of counting organisms (attention transfer) in the group with learning disabilities has a normal distribution (P> 0.05) and selective attention (0 / P> 05) show a significant difference between the two groups.
Conclusion : The results show that children with math learning disabilities performed significantly worse than healthy counterparts in all three areas. Findings indicate that the daily attention test for children has the potential to detect attention deficits in math learning disabilities compared to healthy counterparts. Therefore, it can be a good tool for evaluation in this group.
Keywords : "daily attention for children", attention , mathemathic learning Disorder, Children

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 206
Abstract ID: 243
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Singing Training and Cognitive Emotion Regulation

Submission Author: Leila Kashani Vahid

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2. MA in Psychology and Education of Exceptional Children
3. Assistant professor, Department of Psychology and Education of Exceptional Children, Science and Research Branch, Azad University

Background and Aim : Many research studies show that children with autism spectrum disorder have deficits in their cognitive emotion regulation. On the other hand, music and singing might be able to affect emotional and social neural networks, which also can result in improvement of emotion and relationship with others.

Methods : This study was conducted with the aim of investigating the effectiveness of singing training program on emotion regulation of children with autism spectrum disorder. For this purpose, 20 of students with autism spectrum disorder were selected and were randomly divided in two groups of experimental and control, based on their age, IQ and their level of function. These students had been screened using teachers' form and clinical interview. They Emotion regulation checklist (Shields & Ciecciti, 1998) was used as the measurement tool. The experimental group experienced 15 sessions of signing training (45 minutes each session) and the control group received no intervention and waited in the waiting list. The obtained data was analyzed using Multiple Analysis of the Covariance (MANCOVA).

Results : The findings showed that there was a significant difference between the experimental and control groups in terms of their emotion regulation or singing training program was effective on the emotional regulation of children with autism spectrum disorder (P<0/05).

Conclusion : So, this intervention can be used to increase the emotion regulation of children with autism spectrum disorder.

Keywords : Singing training program, emotion regulation, Autism spectrum disorder.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 207
Abstract ID: 269
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Effectiveness of Cognitive Games on Working Memory of Children with Attention/ Hyperactivity Deficit

Submission Author: Leila Kashani Vahid

Leila Kashani Vahid[1], Zahra Ghomi[2], Hadi Moradi[3]

1. Assistant professor, Department of Psychology and Education of Exceptional Children, Science and Research Branch, Azad University
2. MA. in Psychology and Education of Exceptional Children
3. Associate Professor, School of Engineering, University of Tehran

Background and Aim : Students with attention/hyperactivity disorder have deficits in their working memory and this problem affects their academic performance.

Methods : The present study was conducted with the aim of investigating the effects of computer cognitive games (Maghzineh) on active memory of students with attention deficit/hyperactivity disorder. This quasi-experimental study was conducted with pre-test and post-test and a control group. The statistical population of this study was male students with attention/hyperactivity disorder in elementary school in Tehran. Out of 20 students with attention deficit/hyperactivity disorder, using available sampling, they were randomly assigned to two experimental (10) and control groups (10). The experimental group was trained in a computer program (Maghzineh) for 2 months and the control group received no intervention during the training sessions of the experimental group. Stroop tests, rectangular forward and reverse counts were used to study the working memory of attention deficit/hyperactivity disorder students. The obtained data were analyzed using SPSS software and statistical analysis of variance analysis.

Results : The results showed that computer cognitive games had a significant effect on working memory and academic performance of student with attention deficit/hyperactivity.

Conclusion : Therefore, it is suggested that cognitive computer games be included in the process of education and rehabilitation of the students with attention deficit/hyperactivity disorder in order to improve working memory of the students with attention/hyperactivity disorder.

Keywords : Computer cognitive games, working memory, attention/hyperactivity.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 208
Abstract ID: 290
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Evaluation of the effectiveness of "Continuous Attention for Children" on Attention Performance in Fourth Grade students with Mathematical Learning Disabilities in the Shad Application

Submission Author: Mehdi Yaghobi

Mehdi Yaghobi[1]

1. Spiritual Health Research Center, Qom University of Medical Sciences, Qom, Iran

Background and Aim : Mathematical learning disorder can be identified as one of the developmental neurological disorders with three defects of working memory, strategic and spatial visual problems. On the other hand, attention is considered as one of the basic cognitive functions in the development of mathematics learning. It is important in this group of disorders. Therefore, the aim of the present study was to investigate the effect of the "Continuous Attention for Children" test on attentional performance in fourth grade elementary school children with math learning disabilities in the Shad application.

Methods : The present study is a descriptive-analytical study. The research population includes fourth and fifth grade students in Qom with learning disabilities. Sampling was performed after referral to a psychiatrist for initial diagnosis of math learning disorder. Then the Wechsler test normative intelligence scores in the academic record were examined. Using available sampling method, 12 fourth grade male students with math learning problems were selected from 4 learning disability centers in the four districts of Qom. Also, 12 normal children were matched in terms of age and gender in another group. Parents first completed a demographic information questionnaire. The researcher then tested the students for continuous attention for children during the standard time in a quiet place with adequate lighting. Accordingly, the two groups with math learning disabilities and healthy counterparts in three areas of sustained attention, selective, control and attention transfer were compared with each other.

Results : The results showed that the distribution of values of all variables in the group with learning disabilities has a normal distribution ($P > 0.05$) and selective attention ($P < 0.05$) in the two groups show a significant difference.

Conclusion : students with math learning disabilities performed significantly weaker than healthy counterparts in all three areas of attention. Children with math learning disabilities should be used.

Keywords : Mathematical Learning Disabilities, attention, students

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 209
Abstract ID: 281
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

The Effectiveness of Sensory-Motor Integration Training on Stereotypic Behaviors and Social Skills of Children with Autism Spectrum Disorder

Submission Author: Elham Hakimirad

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2. Department of Psychology and Special Education, Azad University, Science & Research Branch Tehran, Iran.
3. M.A. psychology and education of special children, Azad University, Science and research Branch

Background and Aim : The aim of this study was the effectiveness of sensory-motor integration training on stereotyped behaviors and social skills of children with autism spectrum disorder in Tehran

Methods : . The research method was quasi-experimental with a pretest-posttest design with a control group. Statistical data included children with autism to 5 to 8 years old in the center of the Autism Association of Iran in Tehran with a volume of 21 people who were selected as 12 available and 6 people in the experimental group and 6 people in the control group were randomly replaced. Data were collected using the Gilliam (1994) Autism Diagnostic Test and the Gersham and Elliott (1983) Social and Behavioral Skills Questionnaire. The experimental group underwent 12 sessions of 40 minutes per week, three sessions of sensory-motor integration treatment. Data were analyzed by covariance test with SPSS-25 software

Results : The results of analysis of covariance showed that sensory-motor integration led to a reduction of stereotyped behaviors in children with autism. Also, the treatment of sensory-motor integration had a significant effect on improving the social skills of children with autism

Conclusion : Sensory-motor integration is a useful therapy for stereotyped behaviors and social skills in children with autism and these benefits can be transferred to children in daily life.

Keywords : Sensory-motor integration, stereotyped behaviors, social skills, children with autism

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 210
Abstract ID: 279
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

The effectiveness of psychodrama program on social skills and symptoms of children with attention deficit/ hyperactivity disorder

Submission Author: Elham Hakimirad

Leila Kashani Vahid[1], Elham Hakimirad[2], Lozan Raeisi[3], Maryam Asaseh[4]

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Background and Aim : This research aimed to determine the effectiveness of psychodrama program on social skills and symptoms of children with attention deficit/ hyperactivity disorder

Methods : Present study in terms of purpose was applied and in terms of implementation was a quasi-experimental with pre-test and post-test design with control group. The research population was all girl elementary school referring to counseling and psychological services centers in the 2 and 3 education districts of Tehran city in 2019-2020 academic years. Among members of population 30 people after considering the criteria for entering the study were selected by purposive sampling method and randomly replaced into two experimental and control groups (each group 15 people). The experimental group received 10 sessions of 45 minutes (two sessions per week) by psychodrama program and the control group was not given any special training. The research instruments were the social skills rating system (Gresham & Elliott, 1990) and Conners revised parent rating scale (Goyette & et all, 1978). Data were analyzed by methods of analysis of covariance and multivariate analysis of covariance in SPSS-22 software

Results : The findings showed that there was a significant difference between the experimental and control groups in terms of social skills (and all its subscales) and symptoms of attention deficit/ hyperactivity disorder. In the other words, psychodrama program led to increase social skills (all its subscale including cooperation, assertiveness, responsibility and self-control) and decrease symptoms of attention deficit/ hyperactivity disorder in children with attention deficit/ hyperactivity disorder ($P<0/05$). The results indicated the effectiveness of psychodrama program on increasing social skills and decreasing symptoms of children with attention deficit/ hyperactivity disorder

Conclusion : Therefore, clinical psychologists, therapists and health professionals can use this method along with other educational and therapeutic methods to improve health-related features, especially social skills and symptoms of attention deficit/ hyperactivity disorder.

Keywords : psychodrama program, social skills, symptoms of attention deficit/ hyperactivity disorder

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
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Count: 211
Abstract ID: 162
subject: Development: Aging
Presentation Type: Poster

The effects of aging on judgment and decision processes (interaction between ability and experience)

Submission Author: Sajad Haghshenas

Sajad Haghshenas[1], Melisa Esmaeili[2]

1. Shahid Beheshti university, Institute for cognitive science studies
2. Institute for cognitive science studies

Background and Aim : How many young people who are physiologically older are "older than their chronological age" and how many older people are younger. Mental age, which is measured in terms of emotional states and mental strength, and usually corresponds to physiological age. The World Health Organization classifies different life periods after puberty according to the calendar age: from 35 to 59 years old middle age, from 60 years old to 74 years old, from 75 years old to 90 years old and from 90 years old to 90 years old. Up too old.

Methods : Research on the impact of age differences on judgment and decision making (JDM) examines the context / socio-cognitive perspective with a focus on the impact of reduced cognitive resources, increased experience, and compensatory / comparative processes.

Results : These findings, considering the interaction between situational factors (e.g., self-communication, work requirements), ability (e.g., cognitive resources), experience (e.g., social expertise), goals, and motivational-emotional processes, emphasize the importance of adopting a contextual perspective for understanding cognitive function. They emphasize in adulthood. This perspective is especially important for understanding how aging affects daily functioning, where the impact of motivation and experience is likely to be greater

Conclusion : In this article, we review the research on judgment and decision-making that is based on the socio-cognitive perspective advocated by Blanchard-Fields and Hess (1999). A review of these articles provides details of the complex interaction between several forces to identify the effect of age differences on performance, and in addition to the negative impact of cognitive decline in old age, the positive impact of experience and compensatory processes.

Keywords : Aging, Decision Making, Social Cognition, Judgment

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 212
Abstract ID: 181
subject: Development: Other
Presentation Type: Poster

The magnetic inorganic-organic nanocomposite based on ZnFe2O4-Imatinib-liposome for biomedical applications, in vivo and in vitrostudy

Submission Author: Mahnaz Amiri

Mahnaz Amiri[1]

1. Department of Hematology and Laboratory Sciences, Faculty of Allied Medical Sciences, Kerman University of Medical Sciences, Kerman, Iran

Background and Aim : Liposomes with innovative chemical and physical properties revealed huge potential as drug deliverysystems for cancer treatment. Major cause of death is cancer and a main issue in cancer therapy is lessability of target trapy.

Methods : The current research, objects to advance a unique electromagnetic drug deliverysystem to carry an anticancer drug (Imatinib (IM)) by loading the drug in magnetic liposome nano-composites in order to reach targeted drug delivery in the presence of AMF (alternative magneticfield) inorder to reduce the administration time and drug dose and possible side effects.

Results : ell crystallizedZnFe2O4ultrafine nanoparticles with coral shape and particle size of 22.36±2.21 nm synthesized by ahydrothermal method in the presence ofTeucrium polium(a green synthesis). Biocompatibility of thenanoparticles are demonstrated through cytotoxicity test via MTT assay on U87 cell lines. The in vitroresults demonstrates that AMF strongly promoted IM release from magnetoliposome nanocomposites asa result of nanoparticle motions in the pool of liposome nanocomposite at the applied frequency, owingto an alteration of the permeability of bilayer. In vivo biodistribution results suggested magneticallycontrolled accumulation of liposomes in the targeted sites more rapidly and efficiently.

Conclusion : These primaryresults open up novel viewpoints in the use of these carriers in controlled and targeted release of drugs.Definitely, the multidisciplinary method may help improve the efficacy of cancer therapy.

Keywords : NanostructuresGreen synthesisMagnetic liposome nanocompositesZnFe2O4Magnetic drug targetingImatinib

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 213
Abstract ID: 158
subject: Development: Other
Presentation Type: Poster

matenal separation: consequences of adolescent methylphenidate exposure

Submission Author: Fatemeh Mohtashami Borzadaran

Fatemeh Mohtashami Borzadaran[1], khadijeh Esmaeilpour[2], Vahid Sheibani[3]

1. Kerman Neuroscience Research Center
2. Kerman Neuroscience Research Center
3. Kerman Neuroscience Research Center

Background and Aim : Methylephenidate (MPH) is considered as a drug for treatment of attention deficit hyperactive disorder (ADHD). However, it can also be a drug of abuse. Some studies suggest that negative consequences of addiction and drug abuse are more prevalent among people with early life experience of adversity.
Methods : Maternal separation (MS) is an animal model designed to mimic early life adversities. In this model rats are separated daily from their mother for 3 hours from day 1 (PND1) until the last weaning day which is day 21 (PND21). To address the question of early life stress and its impact on addiction and drug reward, we used a seven-day conditioned place preference test (CPP) in combination with maternal separation. CPP was designed with three stages. A ten-minute habituation time was given on Day 1, conditioning took place on Day 2-Day 6 (5 mg per kg MPH injection in drug compartment and saline in saline compartment with 4 hr gap between injections). The test day for CPP was ten minutes on Day 7. The CPP scores were calculated as indicators of drug reward. CPP testing started on PND34, known as mid adolescence.In addition we needed to investigate the combinatory impact of early life adversity using MS model and drug abuse on sensory pain perception. Sensory pain perception was evaluated using hot plate and tail flick test after 5 days MPH exposure with 5mg per kg starting on PND34. Hence, rats were exposed to maternal separation and then treated with MPH. control and MS groups treated with MPH and without MPH were compared for CPP and sensory pain tests.
Results : It was revealed that MS and control female rats are equally prone to addiction with 5mg per kg MPH. There is no significant difference in the reward score they experience. On the other hand, MS females exposed to MPH experience more pain in tail flick test. Experiencing MPH similarly declined hotplate pain perception in MS and controls in the females. The male MS groups experience higher reward in CPP, however pain perception did not differ among groups.
Conclusion : Results indicate that MS can alter experienced drug reward in male group and pain perception in female group.
Keywords : maternal separation, addiction, pain perception

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 214
Abstract ID: 154
subject: Development: Other
Presentation Type: Poster

The relationship between Phonological Awareness and Rapid Automatized Naming in early literacy development

Submission Author: Mahdi Khodadoust

Mahdi Khodadoust[1]

1. Kerman Neuroscience Research Center

Background and Aim : Phonological Awareness (PA) is a fundamental predictor of reading disability. However, reading researches have indicated that assessment of PA alone is not sufficient to anticipate and prevent reading problems. Rapid Automatized Naming (RAN) has been suggested as another influential factor in reading deficits independent of PA. The present study investigated the impact of phonological awareness on rapid automatized naming.

Methods : The current study as a randomized clinical trial recruited 62 grade 1 Persian monolingual children from three schools by convenience sampling. Lack of deficits with sensory-motor skills as well as knowledge of the Persian alphabets were the inclusive criteria. Measures of PA and RAN were utilized. The participants were randomly assigned to either the intervention or the control group. The intervention group was divided into small groups including 4-6 people who received training in PA for 40 minutes for 30 sessions. We used T-tests, Mann-Whitney and Wilcoxon tests for analyzing data.

Results : The results showed that the RAN time was significantly reduced ($p \leq 0.001$) with a significant increase in PA scores ($p \leq 0.001$). Additionally, there was a significant inverse relationship between some of the measures of the phonological awareness subtests and rapid automatized naming (e.g. phonemic blending & RAN(numbers): $\rho = -0.52$ with $p \leq 0.001$)

Conclusion : The findings showed that in the initial assessment, PA and RAN have a significant relationship but PA training may significantly improve RAN.

Keywords : Rapid automatized naming, Phonological awareness, Reading, Predictors of reading, double deficit hypothesis

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 215
Abstract ID: 245
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

The efficacy of the pain intensity management approaches in complex regional pain syndrome

Submission Author: Niloufar Chamani

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Background and Aim : Complex Regional Pain Syndrome (CRPS) is determined by persistent pain that is excessive to the initiating incident and also has autonomic sensory, motor, signs and symptoms, and trophic abnormalities. CRPS has two diagnostic classifications, which are defined by the appearance (Type 2 or CRPS-2) or absence (Type 1 or CRPS-1) of an identifiable nerve injury. Findings recommend that neuropathic pain in CRPS correlates with a functional reorganization and hyper-excitability of the motor and somatosensory cortex. On the other hand, techniques such as transcranial magnetic stimulation (TMS) and transcranial direct current stimulation (tDCS) are non-invasive brain stimulation approaches, proposed to be proper techniques for cortical excitability modulation. Furthermore, Neurofeedback Training (NFT) is generally helpful in calming over-excitable and over-aroused nervous systems in other populations with chronic pain so, maybe it can be of possible use in those with CRPS. Also, we considered another interesting non-pharmacological intervention used in pain rehabilitation that is transcutaneous electrical nerve stimulation (TENS).

Methods : We conducted a review of literature, using the PICO method about treatment with non-invasive brain stimulation, NFT, and TENS interventions for CRPS, published from 2000 to 2020, to draw clear conclusions about the clinical usefulness of these interventions, particularly in CRPS. Published trials in CRPS mostly are small with a short-term follow-up duration, although several approaches seem reliable.

Results : We found One tDCS single case study reported a significant pain intensity (PI) reduction but, an RCT (CRPS-1) was reported no significant difference between sham tDCS and tDCS group in CRPS-1, another single case study (CRPS-1) investigated that tDCS+TENS slightly reduced PI more than the tDCS group. A single case study (CRPS-2) TENS approach reported significantly meaningful PI decrease after the intervention and at 36 months of follow up and an RCT (CRPS-1) showed a more significant PI decrease in the TENS than the sham TENS group, but a feasibility study with four subjects (CRPS-1) reported that the placebo group showed much more improvement than the TENS group after and at the three-month follow-up. We just found one neurofeedback RCT study (CRPS-1), which was with other treatments, without the control group, reported a meaningful PI decrease. 3 RCT study with the rTMS approach reported a significant reduction in PI.

Conclusion : According to these contradictory results, the NFT, tDCS, and TENS techniques could have therapeutic efficacy in CRPS, but further well-designed investigations, considering type 1 or 2 CRPS are needed to confirm previous findings Whereas, the rTMS findings showed significant effectiveness in pain management of these patients.

Keywords : complex regional pain syndrome, neurofeedback, transcutaneous electrical nerve stimulation, non-invasive brain stimulation

Iranian Neuroscience Society
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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 216
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subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

Sensory Processing Sensitivity and Perceived Stress in adolescents with musculoskeletal pain

Submission Author: Bahareh Ghorbani taghlidabad

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2. Assistant Professor, Psychology Department, Urmia Branch, Islamic Azad University, Urmia, Iran.

Background and Aim : Sensory processing sensitivity is a recently proposed construct indicating that higher sensory processing might lead to more strongly process, a variety of information including pain. Chronic musculoskeletal pain and negative stress are health risks with adverse long-term health effects. The interactions between sensory processing sensitivity and perceived stress in adolescents with chronic musculoskeletal pain are unclear. There is a need for a better understanding of sensory processing sensitivity relation with perceived stress in order to improve health promotion and treatment approaches in these patients.

Methods : Two hundred patients with chronic musculoskeletal pain were given two measures of high sensory processing sensitivity and perceived stress scale. Stepwise regression analysis used to assess predictive contribution of high sensory processing sensitivity with perceived stress in patients with chronic musculoskeletal pain.

Results : High sensory processing sensitivity was correlated with perceived stress(r=.828). In addition, components of ease of excitation(r=.803), aesthetic sensitivity(r=.444), and low sensory threshold (r=25.51) were related to perceived stress. Significant predictors of perceived stress were found to be high sensory processing and component of ease of excitation (Adjusted R2 = .691, F=432.21, P<.0001).

Conclusion : It may conclude that in adults with chronic musculoskeletal pain who reported higher sensory processing were more prone to experience extreme perceived stress. On the other hand, in these patients higher sensory processing sensitivity and component of ease of excitation may predict excessive perceived stress experienced by them.

Keywords : Adolescents; Ease Of Excitation; Musculoskeletal Pain; Perceived Stress; Sensory Processing Sensitivity

BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 217
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subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

Evaluating effect of probiotic supplementation on neuropathic pain and oxidative stress factors in an animal model of chronic constriction injury of the sciatic nerve

Submission Author: Sayyed Alireza Talaei

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Background and Aim : Neuropathic pain, is a nervous chronic disorder that causes injury to peripheral or central nervous systems. Probiotics are a group of nonpathogenic live bacteria that prescription their adequate concentrations have beneficial effects for health. The objective of this study is to examine the ability of probiotics on neuropathic pain in a rat model of chronic constriction injury (CCI) of the sciatic nerve.
Methods : In this experimental study Neuropathic pain was induced by chronic constriction injury (CCI) of the sciatic nerve in rats. Investigating the analgesic effect of the probiotics mixture, 40 male rats were randomly assigned to 10 groups (n=10 for each): Control rats (CO), and CCI model rats (CC) were orally received 1 ml normal saline (CC), or 100 mg Gabapentin (GP) or 1 ml probiotics mixture contained Lactobacillus acidophilus, Bifidobacterium longum, and Bifidobacterium bifidum (109 CFU of each) daily. Using behavioral tests, the pain was assessed on days 1, 4, 7, 14, and 21 of the study. Finally, the biochemical evaluation of rats' blood serum was done.
Results : Receiving probiotics mixture significantly decreased the mechanical ($P<0.001$) and thermal allodynia ($P<0.05$), and also thermal hyperalgesia ($P<0.05$) in days 7, 14, 21 of the study in comparison with the CO group. There was no significant difference between the PB and GP groups for mechanical and thermal allodynia, and thermal hyperalgesia during the study. Besides, compared to the control rats, the probiotics mixture receiving rats showed an increase in SOD and GPx activity and a decrease in MDA level.
Conclusion : Oral administration of probiotics mixture reduces neuropathic pain induced by CCI in rats via increasing antioxidant capacity.
Keywords : Chronic constriction injury; Neuropathic pain; Probiotics; Antioxidant capacity; Rats

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 218
Abstract ID: 171
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

Blockade of hippocampal nicotinic receptors potentiated morphine-induced neuropathic analgesia in rats

Submission Author: Romina Rahiminezhadseta

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Background and Aim : The neuropathic pain appears due to the damage of somatic neurons or nervous system diseases. Incidence of neuropathic pain is increasing for a number of reasons like the highest level of population aging in the world, increased rates of diabetes, and enhanced chance of survival after chemotherapy. Effective cure of neuropathic pain is not fully investigated. FDA-approved usage of morphine, as an opioid analgesic drug, has been recommended to treat moderate to severe pain. Considering that the chronic pain caused some structural changes in the hippocampus to encode pain memory, the aim of the present study was to examine the possible role of cholinergic nicotinic receptors in the CA1 regions of the dorsal hippocampus in the effect of systemic administration of morphine on neuropathic pain.
Methods : Adult male Wistar rats weighing 200-230 g were anesthetized with Ketamine/xylazine mixture to implant bilateral guide cannulas into the CA1 regions of dorsal hippocampus, using stereotaxic apparatus. Moreover, each animal was subjected to chronic constriction injury (CCI) surgery simultaneously with the stereotaxic surgery. To induce neuropathic pain, four loose ligatures (about 1 mm spacing) were placed around the sciatic nerve proximal to the sciatic trifurcation with a 4-0 silk thread. After 14 days of recovery, the maximum level of pain could be induced in the animal. Flexion withdrawal thresholds to mechanical stimulation in the hind-limb were determined using von Frey hairs. The threshold for the mechanical stimuli of each animal was recorded before the surgery (pre-CCI), before (baseline) drug administration, and after drug administration. Each group consisted of seven rats to receive morphine with or without intra-CA1 microinjection of mecamylamine for measuring the pain level.
Results : Our results showed that systemic administration of different doses of morphine (3-5 mg/kg, i.p.) increased the percentage of maximum possible effect (%MPE). The analysis also revealed that morphine at 4 and 5 mg/kg increased the AUC of %MPE, indicating an anti-allodynic effect of the opiate. Interestingly, intra-CA1 microinjection of mecamylamine (0.5-2 µg/rat), a cholinergic nicotinic receptor (nAchR) antagonist, into the CA1 regions of dorsal hippocampus potentiated the effect of an ineffective dose of morphine (3 mg/kg, i.p.) and induced the neuropathic analgesia.

