using the ELISA method. Repeated Measures ANOVA was used to compare changes in both groups over time.

RESULTS: In SM, angiogenic factors VEGF and ANG-1 levels showed a nonsignificant increase, while they nonsignificantly decreased in AEM. IL-8, a myokine that promotes angiogenesis, increased significantly in both groups ($p<0.05$), with a greater increase in the SM group. Among antiangiogenic factors, TSP-1 showed no significant changes in either group, while Endostatin (ES) increased significantly (25%) in AEM compared to control in chronic ($p<0.05$). No significant changes occurred in IL-6 levels in either group, but increase was greater in SM group.

CONCLUSIONS: The back region has more red (oxidative) muscle fibers, suggesting that back massage may stimulate angiogenic factors more effectively. Therefore, back massage could be more beneficial than lower extremity massage for conditions like stroke and paralysis. Conversely, Endostatin increased only in AEM, lower extremity massage may be more effective than upper extremity massage in preventing unwanted angiogenesis (cancer). Further studies with larger sample sizes are needed to understand these changes better.

Keywords: Massage, Angiogenesis, Angiogenic Factor, Antiangiogenic Factor, Myokine

Poster Communications (PC 01 - PC97)

PC-01

Protective Effect of Aerobic Exercise Against Temozolomide-induced Hepatotoxicity in Rats with an Experimental Glioblastoma Model

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AIM: Glioblastoma (GBM) is a common and aggressive brain tumour with a median survival of 12-15 months. Temozolomide (TMZ) is the main chemotherapeutic agent used in the treatment of GBM. Liver injury has been reported in patients treated with TMZ. In this study, we aimed to investigate the protective role of moderate aerobic exercise against TMZ-induced hepatotoxicity in rats with glioblastoma.

METHODS: A total of 50 three-month-old Sprague-Dawley rats were used to form 5 groups; sham-operated (S), glioblastoma (GBM), glioblastoma+temozolamide (GBM+T), glioblastoma+ exercise (GBM+E) and glioblastoma+temozolamide+exercise (GBM+T+E). A moderate-intensity exercise protocol at 50-60% of the rats' VO2max was applied to the exercise groups for 30 min/day for a total of 8 weeks. The tumour model was established by intracerebroventricular injection of 1x106 glioma cells into the rats by the stereotaxic method. Subsequently, the chemotherapy groups were given 10 mg/kg TMZ by oral gavage. After sacrification, liver tissues were isolated and the levels of MDA, GSH and catalase, SOD and MPO in tissue; ALT and AST in serum were measured by spectrophotometer. Histopathological scoring was performed. Statistical evaluation was performed by one-way ANOVA and post hoc LSD.

RESULTS: GBM administration increased MDA levels in liver tissue. However, MDA levels decreased in the exercise groups (GBM+E and GBM+TMZ+E) ($p<0.05$). There was no significant difference in MDA levels between the GBM and GBM+T groups. The antioxidant catalase activity increased with exercise and/or TMZ administration compared to the control group ($p<0.01$). GSH levels increased in the GBM, GBM+E and GBM+TMZ+E groups compared to the control group ($p<0.05$). TMZ treatment increased plasma ALT and AST, whereas exercise decreased them ($p<0.05$). The histopathological score increased in G and GT groups and decreased in GE and GTE groups ($p<0.05$).

CONCLUSIONS: The results of the study showed that moderate aerobic exercise was beneficial in reducing the detrimental effects of temozolomide on the liver. (supported by TUBITAK-2209-A).
Keywords: Glioblastoma, Temozolomide, Exercise, Hepatotoxicity

PC-02

A Preliminary Study About Possible Effects of High Intensity Interval Training on Adipokine and Myokine Levels in Young Female Basketball Players

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AIM: Basketball challenges athletes' speed, balance, strength, and aerobic/anaerobic capacities. To improve in basketball, athletes must train frequently over long periods. High-Intensity Interval Training (HIIT) is popular for its short duration and positive impact on performance. This study aimed to investigate the effects of both acute and chronic (6 weeks) HIIT on adipokines like leptin, visfatin, obestatin and myokines like FGF-21 and BDNF in young female basketball beginners and elite players and whether these effects vary based on training status.

METHODS: With ethical approval from Pamukkale University Faculty of Medicine Non-Interventional Clinical Research Ethics Committee (16.08.2022, 12), 20 elite female basketball players (E group, training for 3 years±1 month, 14±0,8 years old) and 19

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beginners (B group, 16±0,9 years old) were included. Participants were divided into HIIT and control groups, balanced by age and body weight. While the control group maintained routine training, the HIIT group followed a Tabata protocol (3 days/week, 20 seconds exercise/10 seconds rest, 8 sets) for 6 weeks. Venous blood samples were collected before exercise in first week and after the final session in sixth week. Serum levels of obestatin, visfatin, leptin, FGF-21 and BDNF were measured using ELISA method. Data were analyzed with t-test, Mann-Whitney U or Wilcoxon paired test, with significance set at $p<0.05$.

RESULTS: Pre-exercise obestatin levels at 6th week of the E-HIIT group were significantly decreased compared to the E-control group and pre-exercise leptin levels at 6th week of the YB-HIIT group were significantly decreased compared to 1th week. The difference in the other parameters analysed did not reach statistically significant level.

CONCLUSIONS: These findings suggest that in elite athletes, the effects of HIIT on obestatin are predominant, whereas the effects on leptin are more predominant in beginners. Further studies are needed on the effects of HIIT on adipokines and myokines. **Keywords:** HIIT, Adipokine, Obestatin, Leptin, Elite

PC-03

Effect of Concentric and Eccentric Exercises on Some Myokines, Angiogenic and Antiangiogenc Factors in Male Individuals

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AIM: Angiogenesis is the formation of new capillaries from existing ones. Angiogenesis is regulated by the balance of pro-angiogenic and anti-angiogenic factors in the blood. When pro-angiogenic factors dominate, angiogenesis increases and results in conditions such as cancer formation or progression, when anti-angiogenic factors dominate, angiogenesis is prevented. Exercise has been shown to suppress some cancers. This study aims to examine the effects of concentric (CE) and eccentric (EE) exercise on angiogenic and antiangiogenic factors.

METHODS: Twenty-four healthy sedentary males (ages 18-30) participated in a 2-week (6 sessions) CE or EE protocol. Venous blood samples were collected before exercise (control), 1 hour after the first session (acute) and 1 hour after the last session (chronic), and serum was obtained. These serum samples were used for analysis of Vascular Endothelial Growth Factor (VEGF), Angiopoietin-1 (ANG-1), Endostatin (ES), Thrombospondin-1 (TSP-1), Interleukin-6 (IL-6), Interleukin-8 (IL-8) and Creatine Kinase (CK). Repeated Measures ANOVA method was applied to examine whether the changes in the 2 groups and dependent variables over time were significant.