Conclusion : Taken together, it can be concluded that the critical involvement of the hippocampal nicotinic receptors in morphine-induced allodynia may confirm the importance of dorsal hippocampus in pain memory. It seems that mecamylamine via inhibiting the dorsal hippocampal nAchRs impaired memory formation under neuropathic pain, which needs to be studied further.

Keywords : (Neuropathic pain; Morphine; Mecamylamine; rat(s))

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 219
Abstract ID: 117
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

Analgesic and anxiolytic effects of nanoparticle zinc-oxide following chronic constriction injury of sciatic nerve in male rat

Submission Author: Mohammad Ali Zabihian

Mohammad Ali Zabihian[1], Zahra Bahari[2], Farideh Bahrami[3], Gholam Hossein Meftahi[4], Hassan Ghoshooni[5], Zohreh Jangravi[6]

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Background and Aim : Introduction: Neuropathic pain is often accompanied by clinical symptoms such as allodynia, hyperalgesia, and anxiety. The existing treatment options are inadequate to relief pain and associated psychopathologies. Hence, developing new compounds with higher efficacy and fewer complication are necessary. Todays, nanoparticles, as a novel agents in the modern medicine, are critical contribution in the treatment of various disease. Since zinc components have an important role in the central processing of pain information. Therefore, the present study was design to evaluate whether administration of nano-zinc oxide can relief pain and anxiety-like behaviors in a rat model of neuropathic pain.
Methods : Neuropathic pain induced by chronic constriction injury of sciatic nerve. Nano-zinc oxide synthesized by the reaction of zinc acetate and oxalic acid under hydrothermal conditions. Male wistar rats assigned into sham, neuropathy, and neuropathy+ nano-zinc oxide groups. Nano-zinc oxide (1mg/kg) applied at day neuropathy surgery and daily for 30 days following induction of neuropathic pain. Thermal allodynia (using acetone test) and anxiety (using elevated plus maze and open field tests) examined on days of -1, 2, 4, 6, 14, and 21 following neuropathic pain.
Results : Our data revealed that chronic constriction injury of sciatic nerve induced thermal allodynia and anxiety in all experimental days as compared with sham group ($p<0.05$). Additionally, orally administration of nano-zinc oxide significantly decreased thermal allodynia in all experimental days as compared with neuropathy group ($p<0.05$). Furthermore, nano-zinc oxide could significantly decrease close arms entries and time spent in close arms (decreased anxiety-like behaviors) in elevated plus maze ($p<0.05$). Similarly, nano-zinc oxide could significantly increase center area entries (decreased anxiety-like behavior) in open field box ($p<0.05$).

Conclusion : It is suggested that the orally administration of nano-zinc oxide could suppress thermal allodynia and anxiety in neuropathic pain.

Keywords : Nano-zinc oxide, Neuropathic pain, Aloodynia, Anxiety, Rat.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 220
Abstract ID: 86
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

Evaluation of the neuromodulatory role of nitric oxide in periaqueductal gray matter and dorsal hippocampus on pain induced of formalin reduced with morphine

Submission Author: Mahboobeh Hashemi

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2. Department of Biology, Faculty of Basic Sciences, Shahed University2
3. Department of Pharmacology, School of Pharmacy, Tehran University of Medical Sciences3

Background and Aim : According to previous findings, injection of L-arginine as a precursor of nitric oxide in the hippocampus and PAG reduces the analgesic effect of morphine on formalin-induced pain, but the neuromodulatory effect of NO in these areas is unknown, which is the purpose of this research

Methods : In this study, Wistar rats were used and divided into control and experimental groups and under complete anesthesia using stereotaxic surgery were simultaneously cannulated in two areas (the dorsal hippocampus and PAG). One week later, 50 µL of 2.5% formalin was injected into the left paw of the animal under a restrainer, but in order to evaluate morphine-induced analgesia, these animals received morphine (6 mg/kg) intraperitoneally 10 min earlier. To study the neuromodulatory relationship of NO, the precursor of NO, the L-arginine (0.25, 0.5, 1 and 2 µg) and L-NAME before morphine were respectively injected in these areas and formalin test was performed. At the end, the brains of animals were collected and cut and the activation of NO system in the mentioned areas was measured by NADPH-diaphorase and all data were analyzed by analysis of variance.

Results : Morphine-induced analgesia was reduced by injection of NO precursor in the hippocampus and PAG, but with the presence of L-NAME in the PAG compared to the precursor in the hippocampus, the precursor effect was removed. Decreased NADPH-diaphorase response was consistently shown in this region.

Conclusion : NO in the PAG has a neuromodulatory role in inhibiting morphine-induced analgesia in the dorsal hippocampus.

Keywords : Nitric Oxide, Neuromodulator, PAG, Dorsal hippocampus, Rat

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 221
Abstract ID: 44
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

The effect of intraperitoneal administration of celery (Apium graveolens L.) seed hydroalcoholic extract on neuropathic pain induced by chronic constriction injury (CCI) model on male wistar rats

Submission Author: Somaye Hoseini

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Background and Aim : Neuropathic pain is caused by an injury or disease in somatosensory nervous system and oxidative stress is considered as one of the reasons of its occurrence. Celery seed has been used since many years ago as a sedative. The plant also contains vitamin C and Apigenin which respectively have antioxidant and anti-inflammatory effects and as a result they can be neuroprotective. Taking these facts into consideration, it is hypothesized in this study that the chemical constituents of celery seed can interfere with the mechanisms of neuropathic pain and result in reduction of its occurrence. The aim of this study is to assess if there is such a reduction.
Methods : This experimental study was performed using 35 male wistar rats weighing 200-250 g, all underwent chronic constriction injury (CCI) to induce neuropathic pain. There were 5 groups (n=7) including control, sham operated, and groups that received the extract in doses of 100,200,400 mg/kg(i.p). Related tests of thermal hyperalgesia (Hot Plate), cold allodynia (Acetone), mechanical hyperalgesia (Pin Prick), and mechanical allodynia (Von Frey) were done and results were analyzed.
Results : In Hot Plate test the extract at a dose of 200 mg/kg(i.p) compared to sham group meaningfully reduced neuropathic pain ($p< 0.0001$). Acetone test results showed that all doses of the extract have a meaningful difference with sham group ($p<0.001$). Considering Pin Prick test results revealed that up to day 7 after surgery the extract at a dose of 200 mg/kg(i.p) could reduce neuropathic pain in a meaningful manner ($p<0.001$). In Von Frey test mechanical allodynia reduced meaningfully ($p<0.001$) up to day 7 post surgery by dose 200 mg/kg(i.p).
Conclusion : The hydroalcoholic extract of Apium graveolens L. Possesses antineuropathic pain effect on thermal hyperalgesia and cold allodynia. Having antiinflammatory effect, Apigenin reduces plasma levels of Il-1β , IL-6, TNFα and PGE2. It can also can reduce cold allodynia through IL-6 reduction. but in mechanical hyperalgesia and allodynia this effect was observed in the first 7 days post-surgery. Ephrin B receptors which are considered as targets in treatment of neuropathic pain can induce mechanical allodynia and hyperalgesia through increasing PKCγ and Apigenin can reduce Ephrin B receptor gene expression. The extract doesn't seem to have any effect on stabilizing mechanisms of neuropathic pain after the injection period.

Keywords : chronic constriction injury, neuropathic pain, rat, celery seed

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 222
Abstract ID: 28
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

Comparison of painful response to mechanical stimulation of paw plantar surface with dorsal surface in neuropathic pain rats

Submission Author: Ali Ghanbari

Ali Ghanbari[1]

1. Research Center of Physiology- Semnan University of Medical Sciences-Semnan-Iran

Background and Aim : Mechanical and thermal stimuli were used to evaluate neuropathic pain like behavior in animal models usually. Mechanical stimulation of paw plantar surface is commonly used to determine mechanical allodynia. The aim of this study is to compare paw withdrawal response due to plantar surface stimulation against that in dorsal surface stimulation following chronic constriction injury (CCI) induced neuropathic pain in female rats.

Methods : In the present study, thirty Wistar female rats (180- 220 g), were assigned randomly in three group as intact, sham, and neuropathy with ten in each group. After anesthesia, to induction of neuropathy (chronic constriction injury), four movable ligation were established around sciatic nerve using catgut chromic suture with a distance of one millimeter apart and then wound incision was closed. In sham group incision site was closed without nerve ligation. Mechanical allodynia was examined by Von Frey filaments during four weeks. Repeated measure ANOVA and post-hock turkey's test was used to data analysis.

Results : Paw withdrawal threshold of intact group was the same as one in sham group. Paw withdrawal threshold following dorsal surface stimulation significantly ($P<0.001$) reduced compared to sham group at 21 days post-injury. Also Paw withdrawal threshold following plantar surface stimulation significantly ($P<0.01$) reduced compared to sham group at 21 days post-surgery. Results of sham group showed that the paw withdrawal threshold after mechanical stimulation of the plantar surface is not significantly different from that dorsal surface stimulation. Also, there was no significant difference between the paw withdrawal response in plantar surface and dorsal one in neuropathy group.

Conclusion : Paw withdrawal threshold due to plantar surface mechanical stimulation was not significantly different from one in dorsal surface following CCI-induced neuropathic pain.

Keywords : neuropathic pain, plantar surface, dorsal surface, mechanical allodynia, rat

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 223
Abstract ID: 56
subject: Pain and Sensory Systems: Vision
Presentation Type: Poster

Hierarchical representation of familiar faces in posterior cingulate cortex

Submission Author: Neda Afzalian

Neda Afzalian[1], Reza Rajimehr[2]

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2. MRC Cognition and Brain Sciences Unit, University of Cambridge, Cambridge, UK McGovern Institute for Brain Research, Massachusetts Institute of Technology, Cambridge, MA

Background and Aim : Extensive research has shown that perceptual information of faces is processed in a network of hierarchically-organized areas within ventral temporal cortex. For familiar and famous faces, perceptual processing of faces is normally accompanied by extraction of semantic knowledge about the social status of persons. Semantic processing of familiar faces could entail progressive stages of information abstraction. However, the cortical mechanisms supporting multi-stage processing of familiar faces have not been characterized.

Methods : Here using an event-related fMRI experiment, familiar faces from four celebrity groups (actors, singers, politicians, and football players) and unfamiliar faces were presented to the subjects while they were engaged in a face categorization task. We systematically explored the cortical representations for faces, familiar faces, subcategories of familiar faces, and familiar face identities using whole-brain univariate analysis and searchlight-based multivariate pattern analysis.

Results : Convergent evidence from all these analyses revealed a network of overlapping and hierarchically-organized areas in posterior cingulate cortex (PCC) that contained decodable fMRI responses for representing different levels of semantic knowledge about familiar faces.

Conclusion : Our results suggest a hierarchical organization in PCC for processing the semantic information of faces – analogous to the hierarchical organization within ventral temporal cortex for processing the perceptual information of faces.

Keywords : fMRI; multivariate pattern analysis; familiar faces; semantic processing; posterior cingulate cortex; hierarchical organization

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 224
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subject: Pain and Sensory Systems: Multisensory Integration
Presentation Type: Poster

May tDCS and Biofeedback -as a Mix-Method- Support the Headache?

Submission Author: Mohammadjavad Hoseinpourfard

Mohammadjavad Hoseinpourfard[1]

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Background and Aim : Transcranial direct current stimulation (tDCS) established as a noninvasive tool for transient modulation of cortical function.

Methods : Here, we examined the effects of tDCS in the occipital cortical depression (OCD) by using the biofeedback (BFB) temperature relaxation. This mixed-method included the tDCS (cathodal O1:O2-ShX, 2mAmp, 20min) and BFB tasks. The tDCS session designed according to the tDCS world community montage guides and standards and the BFB tasks considered by Temperature BFB training Rehacore Mediacom co. ltd. In contrast, cathodal tDCS on the occipital region during the BFB relaxation training not only increased the frequency between times of headaches but also decreased the severity of headache in the patients.

Results : Our results indicate that both cathodal tDCS and BFB relaxation training could manage the headache as quantified by patients' headache measuring.

Conclusion : This gain achieved from 14 volunteer patients in 4 months of follow-up after the training. In conclusion, the mixed methods include stimulation and training phase according to cognitive neuroscience axiom that may support the treatment of the headache.

Keywords : Headache; tDCS; Biofeedback;

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 225
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subject: Pain and Sensory Systems: Multisensory Integration
Presentation Type: Poster

The sensitivity to thermal pain is dose-dependently altered by intra-BLA injection of Orexin receptor antagonist (SB334867)

Submission Author: Maryam Eqbali

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1. -
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Background and Aim : The amygdala complex is necessary for processing both fearful and rewarding environmental stimuli. This structure is consist of several interconnected nuclei including the basolateral complex (BLA), the corticomedial complex and the central nucleus of the amygdala (CeA). The BLA consists of excitatory glutamatergic neurons and inhibitory GABAergic interneurons. Furthermore, BLA receives massive orexinergic neural connections from the lateral hypothalamus (LH). Orexin A and B modulate various brain functions such as appetite, sleep-wake cycle and pain through orexin type 1 (OX1R) and orexin type 2 (OX2R) receptors. Also, the orexin type 1 (OX1R) receptors are found in the BLA nucleus. It plays an important role in anxiety, fear, aversive memory, learning and memory, social behavior, reward behavior and pain modulation. Moreover, neural projections of the descending inhibitory pain modulatory pathway are originating from the amygdala and terminated in the dorsal horn of spinal cord. Therefore, the purpose of this study was to assess the role of endogenous orexin and OX1 receptors of BLA nucleus of the amygdala in the thermal pain modulation.

Methods : In this study, 35 male Wistar rats weighing 200–270 g were purchased from the animal facility of Baqiyatallah University of Medical Sciences. Animals were randomly divided into 5 groups including: control (intact animals), DMSO (intra-BLA injection of DMSO), SB334768 1 nM [SB 1; (OX1 receptor antagonist), intra-BLA injection of SB 1 nM], SB334768 5 nM (SB 5, intra-BLA injection of SB 5 nM), SB334768 50 nM (SB 50, intra-BLA injection of SB 50 nM) groups. Animals were anaesthetized with 60 mg/kg ketamine and 7.5 mg/kg xylazine and fixed in a stereotaxic apparatus. The stainless steel 23-gauge guide cannulas equipped with a 30-gauge stylet were unilaterally implanted into the right BLA nucleus. After recovery period, DMSO and different doses of SB334867 were injected into the BLA nucleus, and 5 Minutes later, the tail flick and hot plate tests were done by 60 seconds intervals. Every test was recorded for 70 minutes with 10 minutes intervals. At the end of the tests, animals were anesthetized and their brains were removed and examined for the correct cannula implantation in the BLA nucleus.

Results : Our results demonstrated that intra-BLA injection of the lowermost dose (1 nM) of SB334867 significantly increased the latency to response in the hot plate test. The sensitivity to thermal pain was not altered by intra-BLA injection (5 nM) of SB334867. However, intra-BLA injection of the highest dose (50 nM) of SB334867 significantly decreased the latency to response in the hot plate test.

Conclusion : Based on the results of present study, it can be concluded that the SB334867 exerts dose-dependent effect on the sensitivity to thermal pain in the hot plate and tail flick tests. The highest dose of SB334867 develops hyperalgesia. Therefore, the increment of the endogenous orexin A release in the BLA can possibly induce analgesia. Conversely, the lowest dose of SB334867 indicated an antinociceptive effect and can probably induce hyperalgesia in the thermal pain models.

Keywords : Basolateral nucleus of amygdala, Hot plate test, Orexin type 1 receptor, Pain modulation, SB334867, Tail flick test

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 226
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subject: Pain and Sensory Systems: Sensory and Sensory Integration Disorders
Presentation Type: Poster

Title: effective of teaching on the quality of life in patients with back pain

Submission Author: Soraya Nejati

Soraya Nejati[1]

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Background and Aim : Almost a third of the world's population suffers from severe back pain. One of the most common causes of low back pain is disc herniation. People with chronic pain experience failure in the physical, social and psychological problems and reduced quality of life will suffer. The concept of quality of life as a sign of quality health care and disease control programs is. Several therapeutic approaches for the treatment of chronic low back pain or control is used. Regarding the effect of education on quality of life in patients with chronic low back pain, the aim of this study was to improve the quality of life of these patients

Methods : This study was a clinical trial. 50 of patients with chronic low back pain caused by a herniated disc, Intervention four-hour meeting was conducted in four consecutive weeks. The instruments used included a demographic questionnaire and the SF36 quality of life questionnaire score on each question was based on the Likert scale. The lowest score and the highest scores were 0-100. The higher scores showed better quality of life. Samples first completed the demographic questionnaire and SF36 Quality of Life Questionnaire. Then, again, samples completed the SF36 questionnaire at the end of the fourth week and three months after the intervention. Information was collected into 16 spss software version and data using statistical t-test and chi-squer were analyzed. Descriptive statistics, frequency tables,

Results : The quality of life in patients with chronic low back pain caused by lumbar disc herniation increased, but a month after training did not show a significant increase. These increase was not statistically significant (P = 0.68). The quality of life of patients three months after the end of training had increased and this increase were statistically significant (p = 0.025).

Conclusion : According to the results of this study, it can be said that education is significant and these increase has improved quality of life of patients with back pain caused by lumbar disc

Keywords : Chronic low back pain, herniated disc, teaching

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

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Abstract ID: 260
subject: Pain and Sensory Systems: Other
Presentation Type: Poster

The Pain Management Using Virtual Reality Distraction in Children

Submission Author: Mohadese Babaie

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Background and Aim : Many children experience fear before o beginning of medical treatment, which in turn can exacerbate pain perception. Catheterization is the most common cause of pain and distress in children, which causes physical, psychological and emotional dysfunctions. Caregivers should take the essential steps to reduce the emotional and physical harm of children in the face of painful treatments. Therefore, the control of this type of pain should be considered as a priority for nursing care. Considering the growth and development of school-age children, distraction with 3D glasses of virtual reality with the use of five senses can control the intensity of pain and distress and provide a comfortable condition for the patients. So it increases the patient's desire to follow the treatment due to the creation of a positive memory. In this regard, the purpose of this study was to determine the effect of virtual reality distraction on control pain among school-age children.

Methods : This randomized clinical trial included 64 school-age children assigned into intervention and control group. The scale was Oucher face pain intensity scale used to evaluate the intensity level of pain. Catheterization duration was also recorded in this study. Data were analyzed by SPSS software (Version.18) through descriptive statistics, t-test, Mann-Whitney U test, and Spearman correlation analyses.

Results : The mean age of the intervention and control groups were 7.8±1.4 and 7.7±1.6 years old, respectively. The results of the Mann-Whitney U test showed that the mean pain intensity was lower in the intervention group after using the three-dimensional glasses (P=0.01). Spearman correlation test results indicated that there were no significant differences between different ethnicities (P=0.37) and birth ratings (r=-0.061, P-value=0.63) in terms of mean pain intensity.

Conclusion : Based on the findings of the present study, there was a significant difference between the both groups regarding the mean pain intensity. According to the results, the mean pain intensity was higher in the control group, compare with the intervention group. Therefore, it appears that the intervention caused a distraction in children during catheterization and was effective in reducing the reported pain. In general, it can be concluded that virtual reality distraction can reduce the pain induced by catheterization in children. Accordingly, in addition to facilitating therapeutic procedures, the use of distraction methods can reduce the incidence of pain and in turn, improve the general health of the individual.

Keywords : Pain management, Children, Virtual reality distraction

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BOOK of Abstracts

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Presentation Type: Poster

The positive correlation of gamma oscillation in the EEG signals with the severity of neuropathic pain in a rat CCI neuropathic pain model

Submission Author: Mohammad Fathi Dulabi

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Background and Aim : Gamma oscillation in the brain play a critical role in selecting and integrating sensory information into a coherent perception. It is suggested that activation of gamma band frequency has an important role in the pain perception. Several evidences identified that brief nociceptive laser stimulation can enhance the power of gamma oscillations in healthy human and rodents. However, it is far from clear whether such gamma oscillations have a critical role in the chronic pain perception. Neuropathic pain, as a chronic pain condition, can induce following injury or diseases of peripheral or central nervous system. To examine the oscillatory gamma activity and its association with chronic pain, in the current study, we recorded spontaneous electroencephalogram (EEG) signals during neuropathic pain in rats.
Methods : Neuropathic pain induced by chronic constriction injury (CCI) of sciatic nerve. Male wistar rats assigned into control, sham, and CCI groups. Spontaneous EEG signals was recorded on day 30 following induction of neuropathic pain (CCI surgery). The analysis of the EEG data performed by eprob software (homemade software by Science Beam Company, Tehran, Iran) Thermal allodynia, as a neuropathic pain-associated behavior (using acetone test) examined on days of -1, 2, 4, 6, 14, and 21 following neuropathic pain.
Results : The present data revealed that CCI model of neuropathic pain induced thermal allodynia in all experimental days as compared with control or sham groups ($p<0.05$). Aditionally, the analysis of the EEG data revealed that gamma power significantly increased on day 30 following induction of neuropathic pain as compared with sham or control groups ($p<0.05$). Using Pearson linear regression, we identified that the gamma power was positively correlated with the thermal allodynia during neuropathic pain. There was not significant differences between control and sham groups.

Conclusion : It is suggested that increased spontaneous gamma oscillation during neuropathic pain positively correlated with the severity of neuropathic pain in rats.

Keywords : Gamma oscillation, Neuropathic pain, CCI, EEG, Allodynia, Rat.

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BOOK of Abstracts

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Count: 229
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Presentation Type: Poster

The effects of nano-zinc oxide on beta and gamma oscillation of the EEG signals and painful behavior following neuropathic pain in rat

Submission Author: Zahra Bahari

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Background and Aim : Brain rhythmical oscillation at high (beta and gamma) frequencies has an important role in the cognitive performance. It is reported that beta and gamma rhythmical oscillation of electroencephalogram (EEG) increased following noxious stimuli in human and rodents. Neuropathic pain is caused by injury or disease of central or peripheral nervous system. Neuropathic pain is particularly accompanied by allodynia and hyperalgesia. It is reported that the increased beta and gamma power was positively correlated with severity of pain. The current classical drugs for manage of neuropathic pain produce only partial relief with various complication. Recently, nanoparticles, as a novel compounds in the medicine, have an important role in the treatment of various disease. Hear, we examine the effects of nano-zinc oxide on painful behavior and beta and gamma rhythmical oscillation of EEG during neuropathic pain in rat.

Methods : Neuropathic pain induced by chronic constriction injury (CCI) of sciatic nerve. Nano-zinc oxide synthesized by the reaction of zinc acetate and oxalic acid under hydrothermal conditions. Male wistar rats assigned into sham, CCI, and CCI+ nano-zinc oxide groups. Animals received nano-zinc oxide (1mg/kg) on the day CCI surgery and daily for 30 days following CCI surgery. EEG signals was recorded on day 30 following CCI surgery. The analysis of the EEG data performed by eprob software (homemade software by Science Beam Company, Tehran, Iran). Cold allodynia (using acetone test) assessed on days of -1, 2, 4, 6, 14, and 21 following CCI surgery.

Results : Emission scanning electron microscopy proved the formation of nanocubes and nanorods zinc oxide. The present data analysis identified that CCI surgery induced cold allodynia in all experimental days as compared with control or sham groups ($p<0.05$). Furthermore, the analysis of the EEG data revealed that beta and gamma power significantly increased on day 30 following CCI surgery as compared with sham or control groups ($p<0.05$). Aditionally, application of nano-zinc oxide significantly decreased cold allodynia and beta and gamma rhythmical oscillation of EEG as compared with CCI group ($p<0.05$). We also observed that the gamma power was positively correlated with the cold allodynia following CCI surgery.

Conclusion : The current study suggested that nano-zinc oxide has analgesic potency in the neuropathic pain in rat. Indeed, administration of nano-zinc oxide can relief neuropathic pain via attenuation of beta and gamma power of EEG.

Keywords : Nano-zinc oxide, Beta oscillation, Gamma oscillation, EEG, Neuropathic pain, Allodynia, Rat.

Iranian Neuroscience Society
kerman University of Medical Sciences
Iran University of Medical Sciences
BOOK of Abstracts
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December 9-11, 2020
Virtual Congress

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Presentation Type: Poster

Evaluation of analgesic, anti-inflammatory and antioxidant activities of Verbascum thapsus extract in animal models.

Submission Author: Mahdis Moghadas

Mahdis Moghadas[1]

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Background and Aim : Verbascum thapsus belongs to the Scrophulariaceae family, is one of the medicinal plants used in different parts of the world for treatment of respiratory disorders, sore throat, tonsillitis, diarrhea and hemorrhoids. The aim of this study was to find pharmacological evidence to investigate the anti-inflammatory and analgesic effects of V. thapsus according to reports from other species of this genus.

Methods : The ethanolic extract of leaves and flowers was prepared by maceration. Antioxidant capacity, total phenolic and flavonoid content of flower and leaf extracts were measured using DPPH test,folin ciocalteu and aluminum chloride. 77 rats were used to evaluate the central analgesic and anti-inflammatory effects using formalin and carrageenan tests and 23 mice were used to evaluate the peripheral analgesic effect using writhing test. In the formalin test, the leaf extract was administered intraperitoneally (doses of 30, 100, and 300 mg/kg) and in the carrageenan and writhing tests, it was administered orally (doses of 100 and 300 mg/kg).

Results : In the DPPH test, the IC50 values of leaf and flower extracts were 107.9 and 244.5 ?g/ml respectively. The total phenolic content of leaves and flowers were 342.52 and 222.74 (?g gallic acid/g extract) respectively and the flavonoid content of them were calculated to be 123.78 and 81.98 (?g rutin/g extract). Pretreatment of animals with ethanolic extract of V.thapsus (300 mg/kg) significantly reduced rat paw edema in carrageenan test. Also, pretreatment of rats with V.thapsus extract (100, 300 mg/kg) reduced pain related behaviors in formalin test compared with the control group. Finally, pretreatment of mice with V.thapsus extract (100, 300 mg/kg) reduced the writhing count compared with the control group.

Conclusion : The biological effects (analgesic, anti-inflammatory and antioxidant activities) reported in this study might be due to the presence of phenolic and flavonoid compounds in V.thapsus which requires further investigation.

Keywords : analgesic, anti-inflammatory, antioxidant, Verbascum thapsus, formalin, carrageenan, DPPH

BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

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Endogenous orexin release in the basolateral nucleus of amygdala prevents the innate fear-induced analgesia in the male rats

Submission Author: Mahnaz Aghaei

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Background and Aim : The transitory GABAergic dysfunction in the dorsomedial and ventromedial hypothalamus (DMH/VMH) evokes innate fear. Amygdala recieves massive neural connections from DMH/VMH and lateral hypothalamus nuclei. Basolateral nucleus of amygdala (BLA) plays an important role in pain modulation by activating the descending inhibitory pain pathway. Therefore, the aim of this study was to investigate the possible role of endogenous orexin in the innate fear-induced pain modulation by BLA nucleus.

Methods : 35 Male Wistar rats weighing 200–270 g obtained from the animal facility of Baqiyatallah University of Medical Sciences were randomly divided into 5 groups including: control (intact animals), bicuculline (BIC, bicuculline injection into the DMH/VMH), bicuculline/DMSO (BIC/DMSO, bicuculline injection and DMSO injection into the BLA), bicuculline/SB 5 nM (BIC/SB 5, bicuculline injection and SB 5 nM injection into the BLA), bicuculline/SB 0.1 nM (BIC/SB 0.1, bicuculline injection and SB 0.1 nM injection into the BLA). At first, Animals were anesthetized with 60 mg/kg ketamine and 7.5 mg/kg xylazine and then were fixed in a stereotaxic apparatus. The stainless steel 23-gauge guide cannulas equipped with a 30-gauge stylet were unilaterally implanted in the right DMH/VMH and BLA nuclei. After the recovery period, 40ng/300nl bicuculline was injected into the DMH/VMH nuclei and then the innate fear-induced behaviors were evaluated by open field test over 10 min using a Sony Handycam camera. These behaviors contain the rearing “upright posture”; the defensive attention; the defensive immobility “freezing”, and the jumping oriented to the upper side of the arena. Immediately after open field test completion, DMSO or SB334768 (0.1 and 5nM) were unilaterally applied into the right BLA, and 5 min later 50µl of 2.5% formalin was injected subcutaneously into the plantar surface of the left hind paw of rats. The formalin-induced flinches was recorded for 60 minutes. The formalin-evoked flinches were divided into two phases including the early phase (0–7 min) and the late phase (16–60 min) separated with a relative inactivity interval. At the end of the tests, animals were killed and their brains were removed and examined for the correct cannula implantation in the DMH/VMH and BLA nuclei.

Results : These results demonstrated that the intra-DMH/VMH injection of bicuculline significantly increased the frequency of jumping behavior as well as the frequency and duration of defensive attention, rearing and freezing behaviors in all groups which approves the innate fear-induction in all animals. Intra-DMH/VMH injection of bicuculline significantly reduced flinches ($P<0.001$) only in the early phase of the formalin test. Intra-BLA injection of SB 5nM led to a significant increase in flinches ($P<0.05$) just during the early phase of the formalin test. Whereas intra-BLA injection of SB 0.1nM did not affect both phases of flinching behavior.

Conclusion : According to our results, it can be concluded that the inhibition of the GABAergic system of DMH/VMH nuclei can induce innate fear and analgesia. However, intra-BLA injection of the 5nM dose of SB334867 counteracted the innate fear-induced analgesia by preventing the activation of the orexin receptor type 1 via endogenous orexin-A.

Keywords : Analgesia, Basolateral nucleus of amygdala, Bicuculline, Dorsomedial hypothalamus, Innate fear, SB334768, Ventromedial hypothalamus

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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subject: Pain and Sensory Systems: Other
Presentation Type: Poster

Milnacipran attenuated carrageenan-induced hyperalgesia and inflammation in male rats; the involvement of MPO activity and oxidative stress

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Background and Aim : Back ground and Aim: Many injuries caused pain and inflammation, which are one of the major challenges for physicians. Existing anti-inflammatory and analgesic drugs such as NSAIDs and opioids have many side effects. In this study, the analgesic and the anti-inflammatory effects of milnacipran were investigated on carrageenan-induced nociception and inflammation in male rats.
Methods : Methods: Pain and inflammation were induced by intraplantar injection of λ-carrageenan (1%v/v) in the right hind paw. Indomethacin (10 mg/kg: i.p) or milnacipran (10,20 and 40 mg/kg: i.p) were administered half an hour before carrageenan injection. Analgesia was measured by Hot plate test, and inflammation was assessed by plethysmometer. Finally, the effect of carrageenan and milnacipran on lipid peroxidation, TNF-α, IL-1β, IL-6, myeloperoxidase (MPO) activity, nitric oxide (NO) and total antioxidant capacity (TAC) status evaluated in the hind paw tissue.
Results : Results: The results showed that carrageenan caused hyperalgesia and inflammation in the hind paw tissue. Milnacipran (20 and 40 mg/kg: i.p) significantly attenuated ($p<0/01$) inflammation percentage and significantly increased ($p<0.001$) nociception threshold. Also, milnacipran (20 and 40 mg/kg) significantly suppressed malondialdehyde (MDA), NO levels ($p<0.05$), MPO activity, TNF-α, IL-1β and IL-6 ($p<0.001$) following carrageenan injection. Additionally, milnacipran (10, 20 and 40 mg/kg) augmented TAC status subsequent to intraplantar injection of carrageenan in the hind paw tissue in a significant level ($p<0.05$).
Conclusion : Conclusion: In the present study, milnacipran showed anti-nociceptive and anti-inflammatory effects on carrageenan-induced hyperalgesia and inflammation. Milnacipran reduced inflammatory edema and increased the paw withdrawal threshold probably through suppression of MDA, NO, TNF-α, IL-1β and IL-6 levels and MPO activity and increasing of TAC status in the hind paw tissue. Therefore, milnacipran holds important potential as an anti-inflammatory and anti-nociceptive drug. Although, there is need more clinical trial studies to prove this issue.
Keywords : Keywords: Carrageenan, Milnacipran, Plethysmometer, Pain and Inflammation, Analgesia, Myeloperoxidase, Malondialdehyde, Rat

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 233
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Presentation Type: Poster

Nanoiron-oxide decreased cold allodynia and anxiety-like behaviors following a rat CCI model of neuropathic pain

Submission Author: Mohammad Hossein Naimi Ghahruodi

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Background and Aim : Introduction: Neuropathic pain is characterized by spontaneous pain, allodynia, hyperalgesia, anxiety, and depression. Neuropathic pain is an important health problem that affects patient's quality of life. Despite rapid development of drug discovery, the existing classical analgesics of neuropathic pain produce only partial relief. Additionally, current therapeutic options are costly to manage. Hence, developing new agents with higher potency and fewer side effects are necessary. Recently, nanoparticles, as a novel agents in the modern medicine, are critical contribution in the treatment of ample disease. Since iron components have critical contribution in the neuropathic pain. Therefore, the current study investigated the analgesic and anxiolytic properties of nano-iron oxide during neuropathic pain in rat.

Methods : Neuropathic pain induced by chronic constriction injury (CCI) of sciatic nerve. Nano-iron oxide synthesized by the reaction of iron acetate and oxalic acid under hydrothermal conditions. Male wistar rats assigned into sham, CCI, and CCI+ nano-iron oxide groups. Animals received nano-iron oxide (1mg/kg) on the day CCI surgery and daily for 30 days following CCI surgery. Cold allodynia (using acetone test) and anxiety (using elevated plus maze and open field tests) examined on days of -1, 2, 4, 6, 14, and 21 following CCI surgery.

Results : Emission scanning electron microscopy proved the formation of nanocubes and nanorods iron oxide. Our data analysis demonstrated that CCI surgery induced cold allodynia and anxiety-like behaviors in all experimental days as compared with sham group ($p<0.05$). Furthermore, orally application of nano-iron oxide significantly decreased cold allodynia in all experimental days as compared with CCI group ($p<0.05$). Additionally, nano-iron oxide could significantly decrease grooming, rearing, close arms entries, and time spent in close arms (decreased induced anxiety-like behaviors) in the elevated plus maze ($p<0.05$). Similarly, nano-iron oxide could significantly increase center area entries (decreased innate anxiety-like behavior) in the open field box ($p<0.05$).

Conclusion : The present data suggested that the orally application of nano-iron oxide could suppress pain-associated behaviors in the CCI model of neuropathic pain in rat.

Keywords : Nano-iron oxide, Emission scanning electron microscopy, Neuropathic pain, Allodynia, Anxiety, Rat.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 234
Abstract ID: 49
subject: Pain and Sensory Systems: Other
Presentation Type: Poster

Effects of intraperitoneal administration of Lavender (Lavandula angustifolia) flowers and branches hydroalcoholic extract on neuropathic pain induced by chronic constriction injury on male Wistar Rat

Submission Author: Maryam Khoub khahi

Maryam Khoub khahi[1], Masoud Fereidoni[2]

1. -
2. Maryam Khoub khahi

Background and Aim : Neuropathic pain is a chronic pain caused by damage to the peripheral or central nerves. In diseases where the patient has nerve damage, symptoms of neuropathic pain are observed. Therefore, treatment and reduction of its associated symptoms is so important. Steroidal anti-inflammatory drugs and painkillers that work through opioid pathways either lack effect or cause drug resistance after a while. Lavender has high levels of antioxidants and Linalool. It can be thought of as being able to reduce the effects of CCI surgery on neuropathic pain.
Methods : The present study was performed on 35 male rats in 5 groups of 7 each weighing 200-250 g. Neuropathic pain was induced by CCI model by partial occlusion of the sciatic nerve. Experimental groups were divided into control group with sciatic nerve surgery without treatment, physiological saline (Lavender extract solvent) group for 14 days after surgery and Chronic recipient groups of hydroalcholic lavender extract at doses of 100, 200,400 mg/kg for 14 days after surgery. Mechanical pain tests included Von Frey and Pin Prick and thermal pain tests included hot plate and acetone tests performed on days zero (before surgery) and days 3,7, 14, 21, 28.
Results : Results showed that chronic intraperitoneal injection of hydroalcoholic lavender extract at doses of 100, 200,400 mg/kg in all three doses reduced thermal allodynia ($P < 0.0005$) and at doses of 200 and 400 mg/kg reduced hyperalgesia. It also reduced mechanical allodynia ($P < 0.006$) and mechanical hyperalgesia ($P < 0.01$) at doses of 200 and 400 mg/kg
Conclusion : Studies have shown that lavender has high levels of vitamin C and other antioxidants, which may reduce ROS, increase levels of antioxidant enzymes such as superoxide dismutase, glutathione peroxidase and catalase. It inhibits nitric oxide synthesis. Lavender contains Linalool, which is an antagonist of NMDA receptors and may reduce neuropathic pain by inhibiting the activity of these channels. Previous studies have also shown that lavender can reduce inflammation, so a specific study of the proposed mechanisms of how this plant extract works in reducing pain in this study may be worth further consideration
Keywords : neuropathic pain, lavender, intraperitoneal injection, hyperalgesia, allodynia, rat.

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BOOK of Abstracts

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Count: 235
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subject: Pain and Sensory Systems: Other
Presentation Type: Poster

The Efficacy of Topical Basil Essential Oil on Relieving Migraine Headaches: A Randomized Triple-Blind Study

Submission Author: Sajad Yarahmadi

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Background and Aim : Complementary therapies have been increasing- ly used for the prevention and treatment of migraine so that there is a need for studies in this setting. This study sought to determine the effects of basil essential oil on the severity and frequency of migraine attack headaches.

Methods : A triple-blind clinical trial study was performed on 144 patients diagnosed with migraine. Patients were randomly allocated by a stratified method to four groups of 36 titled basil essen- tial oil 2, 4, 6%, and placebo groups. Medications were used topically every 8 h for 3 successive months. In addition, each individual received 325 mg of acetaminophen every 12 h. The severity and frequency of migraine attacks were mea- sured prior to the study, at weeks 2, 4, 8, and 12. The visual analog scale was used to measure pain intensity. The marginal model and generalized estimation equations were used to compare changes in the intensity and frequency of pain over time.

Results : The interaction of the dose and time factors was significant on both pain intensity ($p < 0.001$) and frequency of attack ($p < 0.001$). The odds ratio of higher pain intensity and rate ratio of higher frequency of attack in theintervention groups compared to the placebo group were decreased over the study time.

Conclusion : Time lapse and higher doses of basil essential oil would reduce both the intensity and frequency of migraine attacks.

Keywords : Complementary medicine · Headache · Herbal medicines · Migraine · Ocimum basilicum

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Iran University of Medical Sciences
BOOK of Abstracts
9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
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Count: 236
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subject: Motor Systems and Movement Disorders: Posture and Gait
Presentation Type: Poster

treatment OF ataxia

Submission Author: Zeynab Ghorbani shemshadsara

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Background and Aim : Cerebellar ataxia (CA) is a wide spectrum of brain disorders associated with dysfunction of the cerebellum. Due to various forms of CA and their phenotypic overlap, it is very challenging to envisage an exclusive remedy to address CA efficiently and effectively.there are currently no FDA-approved treatments for ataxia.In this article, we want to review possible treatments
Methods : review of the literature SINCE OF 2016.
Results : Rehabilitation: Physical therapy, home exercise programs , occupational therapy, speech and swallowing therapy, weighted vests, orthotics, assistive equipment assessment, home safety evaluations, and driving evaluations can all improve patient and family quality of life and safety, reduce falls, and help maintain patient independence. Symptomatic treatment: There are several symptomatic drugs in development for cerebellar ataxia, all directed at improving Purkinje cell function.such as Troriluzole D-Serine, a potent N-methyl D-aspartate (NMDA)-type glutamate receptor co-agonist and an agonist for the glutamate receptor subunit delta 2, may lead to an improvement in cerebellar output in the form of motor learning and conditioning currently in testing for dexamethasone in ataxia telangiectasia Neuroprotective: The cascade of interacting molecular events that leads to selective nerve cell death in various neurodegenerative disorders the recnt study implies that curcumin and resveratrol might have neuroprotective effects to counteract neurotoxicity of 3-AP-induced ataxia. Stem cell therapies: Stem cell therapies for neurologic disease have had suggested mechanisms that range from neural replacement to nerve growth factor enhancement to use as a delivery vehicle for other therapy Also use as stem cell therapies such as dental pulp stem cell and Human Neural Progenitor Cells, have been shown to be quite efficient at alleviating many of the symptoms of the ataxic rat model Gene Therapy In genetic diseases where there is a reduction in a protein level (usually recessively inherited disorders), disease-modifying therapies can include protein replacement or other ways to manipulate the metabolic pathway involved (e.g., in lysosomal storage diseases, the use of substrate reduction therapies; in other disorders, strategies to reduce breakdown of the deficient protein)
Conclusion : It is unlikely that there will be a drug that will control all the processes ataxia and be approved as “the cure” for ataxia as for ataxia. There will most likely be a combination of agents, some disease-specific and some ataxia-specific, that will ultimately turn the neurodegenerative cerebellar disorders into treatable diseases.
Keywords : ataxia-treatment-cerebellum

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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subject: Motor Systems and Movement Disorders: Posture and Gait
Presentation Type: Poster

The effects of action observation training as an add-on rehabilitation strategy on the walking ability of patients with chronic stroke

Submission Author: Fatemeh Shamsi

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Background and Aim : Stroke is one of the most debilitating neurological disorders that commonly results in both cognitive and motor dysfunctions. Walking function is substantially impaired in large numbers of stroke survivors. Although the recovery of gait is one of the main goals of the patients with stroke, only 50 to 60% of the patients commonly reach this target using conventional rehabilitation programs. This study was aimed to evaluate the effects of action observation training, an almost new concept based on mirror neurons, as an add-on therapy to the conventional physical rehabilitation on the gait performance of the patients with stroke.

Methods : Ten patients with chronic stroke were recruited and randomly assigned to the control or the experimental group. Both groups received a daily 40-minute conventional physical training following a 12-minute observation training depicting exercises for the experimental group but nature pictures for the sham group. The patients' walking was recorded using a motion analysis system at baseline and after the 12-session intervention. Spatiotemporal parameters of gait and ground reaction forces were measured.

Results : The results showed significant improvements in all three measured spatiotemporal parameters of gait on the unaffected side of the patients in the experimental group, while in the control group, the recovery was observed only in the percentage of the stance phase. Regarding the affected side, the stride length of the patients in the experimental group was the only parameter with a significant amelioration. The components of ground reaction forces were not affected significantly

Conclusion : The results of this pilot study showed that the action observation training had the potential to improve the spatiotemporal parameters of gait of the patients with hemiplegia in the chronic phase of stroke.

Keywords : gait, chronic stroke, action observation, ground reaction force, spatiotemporal gait parameters

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 238
Abstract ID: 161
subject: Motor Systems and Movement Disorders: Motor Neurons and Muscle
Presentation Type: Poster

Effects of neurofeedback on associated behaviors in adults who stutter

Submission Author: Anusheh Mosanen mozaffary

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Background and Aim : Stuttering is a neurodevelopmental disorder that has negative impacts on communication, career, and social achievements. It is often accompanied by later-learned conditioned associated behaviors. These uncontrolled and automatic movements affect the quality of communication and considered as an index of stuttering severity. In this study, we tried to dampen these movements by increasing sensory-motor rhythms (SMR) in the motor strip by neurofeedback (NF) training. We adopted the SMR training protocol of ADHD treatment in NF and applied it 12 sessions on stuttered youngsters between the age of 10-15 years.
Methods : 6 students between the age of 10-15 years (M=14.2, SD=1.09) with developmental stuttering from the speech therapy ward in Ebnesina psychiatric hospital in Mashhad were selected. They did not have any neurological, psychological, or movement disorder. After signing agreement forms with their parents, they entered the study. The severity of stuttering was measured by a well-trained speech therapist by analyzing their speech samples according to SSI4 criteria. They were also assessed by NF technician via baseline protocol of neurofeedback in which amplitudes of the main brain waves were calculated in predetermined regions. After 12 sessions of SMR training on the C4 site, assessments were repeated and data were analyzed by SPSS statistics version 22.
Results : After 12 sessions of SMR training, associated behaviors and consequently, the severity of the stuttering significantly decreased ($P<0.05$) but the amplitude of SMR on C3, C4 and Cz had not changed.
Conclusion : As SSI4 is a valid and reliable test for determining the severity of stuttering, decreasing of stuttering in the subjects is undeniable and NF therapy may play a role in decreasing symptoms but it seems that for electrophysiological assessment, more precise techniques like EEG and QEEG are needed. Sham or other matched control groups are also crucial to eliminate placebo effects.
Keywords : stuttering, neurofeedback, SMR training

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BOOK of Abstracts

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Count: 239
Abstract ID: 187
subject: Motor Systems
and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

Optimum Feature Selection Using Grey Wolf Optimization based on a Float Optimizer for Motor Imagery Brain-Computer Interface

Submission Author: Marzieh Hajizamani

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Background and Aim : Motor imagery Brain-computer interface enables the users to control a system by imagining a movement of his or her limbs, without the need for physical activity. One of the challenges in improving the performance of motor imagery brain-computer interface systems is to overcome a large number of extracted features from EEG signals. Feature selection can reduce noisy data, overtraining effects, necessary storage, computational complexity, and can improve the performance of the classifier. Different feature selection methods have been used to achieve these goals. In this study, a new hybrid feature selection method is proposed. The proposed method employs a filter bank common spatial pattern for feature extraction and a grey wolf optimization algorithm based on a float optimizer to search and generate optimal feature subset in order to maximize the support vector machine classification accuracy.

Methods : In this study, Just 18 channels, containing MI area and cognitive area of the cortex needed to recognize the cue in the experiment, and o.5-2.5s of the trails are used. Then EEG signals are filtered by a filter bank common spatial pattern. In the FBCSP method, the 4-40Hz frequency range of EEG signals is bandpass filtered into multiple smaller frequency bands. In this study, nine same length-frequency bands and a sixth-order bandpass Butterworth filter are used. Then CSP algorithm is applied to each of these bands for feature extraction. Then all extracted features from different bands are integrated to makes the extracted features matrix. Then the proposed grey wolf feature selection algorithm is applied to the extracted features to select the optimum feature subset to maximize support vector machine classification accuracy.

Results : The performance of the proposed method is evaluated using BCI competition III, dataset Iva. The results are shown that the mean accuracy of 98.78 % is achieved with an increase of 2.76% in classification accuracy compared to other methods with the same dataset while using 10-fold cross-validation. Also, with an increase of 2.6% compared to other methods, the average classification accuracy of 90.93% is achieved while using data as small sample training.