RESULTS: VEGF increased significantly in both groups (CE $p<0,05$; EE $p<0,005$). ANG-1 remained unchanged in either group. Endostatin increased significantly in the EE group ($p<0.05$) but remained unchanged in the CE group. TSP-1 decreased significantly in both groups ($p<0,05$). IL-6 and IL-8 increased significantly in both groups ($p<0,001$). CK increased significantly in the EE group ($p<0,05$), but remained unchanged in the CE group. Angiogenic index increased more in CE group than in EE group.

CONCLUSIONS: Studies show exercise benefits cancer patients. Additionally, our study indicates the type of exercise is also matters. Our results suggest that eccentric exercise may be more effective than concentric exercise in tumoral conditions such as cancer, and concentric exercise may be more effective than eccentric exercise in conditions such as myocardial infarction and peripheral artery diseases where angiogenesis is desired. **Keywords:** Angiogenic, Antiangiogenic, Concentric, Eccentric, Exercise

PC-04

Investigation of the Effects of 24-Hour REM Sleep Deprivation on Memory and Hippocampus in Adult Rats Subjected to Treadmill Exercise

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AIM: Sleep is an important biological need for living things and has a cyclical process. Disruption of this cycle causes various behavioral and neurological damages. In this study, the effects of exercise on learning-memory performance and hippocampal NGF and BDNF in REM sleep deprived rats were investigated.

METHODS: M.Ü. after receiving the approval of the ethics committee (2023/37), 32 samples were collected for the study. A 3-month-old Wistar albino male rat was used. Rats were divided into 4 groups (n=8): control (1st), REM sleep deprivation (2nd), Exercise (3rd) and REM sleep deprivation+exercise group (4th). In the exercise protocol applied without determining the maximum performance of the rats, the first week was 15 minutes, and the exercise duration was increased by 15 minutes every week for the following 3 weeks. The moderate exercise protocol was performed on a treadmill device at a speed of 10m/min at a 0° incline, with a 5-minute break every 15 minutes during the exercise. After completion of the exercises, 24-hour REM sleep deprivation was performed and then MWM was used for learning and memory assessment. BDNF and NGF levels were determined by ELISA on hippocampus tissue taken after decapitation.

RESULTS: In the first four days of MWM, where learning evaluation is carried out. The total distance covered, swimming speed and time to find the platform decreased significantly in the inter-day evaluations ($p<0.05$). On the last day when memory was evaluated, the performances of the 2nd group and the 4th group decreased

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significantly compared to the 1st group (p<0.05). According to ELISA results, no significant difference was observed in hippocampal BDNF levels; NGF levels increased significantly in the 2nd group compared to the 1st and 3rd groups (p<0.05).

CONCLUSIONS: In our results, REM sleep deprivation showed negative effects for memory, and the positive effect of exercise was not significant. NGF level increased in REM sleep deprivation.
Keywords: REM deprivation, Exercise, Learning and memory

PC-05

Acoustic Rhinometry in the Assessment of Sympathetic Activation After Exercise

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AIM: The respiratory system is one of the systems where changes that occur due to the sympathetic system activated by exercise are most clearly observed. In our study, the effect of acutely induced sympathetic activity on nasal passage volumes in sedentary young people was evaluated by acoustic rhinometry measurements.
METHODS: Thirty healthy volunteer students participated in this study, which received ethics committee approval. Participants' blood pressure and heart rate were measured before and after exercise, and a treadmill exercise was applied in which participant's resting heart rate was doubled and exercise was continued for 5 minutes. Nasal measurements were evaluated separately for both nostrils with acoustic rhinometry measurements applied before exercise, after exercise, and 20 minutes after exercise.

RESULTS: Total nasal volume values of the right and left nasal passages before exercise were not statistically significant. There was a significant increase in both nasal passage volumes after exercise compared to before exercise. It was determined that the increase in the right nasal passage was higher than the left (p<0.05). In measurements repeated 20 minutes after exercise, the right nasal passage volume was higher than the left, and the difference between them was significant.

CONCLUSIONS: The main mechanism responsible for the nasal response that occurs during exercise is sympathetic system discharge. Expected volume increase as a result of decongestion in the nasal mucosa due to adrenergic discharge was significant for both nostrils after exercise compared to before exercise in our study, and the right nasal passage volume was found to be higher than the left. In the nasal cycle-cerebral dominance relationship, right nostril dominance indicates that the left hemisphere is stimulated and therefore an increase in sympathetic activity. In addition, the higher right nasal passage volume compared to the left in the measurements made 20 minutes after exercise (p<0.05) suggested that sympathetic activity continued.
Keywords: Exercise, Sympathetic activation, Acoustic rhinometry, Nasal volume, Nasal cycle

PC-06

Effects of Exercise and Linagliptin on Body Weight, Blood Glucose and Serum Total Oxidant/Antioxidant Capacity in Rats with Type 2 Diabetes

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AIM: The aim of the study was to investigate the effects of aerobic exercise training and linagliptin treatment separately and in combination on body weight, blood glucose, serum total oxidant capacity and total antioxidant capacity in rats with type 2 diabetes induced by streptozotocin.

METHODS: The study was approved by Başkent University Animal Experiments Local Ethics Committee (DA24/15). The 45 rats used in the study were equally divided into 5 groups as sham control, diabetes, diabetes+exercise, diabetes+linagliptin and diabetes+ exercise+linagliptin. In the diabetes groups, type 2 diabetes was induced with streptozotocin after 2 weeks of high-fat diet and swimming exercise 30 min/day 5 days a week for 6 weeks and linagliptin 3 mg/kg/day was administered by oral gavage. Body weight and blood glucose levels of rats were measured at the beginning and end of exercise training and linagliptin treatment. At the end of the experiment, total oxidant and total antioxidant capacity levels were evaluated in the serum of the rats. Statistical analysis was performed using GraphPad Prism 10 software, dependent t test, one-way ANOVA and Tukey's multiple comparison test, p<0.05 was considered significant.

RESULTS: As a result of the study, when aerobic exercise training and linagliptin treatment were applied separately or in combination, blood glucose levels decreased compared to the beginning of the experiment (p<0.0001, p=0.031, p=0.0016, respectively). Body weight at the end of the experiment decreased in the diabetes group (p<0.0001) and increased in the linagliptin treatment group (p<0.0001) compared to the beginning. Both treatment modalities, separately or in combination, had no effect on serum total oxidant capacity and total antioxidant capacity.

CONCLUSIONS: Aerobic exercise training and 3 mg/kg linagliptin administered independently or in combination to diabetic rats for 6 weeks had positive effects on reducing blood glucose, but had no effect on serum total oxidant and total antioxidant capacity.
Keywords: Type 2 diabetes, Aerobic exercise, Linagliptin, Rat

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PC-07

Effect of Curcumin on Locomotor Activity and Exercise Capacity in Exercised Aged Rats.

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AIM: Physical activity/exercise training may influence the aging process by modulating key signaling pathways. Exercise has been shown that Curcumin, a polyphenolic compound isolated from Curcuma longa, exhibits anti-aging properties shown. The aim of this study: To investigate the effects of curcumin on exercise capacity and locomotor activities in exercised aged rats and to compare the effects of curcumin with exercise.

METHODS: In this study in which 32 20-month-old female Spraque Dawley rats were used, rats were given curcumin (50mg/kg/day) by oral gavage for 3 weeks. I. group: Control n=8 (no treatment); II. group: curcumin group n=8 (5 days a week for 3 weeks by oral gavage); III. group: n=8 exercise group (treadmill exercise), IV. group: n=8 exercise + curcumin. Treadmill exercise application: Rats in groups 3 and 4 underwent adaptation training for 20 min/day in the first week. The exercise capacity of all rats was determined indirectly before training. Starting at a speed of 5 m/min, the rats were made to run until exhaustion by increasing the speed by 5 m/min every 3 min. Fatigue time (min) and workload (m/min) were determined as exercise capacity indices. Adaptation exercise was performed at 4.2 m/min for the first 2 minutes, 6.3 m/min for the next 4 minutes and 4.2 m/min for the last 2 minutes for a total of 20 min/day. Treadmill exercise was performed for 14 days, running at a speed of 4.2 m/min for the first 4 minutes, 9.5 m/min for 12 minutes and 4.2 m/min for the last 4 minutes for a total of 20 min/day (moderate exercise). Rotarod test was performed at the beginning and end of the experiment. Results were evaluated by two-way anova, post hoc tukey's tests.

RESULTS: Exercise capacity measurements on day 0 group averages Group III (exercise group) 36.25 m/min Group IV (curcumin + exercise group) 38.125 m/min. 3 weeks later exercise capacity measurements results Group III 45 m/min, Group IV 52.5 m/min Rotarod: Curcumin + exercise group had more time to fall from the platform ($p<0.05$).

CONCLUSIONS: This findings suggest that curcumin increases exercise capacity when administered with exercise.

This research was supported by Dokuz Eylul University Department of Scientific Research Projects (TYL-2024-3254).
Keywords: Curcumin, Exercise, Exercise capacity

PC-08

Does Ibrutinib Affect the Heart's Contractility?

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AIM: Ibrutinib is the first Bruton tyrosine kinase (BTK) inhibitor approved for the treatment of patients with chronic lymphocytic leukemia (CLL). Approximately 20-25% of patients experience dose-limiting side effects, mostly consisting of cardiovascular toxicities such as severe hypertension and atrial fibrillation. The aim of the study was to investigate the effect of ibrutinib on rat atrioventricular tissue contraction.
METHODS: Atrioventricular tissues of Wistar albino rats (n=8) were isolated after cervical dislocation. All tissues were placed in organ baths containing Krebs solution, thermoregulated at 370C and ventilated (95% O2 and 5% CO2). Changes in isometric tensions were recorded using a transducer. Adrenaline (10-1M) was applied to the tissues to induce isometric contractions. When the atrioventricular tissues reached maximum contraction, ibrutinib (10-3M) was added to the chambers and contractions were recorded. Friedman Kruskal Wallis tests were used for statistical evaluation.

RESULTS: When spontaneous contractions in rat atrioventricular tissues and changes in tension values with adrenaline and ibrutinib (10-3M) application were examined, it was observed that adrenaline-induced contractions were inhibited by ibrutinib application ($p<0.05$). In the evaluation of contraction patterns, adrenaline-induced contractions were inhibited after ibrutinib application and the peak-peak (p-p) value decreased statistically significantly ($p<0.05$).

CONCLUSIONS: The study results showed that ibrutinib caused negative inotropic effects on the atrial muscle at a single dose. Further studies with different doses are needed to clarify the mechanism of action of ibrutinib more clearly.

Keywords: Ibrutinib, Atrium, Contraction, Isolated organ bath

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PC-09

Effects of Ellagic Acid and Berberine on Skeletal Muscle in Hind Limb Ischemia Reperfusion Injury

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AIM: Hind limb ischemia/reperfusion (I/R) injury is a serious clinical condition. The aim of this study is to compare the effects of ellagic acid and berberine on oxidative stress and cell death pathways in hind limb I/R injury model.

METHODS: Thirty-five male Sprague-Dawley rats were randomly divided into five groups (n=7 each): Sham, I/R, Ellagic Acid+I/R, Berberine+I/R, and Ellagic Acid+Berberine+I/R. The infrarenal abdominal aorta was clamped and reperfused during 2 hours respectively. At the 75th minute of ischemia, ellagic acid (100 mg/kg, ip) and berberine (200 mg/kg, ip) were administered. Oxidative stress markers (MDA, GSH, SOD, CAT), apoptosis (Cleaved caspase-3, Bax, Bcl-2) and pyroptosis (NLRP3, NRF2, Gasdermin D) pathways were evaluated. Muscle tissue was histopathologically assessed with hematoxylin-eosin staining.

RESULTS: Histopathological assessment showed significant increases in muscle atrophy/hypertrophy, degeneration/ congestion, nuclear internalization/oval-central nucleus, fragmentation/hyalinization, and leukocyte infiltration in the I/R group. Ellagic acid and berberine reduced them, yielding results close to the sham group. Bax levels increased in I/R group, while ellagic acid and berberine reduced Bax levels. Bcl-2 levels decreased in I/R group but reached normal levels with ellagic acid and berberine. The Bax/Bcl-2 ratio was highest in the I/R group, but ellagic acid and berberine normalized it. NRF2 levels decreased, while NLRP3 and Gasdermin D levels increased in I/R group; ellagic acid and berberine normalized these levels. MDA levels were reduced, while GSH, SOD, and CAT levels were increased with ellagic acid and berberine compared to I/R group.

CONCLUSIONS: Ellagic acid and berberine showed beneficial effects on apoptosis, pyroptosis, and oxidative processes in hind limb I/R injury. The combined use of these antioxidants resulted in more effective outcomes in Bax/Bcl-2 ratio and some histological damage parameters. Ellagic acid and berberine, either separately or in combination, can be considered potential therapeutic agents for hind limb I/R injury.

Keywords: Hind limb, I/R injury, Apoptosis, Berberine, Ellagic acid, Pyroptosis, Rat

PC-10

Comparison of the Effectiveness of Dimethyl Sulfoxide and Trehalose/ Sodium Hyaluronate in Doxorubicin Induced Extravasation Injury

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AIM: Extravasation injury occurs when anticancer agents etc. unintentionally infiltrate into the extracellular space during infusion. Doxorubicin (DOX) is a chemotherapy drug classified as an anthracycline (vesicant substance; causing severe soft tissue damage with formation of blisters that can lead to skin necrosis). The literature emphasizes various treatment options for managing extravasation injury. The first-line treatment for extravasation involves immediately stopping the injection or infusion and then aspirating as much of the extravasated fluid as possible. Some other examples include applying cold packs for anthracyclines, administering antidotes like dexrazoxane and dimethyl sulfoxide (DMSO), micronutrient injection or saline flush out with stab incisions. Trehalose (THA) is a disaccharide formed by two glucose units and produced by some bacteria, fungi, and other invertebrate animals as a result of stress. The human body does not synthesize trehalose. However, it is commonly used in medicine for various purposes, including wound healing, stabilizing cell membranes and proteins, promoting autophagy, and enhancing flap viability. The combination of DMSO and trehalose has displayed promising results as a cryoprotectant.