Conclusion : The proposed method improves the classification accuracy, decreases the number of features, reduces standard deviation compared to state-of-the-art methods. So this proposed method is highly successful for improving the performance of MI-BCIs even with small training data.

Keywords : Brain-Computer Interface, Motor Imagery, Filter Bank Common Spatial pattern, Grey Wolf optimization.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 240
Abstract ID: 116
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

Aspects of the cannabinoid receprtors dysregulation in different stages of Parkinson's disease

Submission Author: Monavare Soti

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Background and Aim : The second most common neurodegenerative disorder is Parkinson's disease (PD) which impacts nearly six million people worldwide. It may be precipitated several environmental factors such as the use of pesticides and neuroleptic drugs, alcoholism, heavy metals, repetitive cranial trauma and cerebral ischemia. The piecemeal decrease of melanin-containing dopaminergic neurotransmission in the substantial nigra-pars compacta area (SNpc) of the basal ganglia leads to an over activation in the subthalamic nucleus. Depending on the degree of dopaminergic degradation in the substantia nigra, the patient experiences 5 different stages. These phases indicate certain motor and/or non-motor symptoms which require different treatments.

Methods : We used PubMed and Scopus database to compose the alternations of cannabinoid receptors in different stages of PD.

Results : Although, no definitive cure has been found to date, numerous studies conducted that the administration of cannabinoid ligands produced widespread dose-dependent alterations in brain function in the basal ganglia, hippocampus, cerebellum, amygdala, and striatum. The cannabinoid system is now known an important physiological modulator of various central nervous system processes including pain, appetite, motor function, synaptic plasticity, neuroinflammation, neural cell fate, and neuroprotection effects. A high interaction between cannabinoid and dopamine (DA) receptors in mentioned regions has been discovered. Growing bodies of evidence showed that in the presence of PD, the number and sensitization of cannabinoid receptors will change under different stages.

Conclusion : Therefore, many researchers have pursued the utilization of cannabinoid-based compounds in the treatment of parkinson’s. Here we ask how cannabinoids receptors alter through particular stages of Parkinson's.

Keywords : Parkinson; cannabinoid receptor; neurodegeneration

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 241
Abstract ID: 15
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

The relation between water channel AQP-4 and motor function: a review article

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Background and Aim : There are some pieces of evidence to support the role of AQP-4 in the motor function. The function of a motor neuron is highly dependent on the astrocytic environment. AQP-4 highly expressed at astrocytic end-feet and has an important role in astrocyte functional regulation and improve motor function. The other mechanism that may mediate the AQP-4 effect on motor function is modulating extracellular dopamine which is a very important neurotransmitter in the motor function. Evidence about the contribution of AQP-4 in the pathophysiology of different movement disorders such as amyotrophic lateral sclerosis (ALS), spinal cord injury (SCI), stroke, and Parkinson's disease further support the role of this channel in motor function.

Methods : we reviewed articles about the role of AQP-4 in motor function without restriction of time in the following database: Medline, Embase, PubMed, and google scholar.

Results : the participation of AQP-4 in mechanisms affecting motor function as DA neurotransmission, astrocyte function, and the role of this channel in different movement disorders and motor symptoms related to neurological disorders represents the important role of AQP-4 in the motor function but the direction of its effect depends on the disease model. For example, the AQP-4 knockout gene led to improve motor function in the ischemic stroke model while exacerbated motor performance in Parkinson's disease.

Conclusion : AQP-4 have an important role in motor function but further investigations about the role of AQP-4 in motor performance specifically the role of it in different motor symptoms and motor functions related to neurological diseases are required that should be addressed in future studies.

Keywords : aquaporin-4, motor function/or performance, neurological disease

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 242
Abstract ID: 212
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

Exosomes as a therapeutic tool in Parkinson's Disease

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Background and Aim : Parkinson's disease (PD) is a neurodegenerative disease produced by the selective death of dopaminergic neurons in the substantia nigra pars compacta.On the other hand, it has been shown that exosomes as extracellular vesicles can play a role in the pathogenesis, diagnosis and even treatment of various diseases including PD.They have been found to carry specific contents such as proteins, lipids, mRNAs, microRNAs and other bioactive ingredients. Therefore, exosomes are now considered as carriers of therapeutic agents.

Methods : Here, we review recent progress in the multiple roles of exosomes in PD, especially exosomes as specific drug delivery tool in PD. By searching a large number of literatures, here we review the available data concerning the biogenesis and applications of exosome delivery system in PD

Results : On the basis of these analyses, this paper summaries therapeutic application of exosomes in PD.

Conclusion : This article presents recent findings on the biogenesis and therapeutic applications of exosomes in Parkinson's disease

Keywords : Parkinson's Disease, Exosome, MicroRNA.

BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 243
Abstract ID: 205
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

Evaluating the survival of trabecular meshwork stem cells transplanted in an animal model of Parkinson's disease

Submission Author: Hossein Mostafavi

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Background and Aim : Parkinson's disease (PD) is caused by a selective loss of a group of dopaminergic cells in the pars compacta of the substantia nigra. One of the treatment approaches for PD is the use of stem cells. Studies have shown that the trabecular meshwork (TM) of the eye also have a group of mesenchymal stem cells. Since these cells are available and based on previous studies, they have the ability to differentiate into dopaminergic cells. Therefore, in this study, the survival of TM stem cells transplanted in an animal model of Parkinson's disease was studied.

Methods : In this experimental study, male Wistar rats were divided into three groups: control group, vehicle group, trabecular mesenchymal stem cells transplanted (TMSC) group. Rats received an injection of 6-OHDA into the right medial forebrain bundle to generate the PD model. Model confirmation was performed 14 days after injection of neurotoxin with apomorphine-induced rotation test. The TM stem cells were labeled prior to transplantation with a green fluorescent protein (GFP). TM stem cells were transplanted in the right striatum.The number of surviving tyrosine hydroxylase-immunoreactive dopaminergic neurons in the substantia nigra pars compacta were evaluated by immunohistochemistry.

Results : The apomorphine-induced rotation test showed that the injection of neurotoxin induced Parkinson's animal model. Significant increase of tyrosine hydroxylase expressing cells in the immunohistochemistry study revealed the survival of transplanted cells after two months of transplantation.

Conclusion : In the present study, it seems that TMSCs transplantation can survive until two months. Other studies seem to be able to identify the potential positive aspects of these cells in PD clinical and laboratory studies.

Keywords : Trabecular Meshwork Stem Cells, Parkinson's Disease, Thyrosine Hydroxylase (TH).

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 244
Abstract ID: 32
subject: Motor Systems and Movement Disorders: Other
Presentation Type: Poster

The Effect of Sertoli cells transplantation and Rapamycin pretreatment on the MCAO-induced brain ischemia in rat model

Submission Author: Sara Moradpour

Sara Moradpour[1]

1. sara moradpour

Background and Aim : Stroke is one of the most common causes of physical disability worldwide. Since mTOR pathway is the primary regulator of cellular response to nutrient availability during post-ischemic stress, administration of Rapamycin as a key modulator of the mTOR pathway could be a new therapeutic approach in neurological disorders.Cell therapy and treatments using trophic factors are some of the new methods to protect brain cells against damage. Specific properties of Sertoli cells (SCs) make them suitable for improving neurological disorders. Evaluation of the possible effect of Rapamycin injection and SCs transplantation on neurological deficit is the main aim of this study

Methods : In this experimental study, 75 male rats weighing between 250-300 g were purchased. The rats were divided into five groups, including: control, sham, Rapamycin receiving, SCs receiving, and Rapamycin+SCs receiving groups In this study, SCs were isolated from testis of rats and were transplanted into the right striatum by using stereotaxic surgery. After five days, ischemic surgery was performed and Rapamycin injection (300 mg/kg) was performed one hour before the surgery. Twenty-four hours after reperfusion neurological deficit were assessed and infarct volume, brain edema and blood-brain barrier permeability of cortex, the piriform cortex-amygdala (Pir-Amy) and striatum were evaluated.

Results : Results has represented that total neurological deficit scores are ameliorated significantly in SCs and Rapamycin+SCs co-administration groups compared to the control group. Infarct volume, brain edema, blood-brain barrier permeability assessments have illustrated significant reduction in some areas of brain in SCs, and Rapamycin+SCs receiving groups compared to the control group.

Conclusion : Pre-treatment with SCs transplantation and Rapamycin injection enhance neural survival during ischemia. Therefore, cell therapy in conjunction with Rapamycin injection could be an appropriate therapeutic approach.

Keywords : Brain ischemia, Sertoli Cell, Rapamycin, Neurological Deficits Scores, Brain Edema, Infarct volume

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 245
Abstract ID: 25
subject: Integrative system: Neurogenetics
Presentation Type: Poster

The effect of endogenous orexin and endocannabinoids on the cannabinoids type 1 receptor gene expression following thermal pain induction in the male rats

Submission Author: Nasim Naseri

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Background and Aim : Orexin A and B are hypothalamic neuropeptides which modulate different brain functions via orexin type 1 (OX1R) and orexin type 2 (OX2R) receptors. Previous studies have been revealed that the activation of orexin 1 receptor by orexin A induces the synthesis and production of endocannabinoids. The endocannabinoids stimulate the cannabinoid type 1 (CB1R) and cannabinoid type 2 (CB1R) receptors in the presynaptic neuron and activate the retrograde signaling which can alter presynaptic neuron signaling. Amygdala plays a key role in the pain modulation and the descending inhibitory pain modulatory pathway is initiated from the amygdala. Furthermore, the orexin type 1 (OX1R) and the cannabinoid type 1 (CB1R) are found in the BLA nucleus and involved in the antinociception. Therefore, the goal of the current study was to evaluate the endogenous orexin A-induced CB1 receptor gene expression alterations while thermal pain is induced by the tail flick and the hot plate tests.

Methods : In this study, tissue samples of the basolateral nucleus of amygdala prepared from male Wistar rats weighing 200 to 270 grams. 28 Rats were obtained from the animal facility of Baqiyatallah University of Medical Sciences. Animals were randomly divided into 4 groups including: control (intact animals), DMSO (intra-BLA injection of DMSO), SB334768 5 nM [SB 5; (OX1 receptor antagonist), intra-BLA injection of SB 5 nM], AM251 50 nM [AM 50; (CB1 receptor antagonist), intra-BLA injection of AM251 50 nM] groups. The cannulation into the BLA nucleus was performed for drug injections. In this research, the real-time quantitative PCR method was used to assess the effect of intra-BLA injection of SB334768 and AM251 on the CB1 receptor gene expression after thermal pain induction. For this purpose, immediately after thermal pain analysis by the tail flick and the hot plate tests, animals were anesthetized with 60 mg/kg ketamine and 7.5 mg/kg xylazine and the brain was rapidly removed. Then, the BLA was carefully dissected while being maintained on ice and held into the -80 ˚C freezer till onset of the Real-Time quantitative PCR reactions. Total RNA was extracted by Trizol reagent (Roche- Germany); then RNA was converted to cDNA by reverse transcription reaction with random hexamer primer and oligo D. Then, the mRNA level was evaluated by quantitative analysis of Real-Time PCR (Lightcycler96-¬¬ Roche- Germany).

Results : The results of this study showed that treatment of BLA nucleus with SB334867 decreased the relative expression level of the CB1R gene but it was not statistically significant. However, intra-BLA injection of AM251 did not show any significant effect on the relative expression level of the CB1R gene.

Conclusion : The results of the present study revealed that intra-BLA injection of OX1 and CB1 receptor antagonists (SB334867 and AM251, respectively) had no effect on the relative expression level of the CB1R gene. Therefore, neither endogenous orexin A nor endocannabinoids could alter the expression level of the CB1R gene.

Keywords : Basolateral nucleus of amygdala; cannabinoid type 1 receptor; Orexin type 1 receptor; AM251; SB334867; Real-Time Quantitative PCR

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 246
Abstract ID: 20
subject: Integrative system: Neuroendocrinology
Presentation Type: Poster

The protective effect of Iranian thyme honey on serum level of irisin following induction of chronic unpredictable stress in male rats

Submission Author: Forouzan Sadeghimahalli

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Background and Aim : Introduction: Chronic psychological stress induces insulin resistance. Insulin resistance is a preclinical manifestation that has various causes and disrupts glucose homeostasis. Irisin as a novel hormone is a myokin which reduces the insulin resistance and improved insulin sensitivity. Several studies showed that natural products such as honey showed hypoglycemic effects in diabetic conditions. Considering this effect of honey, we investigated the protective effect of Iranian honey on serum level of irisin following induction of chronic unpredictable stress in male rats.

Methods : Methods: The rats were divided to 4 groups: control (the rats had normal diet without receiving stress), stress (the rats received unpredictable stress for 21 consecutive days with normal diet), stress honey 0.2gr (stressed rats received honey 0.2gr/kg body weight for 28 dys), stress honey 2gr(stressed rats received honey 2gr/kg body weight for 28 dys). The treated rats were gavaged with different concentrations of honey a week before stress induction and continued until the end of experiment. Then at final of study rats were taken blood to measured serum irisin.

Results : Results: Our results showed that chronic unpredictable stress significantly decreased the serum level of irisin as compared to control group ($P<0.01$). Concentration of 0.2 gr of Iranian thyme honey increased irisin but insignificantly in comparison with stress group. Also the treated rats with a concentration of 2gr of honey markedly showed an increase in serum concentration of irisin ($P<0.05$).

Conclusion : Conclusion: At this study, chronic unpredictable stress reduced irisin while treatment of the stressed rats with two concentrations of honey could improve this decrease in irisin. So, maybe it can be said that honey with reduction of irisin improves the insulin sensitivity and in turn reduces the insulin resistance induced by chronic stress.

Keywords : Keywords: unpredictable stress, irisin, insulin resistance.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 247
Abstract ID: 45
subject: Integrative system: Neuroendocrinology
Presentation Type: Poster

the neurobiological effects- genetic, hormonal and electrophysiological assessments- of Muslim praying

Submission Author: Boshra Hatef

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Background and Aim : Actually Islamic teaching is usually neglect in the experimental studies. Several subjective studies showed the effect of Muslim praying (Namaz) to improve the mental health and cognitive abilities. But there are rare studies to show the objective and biological effect of Namaz.
Methods : In first part, Briefly 40 subjects participated in the study. They have generally health with no diagnosed systematic disease, they perform Namaz as duty program and did not experience new severe stressful event. They were asked did not eat anything one hour before test and perform wudu. They gave the 0.5 ml of saliva sample for measurement of cortisol and alpha amylase and the gene expression of BNDF and IL-6 before and after Namaz. The record of EEG and ECG was done pre and post and during of namaz. Each person was tested for three times and sessions were selected randomly. Once a typical prayer was performed. Another day prayer performed Namaz carefully and one day they prayed after cognitive task
Results : The response of persons to namaz was related to baseline of cortisol. Then the subjects classified to three groups base on normal range of cortisol that reported by kit. The persons had baseline cortisol lower or higher or in the normal range of cortisol. Those who were in the low cortisol group showed increase of cortisol after namaz whereas who were in high cortisol group showed inverse pattern and ones were in normal change showed no significant change. The alpha amylase after namaz increased only in ones that had it lower than 100000 U/L of enzyme. the gene expression of BDNF was significantly decrease after Namaz. In general Namaz effect on complexity of HRV signal not HR. though HR only increased after Namaz in the low cortisol group but the all groups showed increase of SD1 and SD2 of Poincare plot that a type of fractal dimension of signal and marker of complexity. During namaz all linear and non- linear features of HRV changed in all groups. The HR and features signed of sympathetic tone decreased in the bowing and especially in the prostration. And the other hand the complexity Indies of signal increased in these positions. The Namaz did not remained effect on the relative power of band frequency of EEG signals and some nonlinear features except the increases of Beta band frequency in open eye and decrease of it in close eye in the some channels increase of some complexity indices in the open. But there were significant change of linear and non-linear features between positions of namaz. The power of alpha increased in prostration and decreased in the bowing position. Inversely the high frequency (Gama and beta 3) showed the increase power in the bowing and decrease in the prostration position. Several analysis has remained yet

Conclusion : Our finding showed that only 4 rakat of Namaz changes some hormonal secretion, Gene expression, autonomic regulation and brain activity especially during Namaz.

Keywords : Namaz, Cortisol, BDNF, heart rate variation, EEG, non-linear features

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 248
Abstract ID: 132
subject: Integrative system: Other
Presentation Type: Poster

Sumac-loaded nano-phytosome improves locomotor activity in the 6-hydroxydopamine-lesion rat model

Submission Author: Seyedeh negar Setareh

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Background and Aim : Emerging evidence continues to demonstrate that disrupted redox potential and increased oxidative stress may play a key role in pathology of Parkinson's disease (PD). Sumac, a fruit rich in phenolic compounds, has been considered effective in oxidative damage caused by increased reactive oxygen species. Due to large molecular weight and intrinsic instability in some phenolic compounds, passage through biological membranes is very limited. Carriers such as nano-phytosomes are optimal systems for the oral absorption of encapsulated extracts. The aim of this study was to investigate the effect of sumac and sumac nano-phytosomes extracts on motor dysfunction in animal model of Parkinson's disease.

Methods : Rats were divided into five groups: control, positive control, 6-OHDA, 6-OHDA received 40mg/kg sumac extract and 6-OHDA received 40mg/kg sumac nano-phytosome by gavage .Rats in the positive control group had received 40mg/kg sumac nano-phytosome by gavage. The Parkinson's model was made by the stereotaxic surgery and unilateral injection of 6-OHDA (AP: +1 mm; L: +2.5 mm; D: +4.5 mm). In the treatment group, 6-OHDA was injected into the right striatum of rats then received 40mg/kg sumac extract and 40mg/kg sumac nano-phytosome by gavage. 3 week after administration of 6-OHDA, the animal was placed into the Narrow beam test for 2 min for measurement of locomotor activity.

Results : The results showed that injection of 6-hydroxydopamine increases total time taken to cross the beam ($p<0.001$) and treatment of sumac and sumac nano-phytosomes effectively decreases the total time taken to cross the beam compared with the 6-OHDA group ($p<0.01$).

Conclusion : The results highlighted the potential of sumac nano-phytosome as pharmacological tools, suggesting a promising nano-phytosomal formulation containing bioactive agents of sumac that could lead to improve motor dysfunction.

Keywords : : Parkinson's disease, locomotor activity, 6-hydroxydopamine, sumac, sumac-nano phytosome

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 249
Abstract ID: 159
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Poster

Interaction of Lysergide (LSD) and Metandienone with Monoamine Oxidase A Enzyme (MAO-A): A Molecular Docking Study

Submission Author: Shabnam Nadjafi

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Background and Aim : Lysergic acid diethylamide (lysergide, LSD), the known hallucinogen drug, and metandienone, an anabolic steroid, both are included in misused drugs list. The effects of drug abuse on different parts of the body including nervous system are the attractive subjects for researchers. In this regard, monoamine oxidase A enzyme (MAO-A) is one of the mitochondrial enzymes, involved in catalysis of the oxidative deamination of monoamines, and this enzyme has been used as a drug target in treatment of depression disorder. By the way, we proposed to compare the interaction of LSD and metandienone with MAO-A by blind molecular docking method; then, we compared the results with clorgyline that is an irreversible highly MAO-A selective inhibitor.

Methods : Protein structure of MAO-A (PDB ID: 2Z5Y), molecular structures of LSD (CID_5761), metandienone (CID_6300) and clorgyline (CID_4380) were selected from Protein Data Bank and PubChem. Chimera 1.8 was used to prepare the enzyme structure and building the mol2 files. Moreover, MGLTools 1.5.6, AutoDockTools-1.5.6 and AutoDock Vina (DOI 10.1002/jcc.21334) were used for docking process.

Results : According to the results of blind docking by AutoDock Vina, the best calculated affinity of LSD, metandienone and clorgyline in interaction with MAO-A were -8.8, -7.5, -4.9 (kcal/mol), respectively.

Conclusion : The results of the blind molecular docking revealed that LSD had better affinity to MAO-A than two other agents. Remarkably, clorgyline, an irreversible highly MAO-A selective inhibitor, had lower affinity in interaction with MAO-A in comparison with LSD and metandienone. The results of this study might present a function for LSD on MAO-A inhibition. Perhaps, MAO-A inhibition might be related to hallucinogenic action of LSD and the possible effects of metandienone on mood. Certainly, more experimental studies are necessary to validate the possible MAO-A inhibitory effects of LSD and metandienone.

Keywords : Lysergide, Metandienone, Monoamine Oxidase A Enzyme, Docking.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 250
Abstract ID: 169
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Poster

An unsupervised Spike Sorting Algorithm Based on template matching and K-Means.

Submission Author: Zahra Hedayati rad

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Background and Aim : In high density intra-cortical neural recording systems, each electrode records the neural activity of multiple neurons. In neural signal processing the process of assignment the detected spikes to their individual neurons which is so called spike sorting is very crucial. Up to now, various methods have been proposed for spike sorting which can be categorized as supervised and unsupervised algorithms. In this paper, an unsupervised algorithm based on template matching and k-means is proposed for spike sorting.

Methods : Proposed spike sorting approach comprises three steps: 1- spike detection: in this step, spikes extracted from neural signal using simple thresholding method, 2- spike alignment: in the second step, peak alignment method is applied to align spikes to a specific point. 3- Clustering: in the last step, spikes are assigned to their individual clusters. The proposed unsupervised method includes two phases. In the first phase, centroid of clusters are estimated as templates. For this purpose, silhouette algorithm is employed to obtain the number of clusters, and for estimation the template of clusters, k-means algorithm is applied. After calculation the number and the template of the clusters, template matching algorithm is performed to classify spikes in the second phase. In this step, the distance between an incoming spike and the templates is calculated using norm one criteria. The spike is classified to the cluster with minimum distance.

Results : The proposed algorithm was evaluated using a dataset with Signal to Noise Ratio (SNR) range from 3 to 15. The average sorting accuracy is 70% This algorithm presents acceptable accuracy for overlapping spikes too.

Conclusion : In this paper an unsupervised algorithm with two phases based on template matching and k-means was proposed. This algorithm has low computational complexity and can be used in real time applications.

Keywords : Spike sorting; template matching; k-means; silhouette

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BOOK of Abstracts

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Count: 251
Abstract ID: 165
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Poster

A Molecular Docking Study on the Interaction of Mitragynine with Monoamine Oxidase A Enzyme (MAO-A)

Submission Author: Nasrin Hosseini

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Background and Aim : Mitragynine is one of the important indole alkaloids that are supposed to be mainly related to kratom psychoactive effects. In fact, kratom is a kind of tree in the tropical jungles of Southeast Asia, and it is mentioned that kratom leaves could be effective in controlling withdrawal symptoms related to termination of opioid usage. However, both the US Drug Enforcement Administration and FDA have notified warning about the misusage of kratom. Also, the systemic effects of drug abuse have drawn attention of the researchers. Incidentally, monoamine oxidase A enzyme (MAO-A) is a mitochondrial enzymes that is involved in catalysis of the oxidative deamination of monoamines. By the way, MAO-A has been targeted as the site of action for the drugs, used in treatment of depression disorder. In this regard, we proposed to compare the interaction of mitragynine with MAO-A by blind molecular docking method; then, we compared the results with clorgyline, which presents irreversible highly MAO-A selective inhibitory effect.
Methods : Protein structure of MAO-A (PDB ID: 2Z5Y), molecular structures of mitragynine (CID_3034396) and clorgyline (CID_4380) were selected from Protein Data Bank and PubChem. The preparation of the enzyme structure and building the mol2 files were performed by Chimera 1.8. In addition, MGLTools 1.5.6, AutoDockTools-1.5.6 and AutoDock Vina (DOI 10.1002/jcc.21334) were used for molecular docking procedure.
Results : According to the results of blind docking by AutoDock Vina, the best calculated affinity of mitragynine and clorgyline in interaction with MAO-A were -7.9, -5.4 (kcal/mol), respectively.
Conclusion : Mitragynine had better affinity to MAO-A than clorgyline according to the results of the blind molecular docking. Since clorgyline is an irreversible highly MAO-A selective inhibitor, it can be notable that the affinity of clorgyline in interaction with MAO-A is lower than mitragynine. The results of this study might present a probable function for mitragynine in MAO-A inhibition. Also, MAO-A inhibition might be related to psychoactive effects of mitragynine. Further experimental studies can verify the probable MAO-A inhibitory effect of mitragynine.
Keywords : Mitragynine, Monoamine Oxidase A Enzyme, Docking

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 252
Abstract ID: 268
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Poster

Perceptual Decision-Making process in Alzheimer Patients in a Rapid Object Categorization Task.