METHODS: Twenty-eight adult male Sprague-Dawley rats were divided into four groups. All subjects were weighed weekly. DOX injection was performed intradermally. First group received doxorubisin injection (control group). In the second group three drops of topical DMSO were dripped on to the extravasation area. The third group received an intradermal injection of three drops (0.1 mL) of a 3% trehalose and 0.15% sodium hyaluronate solution. Finally, the last group received both topical DMSO and intradermal THA application. All groups were administered their treatments in every eight hours for one week.

RESULTS: The mean surface area of tissue necrosis in control group was 81.2±14,77 mm^2. All treatment groups had significantly lower necrosis area than control group.

CONCLUSIONS: Our study demonstrates the effectiveness of THA injection in reducing tissue necrosis in a rat model.

Keywords: Skin necrosis, Trehalose, Extravasation

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PC-11

Investigation of the Effects of Magnesium Citrate and Melatonin Combination as a Pre-treatment on Hypoxia

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AIM: Excitotoxicity has a key role in many degenerative diseases, including hypoxia-induced diseases. Magnesium can reduce excitotoxicity by blocking N-methyl-D-aspartate (NMDA) receptors. Magnesium citrate (MgC) is known as a form of magnesium that is easy to absorb by cells, but its effect in hypoxia models has not yet been investigated. Melatonin (MLT) is a hormone with neuroprotective effects in the brain and other organs, attributed to its antioxidant properties. Our aim was to investigate both the molecular effects of MgC treatment in the hypoxia model and its potential use as an adjuvant agent in MLT treatment.

METHODS: A total of 350,000 Neuroblastoma-2A (N2A) cells were seeded in petri dishes for each group and treated with MgC (50 mM), MLT (50 µM), or a combination (MgC+MLT) for 24 hours. Hypoxia was induced using oxygen glucose deprivation (OGD) for 8 hours, followed by 16 hours of reperfusion. Subsequently, cell survival was measured and protein expressions were analyzed via western blot. Statistical analysis was performed using one-way ANOVA, $p<0.05$ was considered statistically significant.

RESULTS: It was observed that MgC+MLT treatment applied before OGD increased cellular survival under OGD conditions ($p<0.05$). Expression of phosphorylated mTOR protein was significantly decreased in the MgC+MLT group compared to the control group under OGD conditions ($p<0.01$). Expression of NMDAε2 protein was significantly increased in MgC and MLT groups compared to the control group ($p<0.05$), while a decreasing trend was observed in MgC+MLT group.

CONCLUSIONS: When survival and protein expression analyses were evaluated together, it was observed that combination of MgC+MLT had a protective effect on N2A cells under OGD conditions. It was also observed that MgC+MLT has the potential to reduce excitotoxicity through NMDA receptors. Based on these findings, MgC+MLT combination can be evaluated as a novel therapeutic approach for neurological diseases.

Keywords: Excitotoxicity, Magnesium citrate, Melatonin, Hypoxia

PC-12

Effect of Chronic Exercise on ZFAND3 Gene Expression and Lipid Peroxidation in Liver Tissue in a Diabetic Old Female Rat Model

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AIM: Due to its critical importance in glucose metabolism, the liver has been chosen as the therapeutic organ in the treatment of diabetes. However, the relationship of ZFAND3 (Zinc finger AN1-type domain 3), a zinc finger protein, with the liver of diabetic rats has been investigated in only one study. The aim of this study is to investigate how moderate chronic exercise affects ZFAND3 gene expression and lipid peroxidation in liver tissue in an elderly diabetic female rat model.

METHODS: The protocol of the study conducted on old female Wistar rats (16 months old) was approved by the local ethics committee. A total of 40 old female rats were divided into 4 equal groups. Group 1, Control. Group 2, Exercise Control. Group 3, Diabetes. Group 4, Diabetes+Exercise. Diabetes was induced in the animals of groups 3 and 4 by intraperitoneal administration of 40 mg/kg streptozotocin. Animals in groups 2 and 4 were subjected to chronic running exercise for 45 minutes daily on a rat treadmill for 4 weeks. ZFAND3 gene expression was determined by PCR method and MDA and GSH levels were determined by ELISA method in liver tissue samples taken from animals sacrificed 24 hours after the last running exercise.

RESULTS: In the current study, increased MDA and suppressed GSH levels in liver tissues of diabetic aged female rats were reversed by 4 weeks of chronic exercise ($p<0.05$). We observed increased liver ZFAND3 gene expression values with chronic exercise in exercise groups (G2 and G4) ($p<0.05$).

CONCLUSIONS: The result of the current study shows that the pathological processes that occur in diabetes can be partially prevented by increasing the liver ZFAND3 gene expression, which is suppressed in the diabetic old female rat model, with chronic exercise. Chronic exercise may be an activator that increases liver ZFAND3 gene expression level.

Keywords: Aged female rat, Chronic exercise, Diabetes, Lipid peroxidation, Liver, ZFAND3

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PC-13

Chronic Exercise Prevents Muscle Tissue Damage and Increase in IL-6 Gene Expression in a Diabetic Old Rat Model

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AIM: The improving effect of chronic exercise on antioxidant parameters in diabetic elderly rats has not been extensively investigated. The aim of this study is to investigate how moderate chronic exercise affects IL-6 gene expression and lipid peroxidation in muscle tissue in an elderly diabetic rat model.

METHODS: The study was conducted on aged female Wistar rats (16 months old) and was approved by the local experimental animal ethics committee. A total of 40 old female rats were divided into 4 equal groups. Group 1, Control, Group 2, Exercise Control, Group 3, Diabetes, Group 4, Diabetes+Exercise. Diabetes was induced in the animals of groups 3 and 4 by intraperitoneal administration of 40 mg/kg streptozotocin. Animals in groups 2 and 4 were subjected to chronic running exercise for 45 minutes daily on a rat treadmill for 4 weeks. IL-6 gene expression was determined by RT-PCR method and MDA and GSH levels were determined by ELISA method in muscle tissue samples taken from animals sacrificed 24 hours after the last running exercise.

RESULTS: The highest IL-6 gene expression and muscle MDA levels in muscle tissue, as well as the lowest muscle GSH levels, were obtained in the diabetes group (Group 3) ($p<0.05$). While chronic exercise significantly suppressed IL-6 gene expression and muscle MDA levels in diabetic rats (Group 4) compared to Group 3 ($p<0.05$), it also increased muscle GSH levels ($p<0.05$).