Submission Author: Mohsen Shokri

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1. Institute of cognitive science studies

Background and Aim : Neurodegenerative disorders such as Mild Cognitive Impairment (MCI) and Alzheimer Disease (AD) can cause deficiency in cognitive performance. Studies have shown that patients with these disorders typically perform less well on perceptual decision-making tasks than do healthy people.

Methods : To assess the decline of decision-making process in people with MCI and AD, we examined the response time and accuracy values of participants in a rapid visual object recognition task in which people have to differentiate between animal and non-animal natural images. We use the Ratcliff's (1978) diffusion model to account for response reaction times, their distribution and accuracy.

Results : we observe a significant decline in the drift rate components of the diffusion model as the disease progresses. Furthermore the amounts of decision thresholds have increased significantly from healthy controls to the MCI group. But the difference between MCI and AD groups was not significant. we found no noticeable changes in non-decision time components between the three groups.

Conclusion : The current findings suggest that, as the disease progresses, participants become more conservative in their decision making and this appears relatively soon in the early stages of the disease. Additionally, patients seem to have difficulties in the rate of gathering information to reach a decision between the two given alternatives.

Keywords : Alzheimer disease (AD); Perceptual Decision-making; Drift-diffusion model

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 253
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Presentation Type: Poster

Does jumping during the information accumulation process occur?

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Background and Aim : Sequential sampling models have obtained very achievements in modeling cognitive processes underlying decision making in the last decade. The most popular mode of this family is the drift diffusion model. There are some successful sequential sampling models such as the EZ-diffusion model, linear ballistic accumulators, leaky-competing accumulator, and race diffusion model but perhaps, the drift diffusion model (DDM) is the most popular model that is utilized in information processing modeling. Similar to the other sequential sampling models, the DDM is based on evidence accumulation until reaching a threshold. In other words, DDM assumes that the information accumulation process starts from a point between two fixed boundaries and by recalling a piece of evidence, the accumulator steps toward the upper/lower boundary and by hitting one of these boundaries the accumulation process is stopped and the corresponding option is selected. Despite the good fitting performance of the DDM, it has some basic assumptions that could be incorrect. One of these assumptions is considering a Gaussian distribution for the information accumulation process. Recent findings show that considering Gaussian noise for the information accumulation process is not realistic in some cases and suggests the noise of the accumulation process has a power-low distribution. Stable distribution is a power-low distribution that is used in the Levy Flights model for this purpose. Considering a Stable distribution for the noise of the accumulation process causes some jumps during the information accumulation. The interpretation of jump during the information accumulation process is not clear at the moment and little studies have been done for this goal. In this study we are going to illustrate that does the jumping during the accumulation process have real psychological meaning or it is just a parameter that causes overfitting of the data. To this end, we have examined the effect of practice and feedback on within-trial variability (i.e. the parameter that defines jump size) against the between trial variability parameters.

Methods : In this study, we have reanalyzed the recorded data for the effect of practice and feedback on speed-accuracy tradeoff which is available on https://osf.io/8592y/. In order to test the hypothesis, four versions of the Levy Flights model have fitted on the behavioral data (i.e. with and without variability parameters) and a five layer convolutional neural network has been utilized to fit the Levy Flight models on the behavioral data.

Results : The obtained results show a decreasing pattern in jump size during the blocks whether the between trial variability parameters do not have any specific pattern.

Conclusion : Based on the obtained results, the jump size has a systematic decreasing trend but the other variability parameters do not have any specific pattern during the blocks. This fact shows that the alpha parameter is more than a parameter and that causes overfitting of the model and it should have some psychological interpretation.

Keywords : Sequential Sampling; Levy Flights; Decision Making; Jump; Drift Diffusion Model

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 254
Abstract ID: 90
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Poster

A generative model of effective connectivity dynamics

Submission Author: Tahereh Sadat Zarghami

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Background and Aim : Spatiotemporal patterns of functional coordination have non-random progression at rest, which has been the focus of dynamic functional connectivity (DFC) studies. Most DFC characterizations conceptualize these itinerant dynamics as excursion through a bounded repertoire of FC profiles (known as metastable states). Over the years, DFC studies have endorsed the cognitive and clinical relevance of FC dynamics at rest. However, the descriptive nature of DFC approaches precludes investigation of the neuronal mechanisms that give rise to neuroimaging observations. Disclosing neuronal mechanisms is the subject of effective connectivity (EC) analysis, which relies on a generative model of how neuroimaging data are generated, and a model inversion method that maps from neuroimaging observations to the underlying neuronal causes. The most established biologically-grounded EC approach is called dynamic causal modelling (DCM). To date, most DCM studies have estimated session-average causal influences, which do not account for within-session changes of EC. Here, we propose an augmented DCM to model (and infer) structured temporal changes in effective (and functional) connectivity during resting state.
Methods : We propose a generative model of neuroimaging data (based upon spectral DCM) that can account for structured changes in the effective architecture of neuronal influences over successive epochs, which subsequently produce metastable FC patterns. Specifically, we model itinerant effective connectivity using a hidden Markov model of switching states. Driven by endogenous fluctuations, the current EC state generates fast neuronal dynamics within each brain region, which can be described in terms of their cross spectral densities and induce predictable cross spectra at the hemodynamic level. Equipped with this generative model and some fMRI time-series, model inversion maps from the estimated cross spectra (of successive epochs of fMRI) to the sequence of EC modes that provide the best explanation for this data, in a Bayes optimal sense. We establish the model's face validity by simulating non-stationary fMRI time-series and recovering key model parameters using variational Bayes.
Results : The simulation results show that this Bayesian framework can characterize the non-stationary nature of neuroimaging data, and identify structured sequences of EC modes that generate transient FC patterns at rest. Specifically, this scheme can identify non-stationarity (or lack thereof) in connectivity dynamics, recover the optimal number of EC states, characterize the parametric nature of EC modes, and estimate the transition profile that governs the connectivity switchings. These attributes can be investigated both at the subject and group level, using Bayesian model comparison. Notably, model evidence facilitates the detection of commonalities and differences among subjects, for group analysis.

Conclusion : The present hierarchical extension to spectral DCM accommodates temporal fluctuations (over successive epochs) in directed neuronal couplings. We show face validity for this approach by simulating synthetic resting state fMRI data and performing variational model inversion to recover the underlying parameters of the model. Although these simulations rely on a generative model of fMRI data features, this scheme is a generic Bayesian framework that can be adapted to a variety of non-stationary time series under different generative models—for example, those of other neuroimaging modalities.

Keywords : Effective connectivity, Dynamic causal modelling, Metastability, Dynamic functional connectivity, Hidden Markov model, Variational Bayes

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 255
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subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Poster

The modeling of state-dependent memory with artificial intelligence approaches

Submission Author: SEYED PARSA MADINEI

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Background and Aim : State-dependent memory (SDM) is the term that explains recalling particular information occurs most accurately when a subject (humans or animals) is in the same physiological state of consciousness as it was at the time of memory formation. The present study was defined to construct an accurate model that predicts memory formation under drug abuse. The model assists scientists in the field to appraise their new hypotheses and inspire for further experiment-design without neither animal usage nor colossal amount of time and money consumption.
Methods : The primary dataset for the present modeling was generated by combining the data extracted from five pieces of our previous researches (published in neuroscience journals) that elucidated the influences of various states of consciousness in memory retrieval. Throughout these studies, multiple drugs including morphine, nicotine, MDMA, ethanol, mecamylamine, S-WAY100135 (an 5-HT1A receptor antagonist), ACPA/AM251 (cannabinoid CB1 receptor agonist/antagonist), WIN 55,212-2 (a cannabinoid CB1/CB2 receptor agonist) and dextromethorphan were injected into the different brain sites during post-training and/or pre-test phases of passive avoidance learning task to measure memory consolidation or retrieval in male Wistar rats. Each row in the data-set represented a single experiment on an animal that a combination of drugs with specific doses was administered via systemic or intracerebral injections. The last column of each row was the latency of the passive avoidance task in the range of 0 - 300 seconds. Trials were randomly split into train-set and test-set with a portion of 0.8-0.2; correspondingly, the models were fed with the train-set. Various machine-learning algorithms, including Linear Regression, Support-Vector Machine, Decision Tree, Random Forrest, K Nearest Neighbor, and Neural Networks were applied to establish the most accurate model to predict the latency of the passive avoidance task. The hyper-parameters of every utilized algorithm were tuned by using grid-search functions and illustrative plots.
Results : The best performance of a model was observed in a compound voting model that returned the mean value of latency output from “Support-Vector,” “Decision Tree,” “Random Forrest,” and “K-Nearest Neighbor” regressors. The voting model attained the R2 score of 0.803 on the train-set and 0.781 on the test-set. Moreover, the model reached the Root-Mean-Squared-Error of 49.36 on the train-set and 55.39 on the test-set for predicting the latency of passive-avoidance learning task.

Conclusion : Since the latency numbers can be inferred as a binary conclusion of amnesia or solid memory, and by assuming that latency of 150 seconds or less is referring to amnesia, the model has an accuracy of 93% in predicting amnesia or memory based on injections' doses. Even though the data-set included diverse states of consciousness, additional data from other related articles can lead the model to an even more complex model that appreciates the interactions between added states more precisely to assist scientists multifacetedly.

Keywords : Memory-formation ; Cognitive-neuroscience-modeling ; Artificial-intelligence ; Machine-learning

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 256
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subject: Computational Neuroscience: Computational Tools
Presentation Type: Poster

classification of EEG signals for SSVEP baced BCI

Submission Author: Mahya Sanati

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Background and Aim : The Brain-Computer Interface (BCI) is a system that enables individuals who cannot use their existing muscles and nervous system due to various reasons to communicate with the environment. EEG based Steady-state visual evoked potentials (SSVEP) have gained wide research interest due to their high signal-to-noise ratio and higher information transfer rate compared to other BCI techniques. Therefore, SSVEP plays a major role in practical applications.

Methods : In this paper, SSVEP for four classes of stimuli dataset prepared by Marcin Kołodziej is used . EEG signals were recorded in which the participants were looking at a flickering LED at four distinct frequencies (5, 6, 7 and 8). First, channels which contain SSVEP signals in cortex are separated and then feature extraction was performed using Fast Fourier Transform and Power Spectral Analysis from four frequency bounds. The power of the signal at each of the mentioned frequencies and their adjacent points and their second harmonics were calculated which results in a set of feature vectors of size 4. Finally, these features were applied to multiclass Support Vector Machines classifier. Furthermore, the error is estimated using k-fold cross validation.

Results : The proposed method offers a higher detection accuracy. The average accuracy of the diagnosis and classification was 93.4% in channels.

Conclusion : Authors presented research on checking the usability of classifiers and feature extraction method for recognizing the EEG signal during the stimulus. The results show that it is possible to recognize Steady-State Visually Evoked Potential using Support Vector Machine (SVM) and proposed method for calculating spectral power as feature vectors.

Keywords : SSVEP, EEG, power spectral density, k_fold cross validation, BCI, SVM multiclass.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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subject: Computational Neuroscience: Computational Tools
Presentation Type: Poster

An Efficient Spike Sorting Approach Based on CUDA

Submission Author: Nazanin Ahmadi Dastgerdi

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Background and Aim : Advances in microelectrode arrays have enabled neuroscientists to record neural signal from thousands of neurons simultaneously, which carry a significant amount of information about how the brain works. The process of separating the activity of individual neurons and assigning each spike to its corresponding neuron, called spike sorting, is of great importance for use in neuroscience researches and clinical purposes. Real time processing plays a crucial role in practical applications such as neural prostheses, where computation time needs to be efficient enough to handle real time communication. GPUs are massively parallel processors providing high-density computations which take advantage of better computational speed compared to CPUs. CUDA is a parallel programming language and the structure of it allows to program both GPU and CPU. Parallel portions of the algorithm are executed on GPU as kernels and the other portions are executed on CPU. This way, a computationally intensive spike sorting algorithm can be processed more quickly for use in prosthetic applications.

Methods : The employed sorting approach benefits from principal component analysis (PCA) algorithm for feature extraction and K-means algorithm for classification, and a parallelized model of each algorithm is utilized in our GPU implementation. The PCA used here is based on covariance matrix. To calculate the covariance, the input matrix consisting of detected spikes, is first copied to GPU and using the parallel matrix computation ability of GPU the covariance matrix is calculated, then it is copied back to CPU. The feature matrix is calculated in CPU and GPU gets the CPU output results to complete the feature extraction process. After the PCA is done, GPU executes the K-means algorithm with two defined kernels. The first one calculates the Euclidean distance between each point to the cluster centers and finds the minimum distance to assign the point to its corresponding cluster. The second one updates the cluster centers while using a tree structure to calculate the summation of the points in each cluster. Two defined kernels run until the algorithm converges.

Results : To evaluate the performance of the proposed implementation, a synthetic intra-cortical neural data with a sampling rate of 24 kHz was used. After detecting the spikes, 30 channels were generated, each consisting of 1024 spikes. The 48-point spikes were put in the columns of the input matrix, then the input matrix were fed to the spike sorting implementation. The results of three different implementations of the employed spike sorting including spike sorting based on MATLAB, spike sorting based on C++, and spike sorting based on CUDA

has been evaluated and it has been seen that within the same accuracy, the implementation based on CUDA is about 5 times faster than the implementation based on C++, and is about 31 times faster than the implementation based on MATLAB.

Conclusion : An efficient spike sorting approach based on CUDA has been implemented. It has been shown that the implementation based on CUDA provides a significant speed up than the implementation based on CPU due to its heterogeneous computing ability.

Keywords : spike sorting; PCA; K-means; CUDA

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BOOK of Abstracts

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Count: 258
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subject: Computational Neuroscience: Computational Tools
Presentation Type: Poster

Image Processing Methods in the Evaluation of Morphological Lesions of Acute Disseminated Encephalomyelitis (ADEM)

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Background and Aim : Acute disseminated encephalomyelitis (ADEM) is a demyelinating disease that presents with acute inflammation and demyelination of the central nervous system (CNS) in a monophasic manner. ADEM is more commonly seen in children and young adults and rarely occurs in middle-aged or elderly adults that often follows viral infections, bacterial infections, or vaccinations . The clinical findings in ADEM include acute neurologic decline that typically presents with encephalopathy, with some cases progressing to Multiple Sclerosis. The variety ways of diagnosis is focusing on neuroimaging techniques, such as computed tomography (CT) or magnetic resonance imaging (MRI), allows one to confirm Acute disseminated encephalomyelitis (ADEM) diagnosis and determine the location and the number of lesions. The purpose of this study was to design and introduce a diagnostic software for ADEM in MRI images.

Methods : This research was a software designing study that many MRI images that used in the past articles were analyzed with the software designer. The designed software was in MATLAB . In this study ; we used image processing techniques such as ; noise removing , edge denotation , separate of area with high density and contrast increasing for analysis ,evaluating of output histogram . Based on the evidences from this analysis, radiologist could have the best diagnosis of the lesions. The results of all lesion diagnostics were analyzed and compared in the pathologist's report .

Results : Designed software enables the present MRI images analyzes them pixel by pixel and histogram. This software in addition evaluates the areas of lesions and shown them without viewer diagnosis completely . Final results of diagnostic software analysis showed high sensitivity .

Conclusion : Contemporary assessments of morphologic and physiologic traits of lesions by a computer aided diagnostic software can improve the radiologist's precision and decrease reading time of bulk images of MRI. Using this software to increase the accuracy of the lesions detection is suggested.

Keywords : MATLAB; MRI images ; Acute Disseminated Encephalomyelitis;Brain MRI

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 259
Abstract ID: 174
subject: Computational Neuroscience: Computational Tools
Presentation Type: Poster

Investigating the Effect of Reference Electrode Location on EEG Signal Recording

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Background and Aim : The information present in the electroencephalogram (EEG) signal includes not only the function of the brain but also the state of the whole body. The first step in analyzing these signals is to minimize the artifacts (which may be of a physiological or technical nature) in them using various techniques before or after recording. One of the factors required to reduce the artifact during recording is to select an appropriate position of the reference electrode. The aim of this study is to investigate the effects of reference electrode position selection on the EEG signal's quality.

Methods : EEG signals in two eye-closed and eye-open resting states were recorded from a healthy person with different reference electrode positions (right mastoid, left mastoid, Fz and Cz) and compared by considering the alpha band power as a feature. Alpha band activation was selected because it is usually observed in resting-state conditions and in most individuals with considerable amplitude and does not display major changes due to cognitive status in a short period. After examining the data distribution, Friedman statistical test and Sidak post-hoc test were used for statistical analysis.

Results : Results have shown that the alpha band power in the eye-closed resting state for all reference electrodes is greater than the eye-open resting state. In addition, when the reference electrode is positioned in the Cz and Fz locations, the alpha power in the neighboring channels is decreased (P-value <0.05) compared to mastoid locations.

Conclusion : According to the results, the presence of a reference electrode on the scalp greatly decreases the alpha power of the nearby channels. Thus the left or right mastoids seems to be more suitable places for positioning the reference electrode than the electrodes on the scalp. This can be due to the fact that the electrical potential of these locations can be considered to be approximately neutral.

Keywords : Reference Electrode; Electroencephalogram Signal Recording; Artifact; Alpha Band Power

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 260
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subject: Computational Neuroscience: Computational Tools
Presentation Type: Poster

Early diagnosis of Alzheimer's disease using statistical analysis of volumetric T1-MRI data

Submission Author: Zamani Jafar

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Background and Aim : Alzheimer's disease (AD) is the most prevalent form of dementia, with biomarkers including amyloid-β and tau deposition, white matter degeneration and grey matter atrophy. Brain alterations due to AD occur even before clinical and radiological manifestations of the illness. The accurate diagnosis of AD, especially in the early phase, mild cognitive impairment (MCI), is very important for timely therapy, disease modifying drug development, and possible delay of the disease. It has been suggested that this axiomatic atrophy can be an efficacy marker of neurodegeneration, as measured with structural magnetic resonance imaging (sMRI). The anatomical MRI measures, such as cortical surface area and subcortical volumes, are used to discriminate AD patients from healthy controls. Finding the brain ears that can be discriminate early MCI patients from healthy controls is a challenge for early diagnosis and treatment of AD.

Methods : We compute brain areas' volume and thickness in cortical and subcortical brain regions from T1-weighted magnetic resonance imaging (T1-MRI) data acquired by the Alzheimer's disease Neuroimaging Initiative (ADNI). Participants included 41 patients with early MCI, and 47 healthy control subjects. Brain structural T1-weighted 3D images were acquired for all subjects. The data was preprocessed and processed to obtaining grey/white matter volume using SPM12. Statistical methods were used to select features that could discriminate between early MCI patients from healthy controls.

Results : Our results revealed six brain areas that could discrimination between early MCI patients from healthy controls: left Occipital Fusiform Gyrus (P_Value=0.00020), right Superior Medio Frontal (P_Value=0.000796), right parieto-occipital cortex (P_Value=0.00186), left Inferior Occipital (P_Value=0.00202), right Superior Frontal (P_Value=0.00306), Left Precuneus (P_Value=0.00314). Our results indicated that changes in the occipital cortex can be an early indication of AD. This is in agreement with previous studies suggesting that impairment in MCI patients is correlated with atrophy in the lateral occipital cortex.

Conclusion : We compared the performances of single modality T1-MRI for discrimination of the early MCI patients and healthy participants. Our results showed that biomarkers based on MRI can be used for early detection and diagnosis of AD.

Keywords : Alzheimer's disease, mild cognitive impairment, MRI, atrophy, segmentation.

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kerman University of Medical Sciences
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BOOK of Abstracts
9th Basic and Clinical Neuroscience Congress
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Count: 261
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subject: Neurorehabilitation and Regeneration: Psycho-cognitive Rehabilitation
Presentation Type: Poster

Neuromodulation of nervous systems affecting hippocampal activity

Submission Author: Sahar sadat Nazm Bojnouri

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1. -
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Background and Aim : Neuromodulation is the regulation, modification, and modulation of nerve cell activity that can be used to treat a variety of conditions, including stroke, Parkinson's, and depression. Some hippocampal synapses change function over time, which reinforces the obvious example, and is the durability of synapses in memory and learning.

Methods : The existing study is a review. To access articles related to the purpose of the study, in library and digital resources, Persian Publications Bank, Pubmed Medical Sciences Database and Google Scholar with keywords; Neuromodulation, energy dopamine system and hippocampus are performed. Only 10 related Persian and English articles based on keywords from 2010 to 2019 were retrieved and reviewed.

Results : A review of articles related to neurotransmitter trials such as dopamine can alter a set of neurons by altering a neuron. In fact, the disciplinary flexibility of anger in working memory and executive actions can be enhanced if the dopamine system has a positive effect.

Conclusion : Evidence from the use of neuromodulatory systems can improve hippocampal function.

Keywords : Neuromodulation, energy dopamine system, hippocampus

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 262
Abstract ID: 300
subject: Neurorehabilitation and Regeneration: Occupational Therapy
Presentation Type: Poster

Effect of a visual tracking intervention on attention and behavior of children with Attention Deficit Hyperactivity Disorder

Submission Author: Shiva Janmohammadi

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Background and Aim : attention deficit hyperactivity disorder is characterized by several cognitive and behavioral problems such as inattention and impulsivity, abnormal control of eye movements and relocation, visual fixation and visuospatial perception. There is a link between core motor functions such as oculomotor function and cognition to the extent that the oculomotor system acts as a mediator between the motor and cognitive functions. Therefore, the effects of eye-tracking intervention were investigated on attention in these children.In the present study we used an appealing play format to increase the motivation of children with ADHD to completing the exercise. Because of motivational issues, we could not use a more constrained and rigid paradigm in these children. Therefore, eye movement practices and their inhibitory role in behavioral function was investigated in children with ADHD.
Methods : The subjects were diagnosed with ADHD according to DSM-IV-TR by a child psychiatrist. The child psychiatrist used a clinical interview and also a semi-structured questionnaire based on DSM-IV-TR, an IQ test, and the K-SADS-PL (Persian version) questionnaire for examining comorbidity. Finally, a total of thirty-nine participants (boys), were recruited and randomized using numbered containers toreceive conventional occupational therapy plus visual eye-tracking exercises (20 subjects), referred to as the experimental group, and only conventional occupational therapy (19 subjects), referred as the control group. Subjects in both groups were evaluated using the Wechsler Intelligence Scale for Children, the parents' form of Conner's Parent Rating Scale, the Continuous Performance Test (CPT-II) and the Test of Visual-Motor Skills (TVMS) before and after the intervention
Results : Thirty nine boys with ADHD, 6 to 10 years of age were recruited and randomized to receive current occupational therapy (control group), or occupational therapy accompanied with eye-tracking exercises (experimental group). They were evaluated using the Conner's Parent Rating Scale, the Continuous Performance Task-2, and the Test of Visual-Motor Skills-Revised before and after the intervention. Significant improvements in the mean scores of cognitive problems (F=9/22), coping behavior (F=6.03) and hyperactivity (F=9.77) were detected in the posttest between the two groups ($p<0.05$). Furthermore, in the Continuous Performance Test scores, detectability (F=5.68), omission errors (F=17.89), commission errors (F=19.45), reaction time (F=8.95), variability (F=7.07), and preservation (F=6.33) showed significant differences between control and experimental groups ($p<0.01$).