CONCLUSIONS: The findings of our study show that 4 weeks of moderate chronic exercise suppresses IL-6 gene expression, an inflammatory parameter, and MDA levels, an indicator of muscle tissue damage, and increases GSH levels, an indicator of muscle antioxidant activity, in diabetic rats. Moderate chronic exercise improves the quality of life both in aging and in diabetes, which is known to increase with age.

Keywords: Diabetic Old Rat, Exercise, GSH, IL-6, MDA, Muscle Tissue

PC-14

Loratadine Reduces Cell Viability in Different Types of Human Cancer Cell Lines

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AIM: Due to its high prevalence and mortality rates, cancer remains a prevalent topic in scientific research. Various studies have suggested that anti-inflammatory and antioxidant therapies might prevent or delay the onset and progression of cancer. Recent research has also highlighted the potential effectiveness of antihistamines in cancer treatment. Some investigators have observed that antihistamines could inhibit the proliferation of various cancer cells. Research indicates that these drugs may impart anticancer properties through their effects on cellular growth, apoptosis, and angiogenesis. There is a growing body of evidence that H1 antihistamines may inhibit tumor growth and promote cell death in a range of tumors, including melanoma. Loratadine, an H1 receptor antagonist, is classified as a second-generation antihistamine. Considering all these findings, it is suggested that Loratadine may have a potential impact on cancer. Therefore, our study aims to investigate the effects of Loratadine on human ovarian (A2780), colon (Caco-2), and prostate (LNCaP) cancer cell lines.

METHODS: The cell viability (%) of A2780, Caco-2, and LNCaP cell lines incubated with Loratadine at concentrations of 1, 5, 25, 50, and 100µM for 24 hours was determined using the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) Assay method. The statistical significance of the data was evaluated using the non-parametric Kruskal-Wallis variance analysis in IBM SPSS 24 software, with a p-value of <0.05 considered statistically significant.

RESULTS: Loratadine was found to reduce cell viability at concentrations of 25, 50, and 100 µM in the A2780 cell line; 5, 25, 50, and 100 µM in the Caco-2 cell line; and at all concentrations in the LNCaP cell line ($p<0.05$).

CONCLUSIONS: The results of this study suggest that Loratadine may exhibit anticancer activity on A2780, Caco-2, and LNCaP cells. Additionally, Loratadine demonstrates that H1 receptor antagonists could be potential candidates in cancer treatment.

Keywords: Cancer, Histamine, Loratadine, A2780, Caco-2, LNCaP

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PC-15

Investigation of the Effects of Vildagliptin on Cancer Cell Lines: An In Vitro Study

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AIM: Cancer is one of the biggest health problems that pose a global threat and the fight against cancer continues with different methods around the world. Despite the advances in the prevention and treatment of cancer, success, considering the high mortality rates in cancer, the inadequacy of currently known treatment methods and the low rate and tumor recurrence make the discovery of new alternative agents or drugs important. A limited number of studies have shown that drugs used in the treatment of diabetes, another global health problem that has increased in recent years, may have anticancer activity. In this regard, it is thought that the antidiabetic drug Vildagliptin, which provides glycemic control, may have anticancer properties. This study was conducted to examine the effect of Vildagliptin on human ovary (A2780), prostate (LNCaP) and colon (Caco-2) cancer cell lines.

METHODS: In the study, A2780, LNCaP and Caco-2 cell lines were incubated with 1, 5, 25, 50 and 100 µM Vildagliptin for 24 hours. The effect of Vildagliptin on cell viability was determined by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) Assay method. Cell viability (%) was calculated with IBM SPSS software program for Windows. Statistical significance of the data was evaluated by non-parametric Kruskal Wallis variance analysis and $p<0.05$ was considered statistically significant.

RESULTS: Vildagliptin significantly decreased cell viability at concentrations of 1, 5, 25, 50 and 100 µM in A2780 and Caco-2 cell lines ($p<0.05$) and at concentrations of 25, 50 and 100 µM in LNCaP cell line ($p<0.05$).

CONCLUSIONS: The results of this study suggest that Vildagliptin may have antitumor effects on A2780, LNCaP and Caco-2 cells. Vildagliptin may play a beneficial and protective role in diabetic patients with cancer due to its glycemic control and potential anticancer effects. Therefore, Vildagliptin may be a therapeutic candidate in the development of cancer treatment strategies.

Keywords: Cancer, Diabetes, Vildagliptin, Cell Viability

PC-16

Investigation of In Vitro Cytotoxic and Genotoxic Properties of New Dioxybiphenyl-bridged Spiro Cyclotrifosphazene with Dihydroxycoumarin Groups Synthesized by the Click Method

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AIM: In this study, we aimed to determine the in vitro cytotoxic and genotoxic effects of new dioxybiphenyl-bridged spirocyclotriphosphazene compound bearing coumarin groups synthesized using the click method against human breast (MCF-7) and human ovarian (A2780) cancer cell lines.

METHODS: Coumarin-substituted cyclotriphosphazene compound (CRG-PA-Click-CH_2-Cum-DiOH) was obtained from the interaction of cyclotriphosphazene compound with alkyne end group (CRG-PA) and 7,8-dihydroxy-4-(azidomethyl)coumarin (DiOH-Cum-CH2-N_3) with azide end group using the click method. The cell viabilities of the starting and final product phosphazene compounds at concentrations of 1, 5, 25, 50 and 100 µM on MCF-7 and A2780 cell lines were determined by MTT Assay method. The effective dose that decreases cell viability by 50% (LogIC50/IC50) was calculated by Graphpad-6 program. DNA damage (genotoxicity) studies were performed by comet assay method depending on the effect of the compounds at the highest dose. The tail intensity (TI), tail lenght (TL) and tail moment (TM) parameters induced by the compounds on cancer cells were determined and the presence and rate of DNA damage were determined by the changes in these parameters. The Tamhane's T2 test was used to compare the multiple comparisons since variances were not homogeneous. The value $p<0.05$ was accepted as statistically significant.

RESULTS: From the results obtained, it was determined that the compounds caused significant decreases in cell viability, especially at high doses ($p<0.05$). It was determined that the substances had genotoxic effects on both cancer cell lines by affecting the TI, TL and TM parameters at the same doses ($p<0.05$).

CONCLUSIONS: It was revealed that the substances added to the culture medium caused serious decreases in cell viability rates after 24 hours and that these decreases occurred due to damage in the DNA of the cells.

This study was supported by Inonu University Scientific Research Projects Unit (Project no: TCD-2024-3683) and TUBITAK BIDEB (Project no: 1919B012326997).

Keywords: Dyspirocyclotriphosphazene, A2780, MCF-7, MTT Assay, Comet Assay

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PC-17

Evaluation of the Cytotoxic Activity of Citrinin on Human Prostate Cancer Cell Lines

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AIM: Citrinin is a mycotoxin produced as a secondary metabolite by species of Aspergillus, Penicillium, Monascus, and other strains. Citrinin causes toxicity in humans and animals. Due to this potential for toxicity, it plays an effective role in cancer progression by exhibiting cytotoxic effects on cancer cells at appropriate doses. Citrinin inhibits cancer progression by inducing apoptosis in cancer cell lines. The aim of this study is to evaluate the cytotoxic activity of citrinin on human prostate cancer (PC-3) and healthy fibroblast (L929) cell lines, which have not been previously investigated.

METHODS: Citrinin was applied to PC-3 and L929 cell lines at increasing concentrations (10, 20, 50, 100, 150, 300 µM), and its cytotoxic activity was evaluated using the MTS (3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium) assay. Cell viability was measured 24 and 48 hours after citrinin application using the ELISA method.

RESULTS: Citrinin exhibited cytotoxic effects on prostate cancer cells without affecting the viability of healthy cells. After 24 hours of application, the IC50 values were found to be 360.4 µM for the L929 cell line and 285.4 µM for the PC-3 cell line. After 48 hours of application, the IC50 values were 229.6 µM for the L929 cell line and 222.3 µM for the PC-3 cell line.

CONCLUSIONS: Citrinin exhibited cytotoxic activity by reducing cell viability in prostate cancer cells compared to healthy cells. Financial Support: This study was supported by the Scientific Research Projects Unit of İnönü University (Project No: TOA-2024-3718).

Keywords: Citrinin, Cytotoxic activity, L929, PC-3

PC-18

In Vitro Investigation of the Anticancer Activity of H1 Antagonist Meclizine in Various Cancer Cell Lines

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AIM: According to the World Health Organization, cancer is one of the leading causes of death. Available treatment methods for cancer are inadequate. This situation requires the discovery of new anticancer agents and therapeutic methods. Current literature focuses on the anticancer activities of H1 receptor antagonist antihistamines. In our study, we aimed to investigate anticancer activity of Meclizine, wich is from this drug group, in breast (MCF-7), colon (Caco2) and prostate (LNCaP) cancer cell lines using in vitro methods.

METHODS: In study, MCF-7, Caco2 and LNCaP cells were incubated with Meclizine for 24 hours. Incubation performed with concentrations of 1, 5, 10, 20, 25, 50, 100, 200, 500 and 1000 µM of Meclizine. The effect of this exposure on viability of relevant cells was examined by the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium-bromide (MTT) Assay method. According to the MTT Assay results, inhibitory concentration 50 (IC50) value was determined with Graphpad Prizm-8 program. The IC50 value is a reference for the subsequent Comet Assay. Comparisons between groups were made using Kruskal-Wallis-H test in IBM-SPSS 24.0 Windows package program; value of $p<0.05$ was considered statistically significant.

RESULTS: After 24 hours of incubation of cells with Meclizine, MCF-7 and LNCaP cell viability levels were determined to decrease significantly at all concentrations except 1 µM dose ($p<0.05$). Caco2 cell viability was observed to decrease at all concentrations of Meklizin ($p<0.05$).

CONCLUSIONS: The results obtained show cytotoxic activity of Meclizine on MCF-7, Caco2 and LNCaP cell lines. These findings suggest that Meclizine, an H1 antagonist, may have anticancer activity. This study was supported by İnönü University Scientific Research Projects unit with project number TCD-2024-3615.

Keywords: Cancer, Cell Viability, Meclizine

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PC-19

In Vitro Investigation of the Anticancer Activity of H1 Antagonist Cetirizine in Various Cancer Cell Lines

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AIM: Cancer is one of the public health problems with high incidence and mortality. Available treatment methods for cancer are inadequate. For this reason, studies have focused on discovery of new anticancer agents and therapeutic methods. In current literature, anticancer activities of H1 receptor antagonist antihistamines are remarkable. In our study, we aimed to investigate anticancer activity of Cetirizine, which is from this drug group, in breast (MCF-7), colon (Caco2) and prostate (LNCaP) cancer cell lines in vitro methods.

METHODS: In the study, MCF-7, Caco2 and LNCaP cells were incubated with their own medium (control), dimethyl sulfoxide (solvent) and various concentrations of Cetirizine (1, 5, 10, 20, 25, 50, 100, 200, 500 and 1000 µM) for 24 hours. Effect of exposure to Cetrizine on viability of cells was examined by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium-bromide (MTT) Assay method. According to the MTT Assay results, inhibitory concentration 50 (IC50) value were determined using the Graphpad Prizm-8 program. Comparisons between groups were made using Kruskal-Wallis-H test in IBM-SPSS 24.0 for Windows package program; value of $p<0.05$ was considered statistically significant.

RESULTS: As a result of the analyses, we determined that cetirizine significantly reduced cell viability in MCF-7 and Caco2 cells at all concentrations, and in the LNCaP cell line at all concentrations except 1 µM ($p<0.05$).

CONCLUSIONS: The findings show that Cetirizine administration has cytotoxic effects on MCF-7, Caco2 and LNCaP cells. This result suggests that the H1 antagonist Cetirizine may play an anticancer role.
This study was supported by İnönü University Scientific Research Projects unit with project number TCD-2024-3615.

Keywords: Cancer, Cell Viability, Cetirizine

PC-20

Anticancer effects of cannabinoid type 2 receptor agonist JWH-133 on Prostate Cancer cell lines

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AIM: Pharmacological activation of the cannabinoid type 2 receptor (CB2) has been shown to stimulate anti-tumoral mechanisms in different types of cancer. CB2 receptor agonists have been found to have inhibitory effects on tumor cell growth. The aim of this study was to investigate the anti-cancer effects of JWH-133, a CB2 receptor agonist, in LNCAP, Du-145 and PC3 cancer cells.

METHODS: Cytotoxic effects of JWH-133 were determined by MTT assay. Apoptosis of LNCAP, Du-145 and PC3 cancer cells was detected by annexin V-FITC/PI staining using a flow cytometer. Apoptotic gene expressions were analyzed by real-time PCR. Effects of JWH-133 on colony formation, and cell migration were detected by colony formation assay, and wound-healing assay, respectively.

RESULTS: IC50 dose of JWH-133 was found to be 66.68 µM in the 48th hour in the LNCAP cell line, 36.62 µM in the 48th hour in the Du145 cell line and 24.87 µM in the 24th hour in the PC3 cell line. It was found that JWH-133 in LNCAP, Du-145 and PC3 cells suppressed, migration, and colony formation by using wound-healing assay and colony formation assay, respectively. JWH-133 increased bax, P53, P21 and NOXA gene expressions which are associated with apoptosis ($p<0,05$).

CONCLUSIONS: In conclusion, JWH-133 is thought to exhibit anti-tumor activity on cancer cells by affecting apoptosis, migration and colony formation.