Conclusion : In conclusion, using a rehabilitation program based on Modifying anti-saccadic movements in children with ADHD influences their cognitive ability.and reduces symptoms of hyperactivity and response inhibition in these children.According to the present study, using eye movement practices leads to decreasing and inhibition of unwanted saccadic eye movements. It seems that visual tracking interventions modify behavioral symptoms according Conner's Parent Rating Scale. Considering the relationship between the prefrontal cortex and the oculomotor system and inhibition, it seems that the use of oculomotor exercises may reduce hyperactive behavior because it involves similar brain regions. visual-motor skills or eye tracking is a promising therapeutic exercise to improve symptoms in children with ADHD.

Keywords : Eye movement; saccades; Attention Deficit Hyper-Activity disorder; response inhibition

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BOOK of Abstracts

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Count: 263
Abstract ID: 156
subject: Neurorehabilitation and Regeneration: Speech and Language Therapy
Presentation Type: Poster

The Prevalence of dysphagia in Parkinson's disease: A meta-analysis

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Background and Aim : Dysphagia is a harmful feature in Parkinson's disease (PD). The prevalence of dysphagia in these patients has been reported very differently in related texts. Better insight into the prevalence of dysphagia in PD may improve its early detection and effective rehabilitation treatment. so, the aim of this study was to estimate the prevalence of dysphagia in PD by meta-analysis.

Methods : The PubMed, Web of Science, and Google Scholar databases were searched. We used a random-effects model to combine the prevalence rates reported in the studies. We conducted the meta-analysis using the comprehensive meta-analysis software. All designs of the studies were included.

Results : Nineteen studies entered the meta-analysis phase; the estimation of the overall prevalence of dysphagia in PD was 48% (95%CI:39.6-57.8) in all the 19 studies, which proved statistically heterogeneous ($p < 0.001$). Also, based on these studies, there was a significant relationship between the prevalence of dysphagia and the age of PD patients ($r = 0.64$; $p=0.001$).

Conclusion : Based on the results of this meta-analysis, dysphagia occurs in nearly half of the community-dwelling PD patients. This is proven that dysphagia is common in PD. So should was programed for early evaluation and diagnosis of dysphagia on time. Because the treatment of dysphagia at an early age and in the early stages of Parkinson's disease is easier and faster and will avoid the unfortunate consequences and problems caused by dysphagia.

Keywords : Prevalence; dysphagia; Parkinson's disease; meta-analysis

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BOOK of Abstracts
9th Basic and Clinical Neuroscience Congress
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Count: 265
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subject: Neurorehabilitation and Regeneration: Speech and Language Therapy
Presentation Type: Poster

Acceptability, Reliability, and Validity of the Stroke and Aphasia Quality of Life Scale-39 (SAQOL-39) across languages: A systematic review

Submission Author: Seyed Abolfazl Tohidast

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Background and Aim : Measurement of the quality of life in people with stroke and aphasia has recently gained considerable attention. So, the present systematic review aimed to explore the acceptability, reliability, and validity of the Stroke and Aphasia Quality of Life-39 (SAQOL-39) scale across languages.

Methods : We employed a systematic search of the online databases including MEDLINE (Pubmed), Science direct, Web of science, Psychinfo, Scopus, ProQuest, Google Scholar, and Cochrane library published between 2003 and 2019. We used PRISMA guidelines for conducting and reporting this review. Subsequently, screening of the titles and abstracts, extraction of data as well as the appraisal of the quality of relevant studies were carried out.

Results : The initial search returned 8185 studies. Subsequent screening and study selection processes narrowed them to 20, needing detailed review. Forward-backward translation scheme was the preferred method for translation of the SAQOL-39 from English to other languages. Mainly, the socio-cultural and linguistic adaptations were performed in the translated versions. Most versions of the SAQOL-39 showed high test-retest reliability and internal consistency. However, several psychometric properties including the validity and responsiveness were seldom reported in these versions.

Conclusion : The SAQOL-39 scale showed high acceptability, and reliability across the languages reviewed in this study. Future translations may additionally focus on reporting the validity and responsiveness of the instrument.

Keywords : Stroke and Aphasia Quality of Life; SAQOL-39; Validity; Reliability; Translation.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 266
Abstract ID: 131
subject: Neurorehabilitation and Regeneration: Other
Presentation Type: Poster

Improved Visual Function in a Case of Ultra-low Vision Following Ischaemic Encephalopathy Using Transcranial Electrical Stimulation; A Brief Report

Submission Author: Mohammad Javad Gholamzadeh

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Background and Aim : Cerebral Visual Impairment (CVI) is amongst the core pathological entities in paediatric visual abnormalities which is often resulted from hypoxic-ischaemic brain injury. Such an injury results in profound visual impairments which severely impairs patients' quality of life. Given the nature of the pathology, treatments are currently limited to rehabilitation strategies such as transcranial Electrical Stimulation (tES) and Visual Rehabilitation Therapy (VRT). Here, we discussed an 11 year-old girl with cerebral visual impairment who underwent concurrent VRT, tES, and pharmacological therapy.

Methods : She was suffering from ultra-low vision following occipital ischemic insult and ischemic optic neuropathy since the age of 6 following a bout of prolonged seizure attack. The eye examination before treatment showed decreased Visual Acuity (VA). The basic Quantitative Electroencephalography (QEEG) with concurrent photic stimulation was performed before stimulation and Based on that, the therapy protocol was formulated. The treatment protocol comprised five sessions of transcranial Direct Current Stimulation (tDCS) in the morning followed by transcranial Alternating Current Stimulation (tACS) in the afternoon over five consecutive days. In addition, she was prescribed nootropics and eye

supplements including sodium valproate, Modafinil, and PRESERVISION 3™. post-tES QEEG and visual acuity were assessed to evaluate the improvement. her follow-up involved the use of prescribed drugs, a self-training eye exercise named Fit Eye, and mirror-tracing task over a 60-day follow-up period. She completed the questionnaire of Vision-Related Quality of Life (VRQOL) before treatment and after two months follow-up.

Results : Background EEG findings were fronto-central theta coherence in 'lights on' state, FP1 beta-2 activity in 'lights on' state, increased bioccipital high-beta, and low-gamma amplitudes at 25 Hz photic stimulation. The post-tES QEEG suggests an uptrained gamma activity in the primary visual cortex and enhanced beta-3 coherence within the visual network. The analysis revealed that post-tES values in specific regions of interest (mean= 1.22, SD= 0.11) was significantly higher than those of the pre-tES (mean= 2.70, SD= 0.05) ($p = 0.028$, CI=95%). Moreover, our study showed that the current spectral density z-score (25 Hz) within the visual cortex and z-score coherence value represented by the connectivity network was increased following five sessions of tES. The VA of right eye turned out to gain strength by 75% upon 6 months follow up. On the other hand, left eye's VA was gained by 200% from baseline upon 6 months follow up. LVQOL score indicated amelioration in her quality of life (baseline score= 45/125; post-treatment score= 98/128 respectively). The observations were consistent with subjective improvement and family satisfaction.

Conclusion : Given its beneficial effects, tES may be sought as a potential add-on modality when strategizing VRT. This was an initial step towards developing inexpensive, effective, and available rehabilitation protocols for resource-limited settings. Further studies i.e. randomized sham-controlled clinical trials are needed not only to examine the efficacy of tES in CVI, but also to define and suggest the most appropriate neurostimulation protocols in children with similar neurovisual profile.

Keywords : Cerebral visual impairment; Visual Rehabilitation Therapy; tDCS; tACS; Visual Function; Neurorehabilitation

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 267
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subject: Neurorehabilitation and Regeneration: Other
Presentation Type: Poster

The effect of transcranial direct current stimulation on the functional skills of Parkinson's disease

Submission Author: Azadeh Abedinzadeh

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Background and Aim : Transcranial direct current stimulation (tDCS) is a form of noninvasive brain stimulation that transmits a weak electrical current usually ranging from 1 to 2mA between two electrode sponges, the anode and cathode, placed on the subject's scalp. Since the end of the1990s, tDCS has received clinical interest as a technique able to significantly modify brain functions and clinical application of this technique was reported for the first time in March 2005. In recent years, tDCS has been intensively investigated as a treatment in a variety of neurologic disorders including Parkinson's disease (PD). It has been used extensively for cognitive, language and behavioral treatments and shown to be a viable and safe treatment method for many conditions such as working memory, verbal fluency, and quality of life. The present study critically reviewed the evidence of the applicability and efficacy of tDCS for the treatment of PD patients.

Methods : A review of the literature concerning the application of tDCS in PD was conducted using the databases MEDLINE (PubMed), Science Direct, Scopus, Web of Science, Web of Knowledge, and Cochrane. Relevant studies were identified by three reviewers based on screened titles/abstracts and full texts.

Results : Of the papers found based on the keywords, 10 papers were selected. Studies in this area were conducted in the form of original research, RCT and clinical study, the number of tDCS presentation sessions ranged from 1 to 10 sessions and the duration of each session was between 7 to 20 minutes. The most stimulated areas in the studies were the dorsolateral prefrontal cortex (DLPFC) and the primary motor cortex (M1) and the other areas stimulated were the supraorbital area (SOA), premotor cortex (PMC), temporoparietal cortex (TPC) and orbitofrontal Cortex. In these studies, the effects of tDCS have been assessed on the cognitive, behavioral, communication/linguistic, and motor function as well as brain signals of PD patients

Conclusion : Although research in the field of application of tDCS for PD patients is few and limited to recent years, these studies have shown a positive effect of this method on improving cognitive, behavioral, communication/language, motor, and brain functions in PD patients and this method can be used to improve various functional aspects of these people due to its non-invasive nature.

Keywords : tDCS, Non-invasive brain stimulation, cognitive rehabilitation, PD, functional skills

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 268
Abstract ID: 53
subject: Social Neuroscience: Self perception and regulation
Presentation Type: Poster

Gender differences in Moral Judgment

Submission Author: Negar Karimi

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Background and Aim : Moral decisions, evaluative decisions that a perceiver makes in response to a breach of the moral norm, are at the core of this analysis. The dual-process theory proposed by Greene and colleagues argues that our brains contain several mechanisms that drive moral intuitions, one dedicated to cognitive reasoning, the other to emotional processes. The evidence for the dual-process theory comes from the neuroimaging studies. The results of studies showed that brain regions associated with emotions, such as the medial prefrontal cortex, were more active with deontological judgments in support of this theory, whereas brain regions associated with regulated cognitive processes, such as working memory and abstract thinking, were more active with a consequentialist response. Usually, people expect that moral judgments are unbiased and have strict rules. Previous research, however, the question of gender differences in moral judgment has been an issue of controversy and debate both in social psychology and in neuroscience. The question is whether, and if so, how exactly gender differences are manifested in moral judgment? In this work, we aim to contribute to this ongoing debate about what exactly these supposed gender differences appear in high conflict dilemmas that participants have to choose between two courses of action-one being characteristically consequentialist, the other being characteristically deontological.

Methods : 120 participants (62 man, 58 woman) were screened for a history of neurological disorders, brain injury, or developmental disabilities. The subjects responded to 7 high-conflict personal moral dilemmas in which killing a single person would save several others. Using a 7-point scale ranging from 1 (completely not appropriate) to 7 (completely appropriate) to inclinations toward consequentialist and deontological judgments.

Results : Data analysis with independent sample t test illustrated that utilitarian responses to personal moral dilemmas were significantly more frequent in men than in women ($t(158) = -1.03$, $P=0.01$).

Conclusion : The findings in our research were that gender-related differences in moral judgment affect dilemmas involving emotionally salient behavior. Under these conditions, men more often make a ‘‘pragmatic’’ option regardless of placing others at risk of danger or injury. The prevalence of results can be attributed to gender differences in empathic capacity that make women more resistant to decisions that, despite being rationally feasible, directly cause physical or moral pain.to other individuals. Female moral reasoning, therefore, appears to be aimed at preventing hurting other people, putting high importance on social relationships, and fulfilling the expectations of other people. Male moral thought, on the other hand, relies on the abstract concepts of justice and equality and on an individualistic stance. The present study also discusses a more general and long-standing question of moral psychology, namely the degree to which moral judgments are produced by a faculty dedicated specifically to moral cognition or to the interaction of cognitive processes within the general domain (i.e. not dedicated specifically to moral cognition) cognitive processes. Current research suggests that at least one form of domain-general mechanism, gender, plays an influential role in moral judgment and, more significantly, that its influence is philosophically partisan.

Keywords : moral judgment, gender difference, dual process

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BOOK of Abstracts

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Count: 269
Abstract ID: 176
subject: Social Neuroscience: Interpersonal processes
Presentation Type: Poster

Society Does Not Compensate Your Generosity in the Case of Resource Limitation, Even if It Could

Submission Author: Ali Shiravand

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Background and Aim : Studying human prosocial behavior is one of the most important research topics in social cognitive sciences. Society has many resources that allocate to people based on their effort and many other factors. One candidate factor can be the amount of altruistic behavior of people. It is important to know as a society how we judge and encourage prosocial behavior. This may be caused by many factors like society's tendency to encourage and promote prosocial behavior. One of the main questions that remained unanswered from the former studies is how society allocates resources to people based on their altruistic behavior.

Methods : Strategic social games have been widely used to understand people's preferences and decision mechanisms. In this study, we developed a third-party reward game based on the Dictator Game to see how people reward prosocial behavior and study whether available resources affect that. The paradigm has two different versions: limited resources (low-reward) and abundant resources (high-reward) as a social reward. The main design point here is that the third-party divides money between them, and there is no cost for him. 200 subjects (100 for each version) participated voluntarily in the experiment. The subjects answered the questions in pen and paper, and they were students from the University of Tehran and filled the consent form prior to the experiment.

Results : The results show that when people are in the dictator's role, they give more money to the receiver in the high-reward version relative to the low-reward one. Besides, although people as the third-party give more to generous dictators, they are mostly ignorant toward the money they have lost for generosity. So if the resources for sharing are higher, they gain more money in sum, but in limited resources, third-parties do not compensate for the dictator’s loss even if they could do it.

Conclusion : Just giving more to generous people is satisfactory in society's mind, and they ignore compensation of generosity. Although people as the third-party give more to generous dictators, they are mostly ignorant toward the money they have lost for generosity. This highly depends on society's resources. It is in line with the ignorance toward the future consequences of one's decisions. It can explain why people cooperate less when there are limited resources in their environment.

Keywords : Altruism, Dictator Game, Social Decision-Making, Cooperative Behavior

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 270
Abstract ID: 1
subject: Social Neuroscience: Interpersonal processes
Presentation Type: Poster

The role of Raloxifene on neurological score, BDNF level and brain edema after traumatic brain injury in Female mice : the role of Negative and positive MMP

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Background and Aim : raloxifene(a selective estrogen receptor modulator), a selective estrogen receptor modulator, has successfully been used to treat several animal models of brain injury, but the underlying mechanisms remain unclear. This study was undertaken to evaluate the effect of raloxifene on the toll-like receptor 4 (TLR4)- and nuclear factor-κB (NF-κB)-related inflammatory signaling pathway and secondary brain injury in rats after subarachnoid hemorrhage (SAH).the effect of continuous immobilization stress on anxiety-like behaviour, spatial learning and memory, and a forced swim test in NMRI male mice was examined in the present study. the plasma cortisol changes and the brain-derived neurotrophic factor (BDNF) were also evaluated.
Methods : Adult male Sprague-Dawley rats were divided into four groups: (1) control group (n = 28); (2) SAH group (n = 28); (3) SAH + vehicle group (n = 28); and (4) SAH + raloxifene group (n = 28). All SAH animals were subjected to injection of autologous blood into the prechiasmatic cistern once on day 0. In SAH + raloxifene group, raloxifene was administered intraperitoneally at a dose of 5 mg/kg at 2 h, 12 h, and 36 h after SAH. In the first set of experiments, brain samples were extracted and evaluated at 48 h after SAH. In the second set of experiments, the Morris water maze was used to investigate cognitive and memory changes.
Results : We found that treatment with raloxifene markedly inhibited the protein expressions of TLR4, NF-κB and the downstream inflammatory agents, such as interleukin-1β (IL-1β), tumor necrosis factor-α (TNF-α), interleukin-6 (IL-6), and intercellular adhesion molecule-1 (ICAM-1). Administration of raloxifene following SAH significantly ameliorated the early brain injury (EBI), such as brain edema, blood-brain barrier (BBB) impairment, and clinical behavior scale. Learning deficits induced by SAH were markedly alleviated after raloxifene treatment.
Conclusion : Post-SAH raloxifene administration may attenuate TLR4/NF-kappaB-mediated inflammatory response in the rat brain and result in abatement of the development of EBI and cognitive dysfunction after SAH.
Keywords : : raloxifene, Early brain injury, Learning deficits, Subarachnoid hemorrhage, Inflammation

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BOOK of Abstracts

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Count: 271
Abstract ID: 167
subject: Social Neuroscience: Interpersonal processes
Presentation Type: Poster

The role of Dual Mechanism Control in Paranormal Beliefs: a study based on Behavioral Evidence, Brain Stimulation and Identify Biomarkers by QEEG

Submission Author: Abdolvahed Narmashiri

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Background and Aim : The purpose of this study was to investigate the role of dual mechanism control(DMC) in paranormal beliefs(PB) using behavioral evidence, brain stimulation, and identify biomarkers of PB by three studies. Given the critical role of cognitive control in executive functions and the brain's functioning in supernatural beliefs, we have studied the first study compared to DMC in groups' paranormal beliefs. After that, in the second study, we sought to enhance cognitive control in paranormal believers using tDCS. Finally, This study compared the QEEG patterns in paranormal believers groups to identify biomarkers of PBS.

Methods : study1: In the first study, the participants were screened based on the revised version of Paranormal beliefs(PBS) and, based on the median score, were divided into two groups with mild paranormal believers group(MPB) and severe paranormal believers group (SPB) and were assigned to groups and were compared with AX-CPT tas. The results showed that the interactive effects of trials (AX, AY, BX, BY) and groups on the Index of reaction time and accuracy were statistically significant. The results showed that the SPB group had a deficit in Proactive Control(PC).

Results : study2: In the second study, 72 participants were screened based on the questionnaire. They were based on the mean score above 51.50 to three groups of rDLPFC, rIFG, and Sham were randomly assigned. Based on the international system 20-20, in the rDLPFC group, the anode electrode was located on the F4 and the cathode electrode on the FP1. In the rIFG group,

the anode electrode was located on FC6, and the cathode electrode on the FP1. in the sham group, the sham artificial stimulation was used. The stimulation for both groups, with 2 mA intensity (for twenty minutes) and during task execution and in one session, was performed. The results showed that the interactive effect of trials(AX, AY, BX, BY) and groups (rDLPFC, rIFG, Sham) on the response rate and accuracy were statistically significant in the PC strategy. study3: Eight paranormal believers and 8 skeptics were selected in this study. The severity of paranormal beliefs was identified by the total score on the Revised Paranormal Belief Scale(RPBS). The absolute/relative power of beta and gamma bands was analyzed at resting-state EEG during eyes opened.The independent t-test showed that the paranormal believers showed lower absolute power on the beta band ($t14=2.983, p=0.01$) and gamma band ($t14=2.033, p=0.05$) than did the skeptics.

Conclusion : In general, concerning the findings, paranormal believers' the PC strategy has low. It can be enhanced using tDCS and lower absolute gamma, and beta powers can be used as a potential trait marker of the paranormal believers. NOTE: This article is extracted from the first author's Ph.D. thesis and is presented to participate in the Premier of neuroscience Ph.D. thesis and the Ahvazi Prize.

Keywords : dual mechanism control ; tDCS ; paranormal beliefs ; QEEG.

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BOOK of Abstracts

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Count: 272
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subject: Social Neuroscience: Other
Presentation Type: Poster

Decision confidence increases in social environment

Submission Author: Maryam Rafiei

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Background and Aim : Human beings usually have a degree of confidence about their decisions that provide an assessment of one's choices. It shows how much a person believes that one' decision probably is going to be correct. Confidence in perceptual decisions has a reverse relation with task difficulty and a direct relation with decision accuracy. Research has found that interaction with others increases decision confidence, but it's not clear whether the presence in a social environment and observing others' decision without interaction can change confidence.

Methods : Here, we recruited 12 healthy participants which trained to do a random dot motion (RDM) task. In RDM task, people have to choose the direction of moving dots and we added a few social cues as social information in RDM task. In individual design, participants just saw RDM stimulus; in social design they faced either RDM stimulus with social information or only perceptual RDM stimulus. In both settings, they announced their decision and confidence simultaneously.

Results : People increased their confidence in social design compare to individual design even they didn't receive any social information in social environment. They decided in social environment slower than individual setting, but the accuracy of decision in each design were not significantly different.

Conclusion : People decide more confident in social environment. It can provide some insights about how confidence decisions can be improved in different domains; psychology treatments or marketing techniques.

Keywords : Perceptual decision making, confidence, Random Dot Motion task, social influence

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

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subject: Social Neuroscience: Other
Presentation Type: Poster

compare sleeping between human and birds

Submission Author: Farzaneh Saboohi

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Background and Aim : sleeping for human is very important and many researchers attention it because human try to have a better life in their society. special in children is very necessary because a good environment has a positive necessary for their educational. they learn their parents and they see every things in their parents what they do on their life. in birds is very powerful than human and in a amusing world in animals special bids in zebra researches use EEG in human and they compare with birds. different illness are MS, Epilepsy in birds and human and other point about pet therapy. children don't use drugs very much a new way for curing. painting is a good method about children between grandfather and his grand child abut animals farms and he tells story with paint a old way in japan second warm in wolrd. children will have good feeling before sleeping.

Methods : about human used EEG in brain duration in sleeping and Alfa and Gama show in shapes high or not higher. In Zebra used EEg duration their sleeping but other method about experiencing genes Watson Map. equestriennes used many peoples about their knowledge about animal behaviors and drugs. i shewed them with excel soft ware and other figures of review articles.

Results : in Birds are better than human about their try to have health special balance in sleeping because birds sleep duration nights and they must have balance in their flying .

Conclusion : Mari montesseri a famous psychologist in Italian showed us about children a good environment genetically in their education. that is like animals special in birds like they will take PTS or otism...they don't have a good immigration duration Outism. birds look after their children and they can find foods because some of them sleep at night and other not.

Keywords : brain, animal behavior, Epilepsy

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 274
Abstract ID: 328
subject: Social Neuroscience: Other
Presentation Type: Poster

Predicting Marital Boredom based on Sense of Cohesion, Intolerance of Uncertainty and Dark Personality Traits in wives of people who Addicted

Submission Author: Neda Moradpour

Neda Moradpour[1], Ali Khademi[2]

1. Msc in Psychology General
2. Associate Professor of Psychology, Islamic Azad University of Urmia,Urmia

Background and Aim : The aim of this study was to investigate the prediction of marital boredom based on a sense of cohesion, intolerance of uncertainty and dark personality traits in the spouses of addicted people

Methods : The statistical population of the present study consists of all the spouses of male addicts who referred to addiction treatment centers and clinics in Urmia for treatment in the autumn quarter of 1398 who were under treatment at the time of the study. 150 wives of addicted men treated through available sampling method were selected as the research sample and Pinnes Marital Boredom Questionnaire (1996), Antonovsky Cohesion Questionnaire (1978), Freeston et al. Uncertainty Intolerance Scale (1994) and Scale The dark personality traits complemented Johnson and Webster (2010). Data were analyzed by Pearson correlation coefficient and multiple regression with SPSS 19 software

Results : the results showed that there was a negative and significant relationship between the sense of cohesion and marital boredom in the spouses of addicts ($P < 0.01$). There is a positive relationship between intolerance of indecision and marital boredom ($P < 0.05$) and between psychopathic personality ($P < 0.05$), narcissism ($P < 0.01$) and Machiavellian personality ($P < 0.01$) with marital boredom and There was meaning. also, the results of multiple regression showed that the research variables were able to predict 20% of the variance of marital boredom.