Keywords: Cannabinoid type 2 receptor, JWH-133, Prostate Cancer

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PC-21

Investigation of Mitochondrial Oxidative Stress on GnRH mRNA Expression in vitro

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AIM: Mitochondrial function is crucial in regulating cellular processes, including the expression of gonadotropin-releasing hormone (GnRH) by GnRH neurons. This study aimed to investigate the in vitro effects of mitochondrial oxidative stress induced by rotenone-a mitochondrial complex I inhibitor-on GnRH mRNA levels.

METHODS: GT1-7 cells, a GnRH-secreting cell line, were treated with various concentrations of rotenone (0.5–50 µM) for 24 and 48 hours. Cell viability was assessed using the trypan blue exclusion method to calculate IC50 values. To synchronize the cells, they were either deprived of fetal bovine serum (FBS) for 24 hours before rotenone treatment or directly treated with 0.5 µM and IC50 doses of rotenone for 24 and 48 hours. RNA samples were collected, and GnRH mRNA levels were measured using quantitative real-time PCR. Data were analyzed using one-way ANOVA followed by Dunnett's multiple comparison test. P-values less than 0.05 considered statistically significant.

RESULTS: Rotenone significantly reduced cell viability at all doses except 0.5 µM compared to the control group at both time points ($p<0.0001$). The IC50 values were 2.66 µM at 24 hours and 1.92 µM at 48 hours. In FBS-deprived cells, GnRH mRNA levels was not significantly altered at 24 and 48 hours, but a decreasing trend was observed at 48 hours with increasing rotenone concentrations. Conversely, in the presence of FBS, 24-hour treatment with rotenone at the IC50 dose showed a tendency to increase GnRH levels; by 48 hours, GnRH levels were similar across all experimental groups.

CONCLUSIONS: The findings suggest that GnRH mRNA expression responds differently to mitochondrial oxidative stress depending on the cell cycle phase. The observed increase in GnRH levels at 24 hours with rotenone treatment in the presence of FBS may result from the modulation of transcription factors or signaling pathways involved in GnRH synthesis by rotenone-induced reactive oxygen species in the short term.

Keywords: GnRH, GT1-7, qRT-PCR, Rotenone

PC-22

Investigation of the Anticancer Mechanism of N-(p-amylcinnamoyl) Anthranilic acid (ACA) in Prostate Cancer Cell Lines

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AIM: N-(p-amylcinnamoyl) anthranilic acid (ACA) is an inhibitor of transient receptor potential melastatin 2 channel (TRPM2) and phospholipase A2. Studies have shown that phospholipase A2 and TRPM2 are associated with cell proliferation, cell death and cancer. The aim of the study is to investigate anti-cancer mechanism of ACA in LNCAP, Du-145 and PC3 cancer cells.

METHODS: Cytotoxic effects of ACA were determined by MTT assay. Apoptosis of LNCAP, Du-145 and PC3 cancer cells was detected by annexin V-FITC/PI staining using a flow cytometer. Effects of ACA on colony formation, and cell migration were detected by colony formation assay, and wound-healing assay, respectively.

RESULTS: IC50 dose of ACA was found to be 78.59 µM in the 48th hour in the LNCAP cell line, 75.51 µM in the 48th hour in the Du145 cell line and 49.15 µM in the 48th hour in the PC3 cell line. It was found that ACA in LNCAP, Du-145 and PC3 cells suppressed, migration, and colony formation by using wound-healing assay and colony formation assay, respectively. ACA significantly induced apoptosis in LNCAP cells (apoptosis rate in control group 6%, in ACA group 84%).

CONCLUSIONS: ACA showed anticancer activity by inhibiting cell proliferation, migration and colony formation and inducing apoptosis.

Keywords: N-(p-amylcinnamoyl) anthranilic acid (ACA),Transient receptor potential melastatin 2 channel, Phospholipase A2, Prostate cancer

PC-23

Investigation of the Effect of Quercetin on the Accumulation of Lipids and the Level of Adiponectin in 3T3-L1 Adipocytes

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AIM: Obesity disrupts the homeostasis of adipose tissue, resulting in increase in the number and size of adipose cells. Quercetin is

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known to have beneficial physiological effects through various mechanisms. This study aimed to investigate effects of quercetin on lipid accumulation and adiponectin (ADP) levels in adipocytes.

METHODS: After differentiating, 3T3-L1 adipocytes were treated with high glucose medium to be come mature (8 days) and hypertrophic (18 days). The cells were subsequently incubated with 40-80 µM quercetin for 24 and 48 hours. Lipid accumulation and adiponectin level were measured by ELISA. For statistical analysis; one-way analysis of variance (post hoc: Tukey test) was used to compare independent group differences, and wilcoxon paired-two-sample test was used to compare dependent groups. $p<0.05$ was considered statistically significant.

RESULTS: Results of the study, a significant increase in lipid accumulation was detected in hypertrophic adipocytes in all groups compared to mature adipocytes ($p<0.05$). Quercetin administration to mature adipocytes significantly reduced lipid accumulation ($p<0.05$). At the same time, 80 µM quercetin dose in mature adipocytes led to a significant increase in ADP levels compared to all groups ($p<0.05$). Quercetin administration resulted in an important decrease in ADP levels in hypertrophic adipocytes, as compared to the other groups ($p<0.05$).

CONCLUSIONS: Our research showed that quercetin dramatically lowers lipid accumulation and raises ADP levels in mature adipocytes. However, although quercetin showed a tendency to reduce lipid accumulation in hypertrophic adipocytes, this decrement was not statistically significant, and it was observed that quercetin significantly reduced ADP levels in these cells. These findings demonstrate the protective effects of quercetin on health in the early obesity period, but its effectiveness in the later stages of obesity remains limited. It can be speculated that this may be due to the long duration of treatment in hypertrophic adipocytes.
This study was supported by Pamukkale University Scientific Research Projects Coordination Unit through Project number (2023SABE009).
Keywords: 3T3-L1 adipocyte, Adiponectin, Lipid accumulation, Obesity, Quercetin

PC-24

The First Animal Model of Non-Alcoholic Fatty Pancreas Disease Regarding Exocrine Function: A Methodologic Study

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AIM: Non-alcoholic fatty pancreas disease (NAFPD); causes significant changes in both endocrine and exocrine functions. Besides the pathophysiology of fatty pancreas not being fully understood, its effects on pancreatic functions have not been entirely elucidated. To explain the pathophysiology, the first step should be to create a reliable animal model of NAFPD. However, there is no animal model for NAFPD in the literature yet. Our aim was to create an animal model for examining exocrine functions in NAFPD.

METHODS: Seventy-two male C57BL/6 mice were first divided into 2 groups for standard or high-fat high-sucrose diet (HFHSD) then into 6 time points (2, 4, 6, 8, 10, 12 weeks), therefore we had 12 groups. Steatore was evaluated. Serum lipid profile, and amylase were measured. Histopathologically fat score, inflammation and fibrosis in pancreas were evaluated. Statistical analyzes were performed via Jamovi program and $p<0.05$ was considered significant.