Conclusion : according to the results, which showed that the sense of cohesion, intolerance of uncertainty and dark personality traits in the spouses of addicted people have a significant role and can predict it; Based on the results of the study, it is possible to reduce the marital boredom of addicted spouses.

Keywords : marital boredom, sense of cohesion, intolerance of uncertainty, dark personality traits

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BOOK of Abstracts

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Count: 275
Abstract ID: 40
subject: Social Neuroscience: Other
Presentation Type: Poster

Neuroprotective effect of Nano emulsion containing salvia on CA1 region of hippocampus following transient global ischemia/reperfusion in rat

Submission Author: Mahsa Abdolrahimkhan

Mahsa Abdolrahimkhan[1], Nazanin gharehkhani[2]

1. Islamic Azad University Tehran Medical Sciences
2. Islamic Azad University Tehran Medical Sciences

Background and Aim : One of the important reason for disability and death in the world is stroke, In treatment of stroke, there is a narrow therapeutic time window, so just 3% to 5% of stroke patients benefit of critical treatments and stroke may induce weakness, paralysis or numbness, and loss of sensation in the hands and feet of one side of the body ,speech, visual field and balance disorder are also another symptoms of stroke .Some parts of brain are more sensitive in stroke such as neurons in CA1 region in hippocampus . Salvia officinalis L. (Sage) is largest genus plant in Labiatae/Lamiaceae family that grow all over the world specially in Middle East and Mediterranean areas. Salvia is a rich source of antioxidant and anti-inflammatory compounds that it can reduce the damage of stroke in braine due to decrease the edema and neurological disorders. Nanoemulsions are defined as oil droplets, with particle sizes comprised between 10 and 100 nm. To our knowledge the brain ischemia and reperfusion is a very important issue in medical emergency, so The aim of this study was to investigate the effect of nano emulsion containing salvia on pyramidal cells of CA1 region of male Wistar rat hippocampus following transient global ischemia / reperfusion.

Methods : This study has two main parts: in vivo and in vitro. In in vivo part, we treated wistar rats (in 8 groups: control, ischemia, 3 dose of alcoholic extracts of salvia and 3 dose of aqueous extracts of salvia) for 21 days and then ischemia and reperfusion was done, finally apoptosis gene and neuron death was assay in hippocampus and in in vitro part we cultured hippocampus neurons (control, 3 dose of aqueous extracts of salvia and 3 dose of alcoholic extracts of salvia) and then cell viability was assayed.

Results : Based on our result, 100 mg/kg aqueous extracts of salvia decrease the apoptosis gene expression and increase the anti-apoptosis gene expression in compare to ischemia ($p<0.05$) and decrease the neuron death in CA1 region in hippocampuse ($p<0.05$). The neurons viability that culture with salvia was more than ischemia group ($p<0.05$)

Conclusion : Ischemia can damage to brain specially hippocampus, and salvia extract can decrease the brain damage after ischemia and the best dose in our research was 100 mg/kg, so the protective effect of salvia may be dose depend.

Keywords : Salvia, Hippocampus, Ischemia /Reperfusion

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 276
Abstract ID: 21
subject: Social Neuroscience: Other
Presentation Type: Poster

The effects of functionalized electrospun PLGA scaffold for nerve tissue engineering

Submission Author: Reihaneh Seyedebrahimi

Reihaneh Seyedebrahimi[1], Shahnaz Razavi[2], Jaleh varshosaz[3], Maliheh Jahromi[4]

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3. Department of Pharmaceutics, School of Pharmacy and Novel Drug Delivery Systems Research Center, Isfahan University of Medical Sciences, Isfahan, Iran
4. Department of Anatomical Sciences, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

Background and Aim : Despite of the pivotal role of Schwann cells (SCs) in peripheral nerve regeneration, lack of an available source has prompted researches for Schwann-like cells transdifferentiation.

Methods : This study suggests an effective method for tuning the surface of aligned poly (lactic-co-glycolic acid) (PLGA) nanofibers to enhance attachment and proliferation of h-ADSCs on the scaffold through coating of laminin. Following the preparation of align and random nanofibers, characterization of biofunctionalized PLGA with laminin was evaluated. Afterwards, experimental groups were investigated for the cell adhesion and proliferation by DAPI staining and MTT assay, respectively.

Results : Results of MTT assay showed the significantly higher proliferation of h-ADSCs on laminin-functionalized scaffold compared to PLGA scaffold ($p \geq 0.05$). Additionally, the presence of laminin was improved cell adhesion as compared to the control group. ($p \geq 0.05$).

Conclusion : Therefore, use of biofunctionalized PLGA nanofibers can be a promising strategy in nerve tissue engineering.

Keywords : Adipose derived stem cells, Poly lactic-co-glycolic acid, scaffold, Laminin.

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 277
Abstract ID: 33
subject: Special topics: Converging Technologies (NBIC: Nano-Biotech-Information-Cognitive), euroscience and Nanotechnology, Neuroscience and Biotechnology, Neural Tissue Engineering
Presentation Type: Poster

Preparation nano emulsions containing rosemary and examination of it effect on nerve cells of the CA1 hippocampus male rat following transient pervasive ischemic/ reperfusion Evaluation the protective

Submission Author: Nazanin Gharehkhani

Nazanin Gharehkhani[1], Mahsa abdolrahimkhan[2], Mahdi javad zadeh[3], Mohsen javadzadeh[4]

1. Azad Medical Sciences university
2. Azad Medical Sciences university
3. Azad Medical Sciences university
4. Azad eslamshahr university

Background and Aim : Background: Stroke is an important cause of mortality and morbidity worldwide but effective therapeutic strategy for the prevention of brain injury in patients with cerebral ischemia is lacking. Regard to know the mechanism of injury, the use of plant medicine can help, rosemary is a plant that is accessible and unexpansive that have strong antioxidant and anti-inflammatory effects, that may be helpful.

Methods : This study had two main parts: in vivo and in vitro. In in vivo part, we divided wistar rats into 8 groups (control, ischemia/reperfusion, 3 dose of alcoholic extracts of rosemary and 3 dose of aqueous extracts of rosemary), after 21 days of rosemary administration the ischemia and reperfusion was done, finally apoptosis gene and neurons death were assayed in hippocampus and in in vitro part we cultured hippocampus neurons (in 7 groups: control, 3 dose of aqueous extracts of rosemary and 3 dose of alcoholic aqueous extracts of rosemary) and then cell viability was assayed.

Results : We demonstrated that200 mg/kg aqueous extracts of rosemary decrease the apoptosis gene expression and increase the anti-apoptosis gene expression in compare to ischemia ($p<0.05$) and decrease the neuron death in CA1 region in hippocampus ($p<0.05$). The neurons viability in culture group with 200 mg/ml alcoholic aqueous extracts of rosemary had no significant difference with control.

Conclusion : Present study demonstrated that cerebral ischemic tolerance induced by rosemary extracts pretreatment, the alcoholic aqueous extracts of rosemary in 200 mg/kg dose was more effective to protectof hippocampus

Keywords : Rosemary, Hippocampus, Ischemia /Reperfusion

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 278
Abstract ID: 317
subject: Special topics: Neuro-aesthetics, Art and Creativity
Presentation Type: Poster

Neuro-Aesthetics: Affect and Perceive the Hidden Nature of Objects Throught Painting, Based on Gilles Deleuze's Standpoint

Submission Author: Ehsan Nematollahi

Ehsan Nematollahi[1]

1. Young Researcher and Elite Club , Arsanjan Branch , Iran ; Islamic Azad University , Arsanjan Branch , Iran.

Background and Aim : Art experience is an axis where the Aesthetics and Neuroscience can productively interpenetrate without betraying their core values or identity, but by expressive to each other from circumstances of disciplinary strength and integrity. The interdisciplinary glance to modern art, and the clinical aspects of art, on the other hand (including Neuro-Aesthetics), site the art studies and researches in a special status that duplex the transition magnitude from analysis based on the symbolic expression of conceptual representations. The analysis of the color formal struggles of painting must be desolated by abandoning the image symbolic content and investigating the colors actual expressing methods in the painting; and As a result, achieve to expressing the concept of "other" (instead of the object) and the perception of virtual ideas in colors.
Methods : The artistic dynamics of “Gilles Deleuze's” standpoints for defining the concept of “Difference and Repetition”, in addition to paving the way for newly artistic experiences, also become a potent implement in artistic and Neuro-Aesthetic's analysis. The path to aesthetic experiences through the mechanism of “difference and repetition” is paved By preventing the synthesis of narrative and temporal sequences. Since the creative power of difference is virtualizing in the concept of “Differential”, and on the other hand, by the loss of the meaning of dualities (in the horizon of ideas based on “differentiation”), the “soul/body” and “thought/seeing” dualities will no longer have meaning, So this study turned to virtual ideas in structural elements of the artwork Instead of dealing with actual forms, and studied the painted images beyond form and idea, as an extract from the interaction of forces influencing the Affect determinant of virtual ideas.
Results : The results of this study, while answering the basically questions like: How to come up with virtual ideas in color by analyzing the figures on the canvas, The Role of Colors in the retreat of the recognition unity for the art composition, How to provide creative analysis to recognize paintings through the legacy of specific painting by Francis Bacon (a 20th Century Painter) and how transitioned from “color-structure” to “color-force” in his artistic standpoint, and etc.; also proved the unique hypotheses of this study, such as: Avoiding the equivalence and equality of the figural and figurative from abstraction, How to present new analysis of figuration in painting by accepting the transition from visual and action painting stereotypes, How ratios and elements of difference are applied in the absence of the cryptographic system (instead of reproducing phenomenological relationships) , and etc.

Conclusion : Based on the results of this study, and By focusing on the aesthetic experiences resulting from the gap between the consciousness and transcendental empiricism, are much Neuro-Aesthetics hints to discuss; like: How to identify the mechanisms that related to paired and separated figures on a painting canvas, evaluation of the painting figures deformation in order to match real Images to Human Body, Determining the coordinates of modern paintings based on Affect-Colorism, and etc.

Keywords : Neuro-Aesthetics ; Color-Structure ; Color-Force ; Affect-Colorism ; Transcendental Empiricism

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020
Virtual Congress

Count: 279
Abstract ID: 207
subject: Special topics: Neuro-aesthetics, Art and Creativity
Presentation Type: Poster

Interpretation Complexity: The Theoretical Critique of Neuroaesthetics

Submission Author: Gooya Bozorgi

Gooya Bozorgi[1]

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Background and Aim : Neuroaesthetics requires interpretation problem to explain aesthetic experience. The interpretation of the problem is complex, requiring the understanding of theoretical levels of thinking/imagination. The purpose of this article is to illustrate this blind point, Where Neuroaesthetics does not say much.

Methods : Aesthetic experience is a gestalt totality of the interaction between top-down orienting of attention and bottom-up perceptual facilitation. The method in this article, is based on the theoretical analysis of some of Claude Monet's paintings. It is intended that, Aesthetic experience is a gestalt totality of the interaction between (i) top-down orienting of attention and, (ii) bottom-up perceptual facilitation.

Results : The findings of this research reveal the Neuroaesthetics, works well in (i) description, but poor in (ii) description, because theoretical levels of mind in the aesthetic perceptions it is decisive. Attention to theory as an independent element in aesthetics studies is key and interpretation is dependent on theory. The theory is present in all the aesthetic experiences and (i) description is dependent on those.

Conclusion : The results show that neuroaesthetics remains an open issue due to the complexity of interpretation.

Keywords : theory; aesthetics of theory; the neuroaesthetics of theory; Interpretation; Theoretical Critique; Complexity;

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 280
Abstract ID: 142
subject: Special topics: Neurophilosophy
Presentation Type: Poster

Vagus nerve stimulation in the treatment of nervous system disease

Submission Author: Somayeh Nazari

Somayeh Nazari[1], Seyedeh Masoumeh Seyedhosseini[2], Fateme rahimi shourmasti[3], Hamed ghazvini[4], Rahele Rafaee[5]

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Background and Aim : The vagus nerve, the longest cranial nerve and major component of the parasympathetic nerves system, connect the central nerves system to cardiovascular, respiratory, gastrointestinal, immune, endocrine systems and involved in the maintenance of homeostasis by controlling these systems. Vagus nerve stimulation (VNS) is an approved treatment for refractory epilepsy, treatment-resistant depression, and cluster headache. Currently, there are two methods for vagal nerve stimulation: a) invasive vagal nerve stimulation, requires surgical implantation of pulse generator under the anterior chest wall and warped electrodes around the cervical vagus nerve, b) non-invasive transcutaneous vagal nerve stimulation. This study aimed to review therapeutic effect of VNS in Neuropsychiatric and neurological disorders.

Methods : : A comprehensive review has been conducted since 2000 by searching PubMed, Scopus and Web of science services for clinical studies in English with the search keywords: invasive vagus nerve stimulation, non-invasive vagus nerve stimulation, neurological diseases and neuropsychiatric diseases.

Results : Invasive stimulation of the vagus nerve improved mood and daily alertness, reduced number of antiepileptic drugs required, and improved behavioral outcomes in children and also, reduce the number of seizures in drug-resistant adult patients with epilepsy. VNS affected the nucleus of solitaries' tract- locus coeruleus systems and modify cerebral activation patterns that mediate the anticonvulsive and antidepressant mode of actions. A possible neuroprotective mechanism of VNS is not completely elucidated. It is reported that the vagal stimulation mediated release of several neurotransmitters, especially noradrenaline, and also changed local blood flow in subcortical and cortical brain structures. VNS also activate anti-inflammatory responses, and therefore has potential to provide an effective treatment approach for

neurodegenerative diseases associated with neuroinflammation, such as Alzheimer's and Parkinson’s disease. Non- invasive vagal stimulation significantly reduce the number of headache days in migraine patients.

Conclusion : VNS consider to be an effective tool for the improvement of psychiatric and neurological disorders, but further studies need to elucidate its mechanism of actions.

Keywords : : Neuropsychiatric diseases; Neurological diseases; Non- invasive vagus nerve stimulation; Invasive vagus nerve stimulation; nervous system disease

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 281
Abstract ID: 59
subject: Special topics: Neuro-Marketing, Neuro-economics
Presentation Type: Poster

Empirical study of the "what is beautiful is good" cognitive bias: A study on consumer purchasing decisions

Submission Author: Mohammad Taghi Saeedi

Mohammad Taghi Saeedi[1], Mohammad Alli Nazari[2], Farshad Fatemi[3]

1. PhD Student, Cognitive Neuroscience Division of Cognitive Neuroscience, Department of Psychology, University of Tabriz
2. Professor, Division of Cognitive Neuroscience, Department of Psychology, University of Tabriz
3. Assistant Professor, Faculty of Management & Economics, Sharif University of Technology

Background and Aim : For more than a decade, researchers of Neuromarketing in the field of decision-making neuroscience have been studying the limitations, cognitive biases, and stereotypes of consumers. The purpose of this study was to examine the cognitive bias of "what is beautiful is good" on consumer's purchasing decisions. The appearance of the product is one of the most important factors in the consumer's decision to purchase a product, however, functional information might lead to a breach of expectation in the purchase decision.

Methods : In order to investigate this phenomenon, 40 female undergraduate students of Tabriz University were selected by convenience sampling method. In this study, 140 wearable gadgets in four categories of beautiful products and standard products, and congruent and incongruent functional information were presented, using eevok software, in order to investigate the purchase decisions of the participants.

Results : Repeated measurement analysis shows that when congruent information is provided, participants have a faster response time to a purchase decision task. The interactive effect of product appearance and information was also significant.

Conclusion : The results of this study show that information processing can be as effective as the appearance of the product. These results complement previous and recent findings on "what is beautiful is good" cognitive bias and suggest that functional information is important in interacting with product appearance in the purchasing decision process.

Keywords : cognitive bias, marketing, Neuromarketing, decision making, product

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 282
Abstract ID: 60
subject: Special topics: Neuro-Marketing, Neuro-economics
Presentation Type: Poster

INVESTIGATING ROLE OF SOCIAL VALUE ORIENTATION IN INDIVIDUAL'S DECISION-MAKING EVIDENCE FROM THE ULTIMATUM GAME

Submission Author: Mohammad Taghi Saeedi

Mohammad Taghi Saeedi[1], Mostafa Hosseini Deldoost[2]

1. Department of Psychology, Division of Cognitive Neuroscience University of Tabriz Tabriz, Iran
2. Department Quantitative Psychology and Economics University of Warsaw Warsaw, Poland

Background and Aim : In the conventional literature of economics, human preferences are defined based on the self-interest and independence from social contexts and norms. In practice, however, human behaviors and actions are seriously influenced by social norms (such as fairness and beliefs) individual's and mutual behavior of others. Given that people's social values influence the decision-making process, this study aims to investigate individual's social value orientations in hypothetical and real conditions. Therefore, the triple-dominance measure and the ultimatum game were used to determine the social orientation of individuals in hypothetical and real conditions, respectively.

Methods : In total, 64 students were randomly selected from faculty of Economics, University of Tabriz, and the required data were collected within two weeks in January 2019. Since the data were not normally distributed, the nonparametric techniques of Chi-square and Wilcoxon were employed to explain the correlation between the research variables.

Results : The results showed that the assumptions were very simplistic and misleading in the neoclassical economic paradigm. Individual's personality traits and social value orientations affected their decisions, so that about 75% of people chose the equality strategy, instead of maximizing their self-interest. The results also indicated a significant difference in the strategies and decisions of the proposers in both hypothetical and real conditions.

Conclusion : In other words, in addition to self-interest, the behavior and action of the dividers in the ultimatum game were a function of personality and environmental factors.

Keywords : Behavioral Economics, Ultimatum Game, Social Value Orientation, Hypothetical Conditions, Real Conditions

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 283
Abstract ID: 73
subject: Special topics: Art and Neuroscience
Presentation Type: Poster

Mosque Design according to cognitive effective elements

Submission Author: Reza Khoeini

Reza Khoeini[1], Boshra Hatef[2], Hedayat Sahraei[3]

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Background and Aim : Every things related to Islam are important for people in our society that has the Islamic culture. The mosque as an important place for the planning, coordinator and ordering the Islamic culture and distribution of it in society, then should be notice by several scientists. On the other hand, the stress system is very important in controlling the function of various organs and in case of disrupted stress system, it may cause various neurological, cardiovascular, gastrointestinal and immune diseases. The visual input has a critical role to control stress. For this reason, it is important for governments that make the policies to provide solutions for management of environmental stress. Then building the mosques with familiar, calming, safe with good feeling design could help our people to connect with it and activate it.

Methods : In this project, a mosque was designed that considered the following points to reduce stress, increase attention and induce a good feeling. The three dimension animation of this masque was also made.

Results : The characters of this masque were: Observation the golden ratio and symmetry and pairing of components and designs of the mosque, including domes, doors and wall patterns Observation of curved lines next to angled lines and do not use broken lines Observation the warm and cold colors together. The warmer color was used in upper, and the colder color was used in lower parts. Not use metal facades and gray or red colors Using the sensory combination to induce more pleasure and good feeling, such as the simultaneous use of the color combination of windows and colored lights and good sound and good smell Designing a porch-shaped entrance at the beginning of the mosque to create a space where a person can mentally separate from the outside environment and enter the spiritual environment of the mosque before entering it. After the entrance, the mosque had a courtyard with a beautiful pool to quick access to water and its convenience, as well as creating a space with fragrant flowers and birdsong and a quiet space for preparation. The yard is benefit for people to meet and talk outside the nave and a place for easy access to other rooms. Popular rooms were put around the yard, and items such as bathrooms, kitchens and classrooms were further away. Use of the signboards to access different parts of the mosque was put on the entrance The carpets were simple and are made of blue and green colors with rugs, which is in the direction of the qibla. The ventilation, heating and cooling system of the mosque was optimal, indirect, even distribution and balanced

temperature. The nave and rooms were bright and had a high ceiling Use of complex designs, with the meaning of the original Iranian-Islamic titles use of suitable parking, meeting hall downstairs, happy and fun space for children and teenagers, place for mosque attendant to stay.

Conclusion : this masque was approved by several experts that it was design beautiful, anti-stress and efficient place.

Keywords : Masque design, cognitive element, stress

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 284
Abstract ID: 107
subject: Covid-19 and Nervous System: Basic and Clinical Aspects: Covid-19 and Nervous System: Basic and Clinical Aspects
Presentation Type: Poster

The effect of weight loss due to long-term use of high doses of hydroxychloroquine in male rats

Submission Author: Tannaz Haghgouie

Tannaz Haghgouie[1], Yousef Panahi[2], Sudeh Tavakoli[3]

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2. Department of Pharmacology and Toxicology, Department of Basic Sciences, Faculty of Veterinary Medicine, University of Tabriz, Tabriz, Iran
3. Department of Pharmacology and Toxicology, Department of Basic Sciences, Faculty of Veterinary Medicine, University of Tabriz, Tabriz, Iran

Background and Aim : : Hydroxychloroquine is one of the drugs used in the treatment of malaria. In this study, the effects of long-term oral administration of high doses on the weight of male rats were investigated.

Methods : In this study, 24 male Wistar rats were studied in 4 treatment groups that were gavaged at doses of 10, 50, 100, and 200 mg/kg of hydroxychloroquine. Thus, after dissolving 200 mg hydroxychloroquine tablets in tab water, the above compound was given orally to animals. The study groups received hydroxychloroquine by gavage for 7 consecutive days.

Results : The results of the present study show that oral administration of hydroxychloroquine for 7 consecutive days at doses of 10, 50, and 100 mg/kg didn't have a significant effect on the weight of the animals studied. However, the group that received a dose of 200 mg/kg showed a statistically significant weight loss compared to the control group ($p < 0.05$).

Conclusion : Long-term use of high doses of hydroxychloroquine reduces the weight of the studied animals.

Keywords : Hydroxychloroquine, Weight, and Rat

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Iran University of Medical Sciences

BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 285
Abstract ID: 303
subject: Covid-19 and Nervous System: Basic and Clinical Aspects: Covid-19 and Nervous System: Basic and Clinical Aspects
Presentation Type: Poster

COVID-19 Patients Could Helped with Polyvagal Neural Biofeedback as a Psychophysiological Mirror in Stress, Anxiety, and Sleep Disorder

Submission Author: Mohammadjavad Hoseinpourfard

Mohammadjavad Hoseinpourfard[1]

1. Institute for Cognitive Science Studies, Tehran, Iran

Background and Aim : Biofeedback designed for functional biofeedback procedures with biofeedback training. Biofeedback training realized based on the principle of "psycho-physiological mirror", so that the patient is literally able to see and hear, with the help of visual and audio biofeedback images, the subtle nuances of change in their condition, manifested in changes of various physiological processes. The structure of software for biofeedback system device includes a library of procedures, suitable for direct use.

Methods : Now a day artificial intelligence technology helped biofeedback to register the activity and made neural sensors for recording the procedures with bio-systems.

Results : The data gathering to illustrating initial state and significant changes caused by functional tests in scientific and clinical studies. So kinds of environmental stimulation could use during biofeedback to assess the state of the brain, to study the mechanisms of perception, memory and other aspects of cognitive and mental activity in neuroscience studies.

Conclusion : The following tables guide six aspects for neural pathways focused on vague nerve (X paired of cranial nerves).

Keywords : Neural biofeedback; Psychophysiological mirror; Polyvagal;

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 286
Abstract ID: 120
subject: Covid-19 and Nervous System: Basic and Clinical Aspects: Covid-19 and Nervous System: Basic and Clinical Aspects
Presentation Type: Oral

Comparison of psychological characteristics (stress, anxiety, and depression) in the medical staff working in COVID-19, patients with the medical staff of other centers

Submission Author: Nasrin Abdoli

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Background and Aim : Today, coronavirus is one of the most important phenomena that have plagued the whole world in a pandemic way. In Iran, at the same time with the outbreak of the COVID-19 virus, the treatment staff increased their workload and was at risk of infection for the treatment of patients with COVID-19. Wearing the form of personal protective clothing, special nutritional conditions for a long time, and the negative feeling caused by the tolerance of common anxiety experienced by the medical staff during the outbreak of infectious diseases. Also, quarantine conditions after work shifts and being away from family are among the causes that caused burnout in the medical staff. This study aimed to compare the psychological characteristics of stress, anxiety, and depression in medical staff working in coronavirus patients with medical staff in other centers in Kermanshah. A demographic questionnaire and DASS-21 standard questionnaire.

Methods : The research method was applied in terms of purpose and descriptive in terms of data collection and causal-comparative. The statistical population was all medical staff working in corona and non-corona hospitals in Kermanshah. The instrument used in this study was the DASS-21 questionnaire (depression, stress, and anxiety).

Results : The mean age in the two groups was between 29 ± 2.41 years. The results showed that there was a significant difference between the two groups in terms of depression, anxiety, and stress. P = 0 / 0001.

Conclusion : Depression, anxiety, and stress are higher in employees in the corona than in the non-corona

Keywords : Depression Anxiety, Stress, Medical Staff, COIDE-19

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 287
Abstract ID: 93
subject: Covid-19 and Nervous System: Basic and Clinical Aspects: Covid-19 and Nervous System: Basic and Clinical Aspects
Presentation Type: Oral

A Review on the Neurological Manifestations of COVID-19 Infection: a Mechanistic View

Submission Author: Tahereh Ghadiri

Tahereh Ghadiri[1]

1. Department of Neuroscience, Tabriz university of Medical Sciences

Background and Aim : While new coronavirus affects multiple organs, its sign and symptoms are varying from acute respiratory dysfunction to gastrointestinal or even neurologic features in the infected people. More than a quarter of patients with COVID-19 develops miscellaneous neurological symptoms, ranging from headache and dizziness to more serious conditions such as stroke.

Methods : Herein, we reviewed the most common neurologic symptoms and complications that emerged in the SARS-CoV-2 patients and their relation to ACE2.

Results : More recent investigations introduced hyposmia as a potential early criterion of infection with COVID-19. A growing body of evidence reported death following new coronavirus infection in young adults due to severe neurologic complications, particularly stroke. Despite the high mortality and morbidity rate of COVID-19, its exact mechanism of action and pathogenesis is not well characterized. Since, spike protein of SARS-CoV-2 could interact with angiotensin-converting enzyme 2 (ACE2) in the endothelial, neural, and glial cells, it is a well-defined mechanistic way explanation for the action of current virus.

Conclusion : Understanding mechanism of CNS invasion by SARS-CoV-2 and potential role of ACE2 can help medical service providers to rescue sufferers and stop the current outbreak. Comprehensive and detailed studies are required to uncover how this virus invades the neural system as well as other critical organs.

Keywords : COVID-19 ; ACE2 ; Vascular ; Brain ; Angiotensin ; Cytokine

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BOOK of Abstracts

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Count: 288
Abstract ID: 35
subject: Covid-19 and Nervous System: Basic and Clinical Aspects: Covid-19 and Nervous System: Basic and Clinical Aspects
Presentation Type: Poster

COVID-19 and Fear, which comes first?

Submission Author: Monir Shayestefar

Monir Shayestefar[1], Amirhossein Memari[2], Mohammad Taghi Joghataei[3], Amin Nakhostin-Ansari[4]

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3. cellular and molecular research center, Iran university of medical sciences
4. sport medicine research center, Tehran university of medical sciences

Background and Aim : It is not an original paper; it is a review one. So I can not fill this format of abstract. Obligatory I separate my abstract into 4 parts as bellow.

Methods : Today people have a few unanswered questions in their mind such as “Do negative emotions will co-survive with COVID-19 pandemic? Which one is worse? Which one will disappear quicker? Is there any connection between negative emotions induced by COVID-19 and being infected by COVID-19 or severity of the symptoms in infectious individuals? How are we supposed to live with COVID-19 and to adapt our emotional system with the virus for more than one upcoming year?

Results : These uncertainties could result in huge pressure on people. While, there is no clear consensus regarding what establishes psychological stress on an individual, the effect of negative affect and psychological stress on increased susceptibility to disease due to altered immune functions is well established.

Conclusion : Here we are going through the possible effect of emotions associated with the present pandemic on COVID-19 course of disease and severity of symptoms.

Keywords : Anxiety; Coronavirus; Emotions; Fear; Immune system,

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 289
Abstract ID: 334
subject: Covid-19 and Nervous System: Basic and Clinical Aspects: Covid-19 and Nervous System: Basic and Clinical Aspects
Presentation Type: Poster

A Case Report of COVID-19 With Memory Problems & Cognitive Impairment

Submission Author: Neda Rafieetari

Neda Rafieetari[1], Jamshid Saemi [2], Mahya Abdiyan[3]

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2. General Medicine in Medical science of shahid Beheshti University
3. student of Phd general psychology in IAU

Background and Aim : Cognition refers to the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses. Cognition can be impaired as a result of mental health conditions and their treatments .Novel coronavirus disease 2019 (COVID-19) is associated with significant morbidity and mortality, with more than 654936 cases and 36985 deaths in Iran as of 5 November , 2020 .The disease ranges from asymptomatic infection to severe illness, which varies among different patients for reasons that are currently unclear

Methods : A 97-year-old man presented to the emergency department with acute cognitive impairment & memory loss. He was experiencing memory deficits, such as difficulty remembering the names of his children and his work schedule for the day, as well as the names of supermarkets near his house, as noted by his family member. There was no history disease or any other neurological concerns in the past .). His nasopharyngeal swab tested positive for novel SARS-CoV-2 reverse transcriptase-polymerase chain reaction (RT-PCR). Other laboratory findings were suggestive of lymphopenia, with an absolute lymphocyte count of 800 cells/mm3. The serum immunoglobulin-G (IgG) antibody test for SARS-CoV-2 was positive. The inflammatory markers were within normal range. The mental state exam (MSE) was performed for cognitive and memory assessment .

Results : He was diagnosed with COVID-19 one month prior to the current admission when his symptoms included myalgia, loss of taste and smell , anorexia, balance problem, fall down , and fatigue for two weeks. He was not hospitalized at that time, and after viral detection, He observed home quarantine for two weeks. He reported feeling mental fogginess and experienced difficulty with memory and executive functioning after the viral illness. However, His memory deficits acutely worsened on the morning of presentation.Memory problems and cognitive impairments existed during the acute phase of the disease and were resolved by improving ccovid-19 symptoms. More research is needed in this area. Pre-test, post-test showed that the mentioned symptoms developed at the beginning of the disease and disappeared at the end of the disease period.

Conclusion : Due to the novelty of the issue, cognitive assessments seem necessary. The findings show that similar cases have been reported in other countries. There is a concern that cognitive problems may persist in some patients with Covid 19.

Keywords : Cognitive Impairment ;COVID-19;Memory Problems

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 290
Abstract ID: 143
subject: Covid-19 and Nervous System: Basic and Clinical Aspects: Covid-19 and Nervous System: Basic and Clinical Aspects
Presentation Type: Poster

Relationship of between COVID-19 and Stroke

Submission Author: Somayeh Nazari

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Background and Aim : Coronavirus 2019 (COVID-19) is a pandemic that causes flu-like symptoms. A body of evidence suggests that both the central and peripheral nervous systems may be affected by SARS-CoV-2, including stroke. Acute stroke remains a medical emergency even during the outbreak of COVID-19. Most patients with COVID-19 infection present with major respiratory symptoms. While others experience unusual gastrointestinal, cardiovascular, or neurological manifestations. Blood clotting and vascular endothelial dysfunction have been suggested as complications of COVID-19, which can eventually lead to ischemic stroke. Amyloid protein precursor gene amplification is a rare cause in the early onset of Alzheimer's disease that may be associated with cerebral amyloid angiopathy. These conditions predispose to cerebrovascular events, especially hemorrhagic stroke.

Methods : In this study, articles that were studied from 2019 to 2020 in the field of clinical stroke and COVID-19 were extracted from the databases of scinceDirect, PubMed, scopus, web of science, Google scolar. Keywords used are: Stroke, COVID-19

Results : The results show that ischemic stroke is one of the most common neurological manifestations of COVID-19. Blood coagulation and vascular endothelial dysfunction have been suggested as complications of COVID-19, which can eventually lead to ischemic arterial and venous stroke due to cerebral venous sinus thrombosis in COVID-19 infection, which in turn can lead to encephalopathy. , Dysarthria and hemiplegia in these patients. The results also show that COVID-19 patients with stroke have significantly higher NIHSS and neutrophil-to-thymocyte ratio (NLR), which is an inflammatory response, than those without stroke, which can also be seen in Stroke severity is involved in COVID-19 patients. A history of stroke increases the risk of death from COVID-19 by up to 3 times.

Conclusion : Stroke severity is involved in COVID-19 patients but further studies need to elucidate its mechanism of actions.

Keywords : COVID-19, Stroke,pandemy,ischemic stroke, Nervous System

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 291
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subject: Covid-19 and Nervous System: Basic and Clinical Aspects: Covid-19 and Nervous System: Basic and Clinical Aspects
Presentation Type: Oral

Neuropsychiatric manifestations of Hospitalized Patients with COVID-19: A Cross-Sectional study in Iranian patients

Submission Author: Mojtaba Sharafkhah

Mojtaba Sharafkhah[1], Mohsen Ebrahimi-Monfared[2]

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Background and Aim : Coronavirus disease 2019 (COVID-19) is a pandemic. Coronavirus infections are known to have neuroinvasive potential. However, neuropsychiatric complications of COVID-19 have not been reported completely. Because studies have been limited by both geography and specialty. The aim of this study was to investigate of neuropsychiatric manifestations among Iranian patients with COVID-19.

Methods : In this cross-sectional study we investigated neuropsychiatric manifestations among 178 COVID-19 adult patients with RT-PCR-confirmed diagnosis from June 14, 2020 to September 20th, 2020 at Imam Khomeini hospital in Arak, Iran. All patients were hospitalized in COVID-19 ward. Neuropsychiatric manifestations fell into 4 categories: central nervous system (CNS); peripheral nervous system (PNS); skeletal muscular injury and psychiatric manifestations.

Results : Of 178 patients (mean [SD] age, 48.7 [14.5] years; 92 men [51.6%]) with COVID-19, 59 patients (33.1%) had non-severe infection and 119 patients (66.8%) had severe infection according to their respiratory status. Generally, 68 patients (38.2%) had neuropsychiatric manifestations. Among all COVID-19 patients the most common neurologic manifestations included headache (15.7%), Dizziness (10.6%), Impaired consciousness (6.5%) and also 1.1% had Stroke and transient ischemic attack (TIA). Smell impairment was the most manifestation (8.4%) in PNS findings. Skeletal muscular injury was diagnosed in 10.5% of COVID-19 patients. Most common psychiatric manifestations included anxiety and other related disorders (28.7%). Also, 4.4% patients had suicidal ideation.

Conclusion : Patients with COVID-19 commonly have neurologic manifestations. Early recognition and prompt management of neuropsychiatric manifestations in these patients have a potential to decrease overall morbidity and mortality.

Keywords : COVID-19; Coronavirus; Neuropsychiatric manifestations; Neuropsychiatry

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

December 9-11, 2020 Virtual Congress

Count: 292
Abstract ID: 286
subject: Covid-19 and Nervous System: Basic and Clinical Aspects: Covid-19 and Nervous System: Basic and Clinical Aspects
Presentation Type: Poster

Evaluate the importance and feasibility of swallowing interventions in Covid-19 pandemic conditions

Submission Author: Jalal Bakhtiyari

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1. BSc of speech therapy
2. Bsc of speech therapy
3. PHD of speech therapy

Background and Aim : Coronavirus was declared a pandemic by the World Health Organization and has now crippled the global health sector. Due to the close link between the respiratory system and swallowing, the complications of Covid-19 can have irreversible effects on swallowing function and cause dysphagia. Dysphagia, in turn, can lead to dehydration, malnutrition, increased length of hospital stay, decreased QOL, increased mortality rates. Among Covid-19 patients, Intubation as one of the measures of airway protection along with extubation can lead to laryngeal trauma and inadequate closure, laryngeal stenosis, edematous and arytenoid edema, granuloma and recurrent and paralytic paralysis nerve damage. Breathing and swallowing, prolonged intubation, hyolaryngeal elevation injury, neuromuscular weakness, gastrointestinal reflux, and decreased upper respiratory tract sensitivity are other complications of intubation that may increase the risk of aspiration and dysphagia. Also, if a tracheostomy is performed for the patient, it leads to problems in voluntary clearance or cough reflex, problems in clearing saliva, desensitization of the throat and larynx and above the trachea, and saliva aspiration above the trachea. Discharge and administration of high-dose sedation drugs due to weakness and cognitive impairment, increased pharyngeal weakness, impaired coordination of swallowing and respiration, and ultimately increased risk of aspiration are other side effects of intubation. These include decreased level of consciousness, stroke, encephalitis, acute polyneuropathy, Guillain-Barré syndrome, and musculoskeletal damage that increases the risk of aspiration and dysphasia. On the other hand, screening, evaluation, and treatment of swallowing can transmit the virus. Instrumental assessments such as endoscopy, FEES, VFSS, and manometry known as AGP, and cranial nerve assessments are considered high-risk trends due to the possibility of gag reflux and coughing along with CSE and swallowing approaches. Therefore, the aim of this study was to evaluate the importance and feasibility of swallowing interventions in Covid-19 pandemic conditions.

Methods : Here, we have reviewed articles from January to November 2020 regarding the dysphagia and covid-19. these papers were obtained through the following databases: PubMed, SAGE, ScienceDirect, ASHA, and Google Scholar. We used "swallowing disorder","covid-19","oropharyngeal dysphagia", "complications of covid-19" as keywords for search.

Results : In this work, 30 paper have been reviewed. among these, four studies have examined the aerosol release rate during rehabilitation interventions, ten papers investigated the management of swallowing disorders during a pandemic, and eight studies explained the factors cause dysphagia in covid-19 patients. Additionally, four articles analyzed telehealth, two examined appropriate PPE for SLPs in medical environment, and last two were case reports.

Conclusion : Swallowing interventions are necessary to prevent exacerbation of the patient's pneumonia and lengthy hospital stay. It is critical to screen and evaluate swallowing in all extubated patients. Initial screening should be done through telehealth to minimize PPE consumption and exposure of nursing staff, and to limit instrumental evaluations as much as possible. In the acute phase of the disease, only the management of pharyngeal secretions is important to prevent aspiration and until the Covid-19 test is negative, compensatory management, diet modification and swallowing maneuvers are performed.

Keywords : dysphagia, covid-19, covid-19 complication

Iranian Neuroscience Society
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Iran University of Medical Sciences

BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress
December 9-11, 2020 Virtual Congress

Count: 293
Abstract ID: 291
subject: Covid-19 and Nervous System: Basic and Clinical Aspects: Covid-19 and Nervous System: Basic and Clinical Aspects
Presentation Type: Poster

Investigating the relationship between spiritual health and recilience against coronary anxiety in primary school teachers in Qom

Submission Author: Mehdi Yaghobi

Mehdi Yaghobi[1]

1. Spiritual Health Research Center, Qom University of Medical Sciences, Qom, Iran

Background and Aim : Coronaviruses are a large family of viruses that cause respiratory infections from the common cold to more serious illnesses such as measles and mumps. Recently, a mutated type of the virus has been identified that causes Covid-19 disease. Covid-19 is a respiratory disease that started in December 2019 in Wuhan, China and has spread to other parts of the world. The World Health Organization has named Covid-19 as the sixth global health emergency. Teachers are at risk due to their presence among students as Covid asymptomatic cortex. . Therefore, the aim of this study was to investigate the relationship between spiritual health and recilience against coronary anxiety in primary school teachers in Qom.

Methods : The present study is a descriptive study. The research population includes all male primary school teachers in Qom province. 4 schools were selected from each district. A total of 203 available teachers were selected who completed the Connor & Davidson Resilience Questionnaire and the 20-item Ellison Questionnaire on Spiritual Health and the Demographic Information Questionnaire.

Results : The results showed that there was a significant negative relationship between spiritual health and resilience in coronary anxiety disorder.

Conclusion : Promoting spiritual health can be considered as an effective method in managing coronary anxiety. Of course, more research is needed in this field.

Keywords : spiritual health, recilience, corona viruse-2, anxiety, teachers

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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Count: 294
Abstract ID: 326
subject: Covid-19 and Nervous System: Basic and Clinical Aspects: Covid-19 and Nervous System: Basic and Clinical Aspects
Presentation Type: Poster

Covid-19; What, When, Where, and How in a Geography-Anthropology Cognitive Neurobiological Model

Submission Author: Sajad Shiri

Mohammadjavad Hoseinpourfard[1], Sajad Shiri[2]

1. Raftar Cognitive Neuroscience Research Center, Shahid Beheshti University, Tehran, Iran.
2. Raftar Cognitive Neuroscience Research Center, Shahid Beheshti University, Tehran, Iran.

Background and Aim : In this study, environmental variables are defined and categorized based on standard criteria in recent studies. They were then adapted using an experimental method. 1. The five senses as a means of communication between man and his environment Some sources consider cognition to be derived from the abstraction of data obtained from a set of sensor systems in the face of environmental stimuli. Table (1)assumed that by assigning weight to each of the five senses in the sensory layer, the combination of some senses with each other, such as sight and hearing, or olfactory and taste, creates integrated layers in the perceptual layer. Man needs attainment of the next layer of abstraction, namely cognition, to understand much of the information he needs in his daily life. It is assumed that for each recognizable object, we can consider a unique coding code. Kandel et al. express this issue from another angle. He believes that in the cerebral cortex, in addition to the regions that play a role in only one of the sensory pathways in a specific and unique field, in other pathways of the cortex, they create a more extensive communication network so that in this communication network Signals, in their role, lead to the understanding of phenomena. Simultaneous activity and participation of the neural cell network causes human cognition, and the term "cognition" also refers to all the processes in this network. This abstraction system has brought about a vast neural network of the brain for human beings by combining different parts.
Methods : 2. Behavioral patterns 2.1. Stable behavior In this theory, two personality types, namely energetic personality (type A) and simplistic personality (type B), are evaluated as poles and other intermediate states. 2.2. Dynamic behavior In this behavioral classification system, although two types of behavior A and B can be identified, most humans are distributed in the interval between these two types of personalities. we can identify different behaviors and discuss them.
Results : 3. Proportion of environmental-behavioral changes Now the question is whether behavioral changes in humans indicate changes in the components of climate and habitat? Discovering the observed facts in human behavior and adapting it to changes in his environment, and finding out how this relationship has been in the past has been of interest to scientists. Some scientific sources explain and interpret human anomalies using the same subject. Today, similar models are used to select an effective treatment method, which is considered one of this model's applications.

Conclusion : 4. Axes of study Many believe that human behavior is commensurate with his knowledge of the environment. This knowledge, formed by our five senses of environmental stimuli, is continuously flowing to all our perceptible areas of the environment. This vast network has large chains, each of which, in turn, forms significant categories in our daily activities and, ultimately, our behavior. This study can be considered as a useful tool in solving some problems due to its focus on various aspects of cognitive sciences.

Keywords : Cognitive science; Neurobiology; Geography-Anthropology;

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BOOK of Abstracts

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Count: 295
Abstract ID: 322
subject: Covid-19 and Nervous System: Basic and Clinical Aspects: Covid-19 and Nervous System: Basic and Clinical Aspects
Presentation Type: Oral

Neurological manifestation in patients diagnosed with COVID19 in an out-patient setting

Submission Author: Paria Akbari

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3. School of public health, Tabriz University of Medical Sciences

Background and Aim : COVID19 could affect lots of organs and systems in human body. Neurological manifestation of COVID19 vary from anosmia to encephalitis or cerebrovascular disease. In this study we investigated neurological symptoms in patients with positive COVID19 PCR test in an out-patient setting.

Methods : We asked confirmed COVID19 patients if they had experienced headache, anosmia, ageusia, Guillain-Barre syndrome and cranial nerves neuropathy before, during or after general symptoms start.

Results : From about 70 confirmed COVID19 cases came to primary health care center 49 of them consented to cooperate. 21 of them had headache, 30 had anosmia and ageusia. None of them reported more serious neurological manifestation. 7 of patients mentioned lasting pain in their legs.

Conclusion : In this out-patient setting no serous neurological symptom of COVID19 had been reported. The most common neurological manifestation was anosmia.

Keywords : COVID19, Out-patient, Neurological manifestations

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BOOK of Abstracts

9th Basic and Clinical Neuroscience Congress

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subject: Covid-19 and Nervous System: Basic and Clinical Aspects: Covid-19 and Nervous System: Basic and Clinical Aspects
Presentation Type: Oral

COVID-19 increases the mortality rate of stroke: Is it true and what are the predictors?

Submission Author: Mostafa Almasi Dooghaee

Mostafa Almasi Dooghaee[1], Zahra Mirzaasgari[2], Fatemeh Moghadas [3], Tara Khoeini [4], Mona Ramezani Ghamsari[5], Tayebeh Lotfi [6], Seyedehnarges Tabatabaee [7], Matineh Heidari [8], Mehdi Moghaddasi[9]

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Background and Aim : COVID-19 pandemic has become a major challenging issue worldwide after its emergence in December 2019 from Wuhan China. Although the most common and significant complication is respiratory symptoms, reports of neurological features are increasing. Healthcare systems were adversely affected during COVID-19 pandemic and patients with non-infectious disease have challenges in getting appropriate management. Not only ischemic stroke could be a life-threatening complication of COVID-19 infected patients, there are reports of ischemic stroke as a presenting feature of COVID-19 as well. Decline in admitting patients with ischemic stroke as well as alternation in clinical features, etiologies and prognosis, have been documented globally.
Methods : We performed a retrospective study of stroke patients, who admitted to three referral hospitals in Tehran and Karaj, Iran, during the first 3 months of the pandemic period, investigate the outcome including need to mechanical ventilation and death, and compare them to similar period in a year before COVID-19. The predictors for final outcome of death was determined. Date were analyzed using SPSS 18 version with T-test and Chi-square.

Results : 124 individuals with stroke were admitted in three centers within first three months of COVID-19 pandemic. The diagnosis of COVID-19 was documented in 59 individuals (47.6%), including 8 subjects with PCR and 46 subjects with typical appearance of lung involvement in chest CT scan. The respiratory symptoms were the first pathology in 7 patients and stroke and respiratory symptoms were simultaneously presented in 8 patients. The initial NIHSS was 14.2±7.4 and 10.7±7.9 in COVID positive and COVID negative patients (P=0.053). Mechanical ventilation was done in 59.3% and 27.4% of COVID positive and COVID negative patients (P=0.001). Final outcome of death, including during admission or after discharge, was observed in 47.5% and 21.0% of COVID positive and COVID negative patients (P=0.025). The predictors for death in COVID positive patients included hemorrhagic stroke (P=0.013), the stroke in territory of MCA or ICA (P=0.042), main vessel occlusion as the mechanism of stroke (P<0.001) and presence of atrial fibrillation (P<0.001). There was no difference between the frequency of these factors between COVID-19 positive and COVID-19 negative patients (P>0.05). One year before COVID-19 and within the similar duration, the death was observed in 36/186 (19.4%) of stroke patients. The involvement of lungs were observed in 16/24 (66.7%) patients with outcome of death (P<0.001). Except hemorrhagic stroke (P=0.002), the other predictors of death from stroke in COVID-19 patients had no relationship with outcome of death.

Conclusion : The mortality rate of stroke in COVID-positive patients is more than 2 times compared to COVID-negative patients. The hemorrhagic stroke, large vessel occlusion and atrial fibrillation are the predictor of death in COVID-19 patients. The mortality rate of stroke in patients without COVID-19 is similar to the mortality rate of stroke one year before the emergence of COVID-19.

Keywords : Stroke, outcome, COVID-19 infection, Pandemics