RESULTS: While feeding with HFHSD increased body weight, it generally did not alter glucose concentrations. LDL and periepididymal fat weight increased significantly in all groups fed with HFHSD compared to controls of same week. amylase, cholesterol and HDL levels increased with 6-week diet application. Significant increase was observed in steatore within diet groups first at 6th week ($p=0.008$). There was significant increase in fat score in diet groups starting from 6th week ($p=0.03$) and no significance difference in inflammation and fibrosis within all groups.

CONCLUSIONS: Our results suggest that while HFHSD immediately effects the body fat metabolism, significant increase in pancreatic fat accumulation and amylase levels first detected at 6th week. These results coincide with an increase in steatore which is the main determinant of the exocrine pancreas dysfunction. We conclude that feeding C57BL/6 mice for 6 weeks with HFHSD is adequate to induce fatty pancreas and subsequent exocrine pancreas dysfunction.
Keywords: Non-alcoholic fatty pancreas, Animal model, Exocrine pancreas

PC-25

The Relationship Between Glycoprotein Non-Metastatic Melanoma Protein B (GPNMB), Blood Glucose Levels and Hepatic Steatosis in Healthy Subjects

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AIM: Glycoprotein Non-Metastatic Melanoma Protein B (GPNMB) is a hepatokine secreted from the liver and increased in diseases such as diabetes, fatty-liver disease, and obesity. The functions of GPNMB, its role in energy metabolism, and the factors affecting blood GPNMB levels in healthy individuals are not fully known. The aim of this study was to investigate the relationship between blood GPNMB levels and glucose metabolism, lipid profile, liver size, steatosis, and stiffness in healthy individuals.

METHODS: There were 61 participants (30–55 years old, 32 female). Blood samples were taken after 12 hours of fasting for glucose, insulin, GPNMB, lipid profile, ALT, AST, and CRP measurements. After oral glucose tolerance test (OGTT), blood samples were taken again at 30, 60, 90, 120 minutes to measure blood glucose, insulin, and GPNMB levels. The liver size, steatosis and stiffness were evaluated with magnetic resonance imaging after anthropometric measurements and detailed body analysis.

RESULTS: 47.5% of the subjects were normal-weight and 52.5% were overweight/obese. The mean blood GPNMB level of the subjects was 2.91 ± 1 pg/ml. OGTT did not affect GPNMB levels due to blood glucose and insulin changes. GPNMB levels were positively correlated with age (β=0.172, P<0.01), body-weight (β=0.191, P<0.0001), AST/ALT (β=1.244, P<0.001), LDL (β=0.150, P<0.05) and CRP (β=1.244, P<0.001). Liver size (β=0.190, P<0.01) and stiffness (β=0.722, P<0.05) were found to have positive effects on GPNMB levels, while liver steatosis had a negative effect (β=-0.205, P<0.001).

CONCLUSIONS: Serum GPNMB levels are not affected by acute changes in blood glucose levels in healthy individuals. However, serum GPNMB levels are influenced by parameters that reflect long-term changes in energy metabolism, including increased body-weight, LDL, and fatty-liver. Additional research is required to better understand the physiological functions of GPNMB and its link to disorders related to energy metabolism. This thesis study was supported by Hacettepe University Scientific Research Projects Coordination Unit (THD-2022-19610).

Keywords: GPNMB, Hepatokine, OGTT, Fatty liver, Gucose metabolism

PC-26

Effects of High-Molecular-Weight Polyvinyl Chloride on Wistar Rat Gut Microbiota Diversity

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AIM: There are more than 100 trillion microorganisms in the healthy human body, 85% of which are beneficial and 15% are opportunistic bacteria called pathobionts. Microbiota, which is a community of microorganisms consisting of bacteria, viruses and archaea, causes changes in the physiological balance of the body in case of dysbiosis.
METHODS: In this study, metagenome analysis was used to determine the effect of chronic administration of High Molecular Weight Polyvinyl Chloride (HMW-PVC) microplastics to young Wistar rats on the intestinal microbiota.A total of 40 young rats were used in the study: 15 in Group1, 15 in Group2 and 10 in Control. HMW-PVC (Group1; 1% of their weight, Group2; 2% of their weight) microplastic was added into the pellets specially produced for feeding. At the end of the experiments, the rats were dissected under ketamine and xylasin anesthesia and the intestines were examined metagenomically.Differential abundance analysis (Deseq2 R package) was performed to identify specific changes between groups and a linear discriminant analysis effect size (LEFSe) search was performed between groups to demonstrate statistically significant taxonomies.
RESULTS: Due to the small number of samples, alpha diversity in the intestinal metagenome study did not show statistically significant differences, but there were differences in bacterial diversity and density across experimental groups.The predominance of Escherichia coli and Shigella in the experimental groups, compared to the control groups, was evaluated as an increase in metabolic pathways associated with pathogenicity as a result of microplastic exposure.
CONCLUSIONS: The findings reveal that extreme caution should be exercised in the production and use of nano/microplastics that pose a risk to the health of living things.

Keywords: HMW-PVC, Intestine, Krona, Metagenom, Microbiota

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PC-27

The investigations of Effects of Citicoline on Experimental Intestinal Ischemia Reperfusion Injury

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AIM: Intestinal ischemia/reperfusion (I/R) injury leads to motility dysfunction in the intestines, local and systemic inflammation response, and damage to the intestinal mucosa. Citicoline, also known as cytidine 5'-diphosphocholine, is reported to have neuroprotective effects. The aim of the this study was to investigate the effects of citicoline on the intestinal I/R injury.

METHODS: Thirty two rats were randomized into four groups (n=8). The sham-control, intestinal I/R, and I/R + citicoline 100 mg/kg treated group and I/R + citicoline 250 mg/kg treated group. The induction of ischemia was achieved by clamping the superior mesenteric artery for 45 minutes, followed by a 2-hour period of reperfusion. Citicoline was administered intraperitoneally just before the onset of reperfusion. Ileum contractil activity was investigated using an isolated organ bath. Tissue levels of toll-like receptor 4 (TLR4), Nuclear factor kappa B (NF-κB) was evaluated using ELISA. Histopathological analysis were also evaluated. A one-way analysis of variance (ANOVA) was conducted for statistical comparison of the groups, followed by the Bonferroni test to identify differences between the groups.

RESULTS: Histopathological analysis revealed that intestinal I/R caused intense injury to intestinal tissues. In the I/R group TLR4, NF-κB levels and histopathological scores were increased ($p<0.001$, $p<0.001$, $p<0.001$, respectively). Citicoline treatment decreased TLR4 and NF-κB levels ($p=0.020$, $p=0.012$, respectively) in 250 mg/kg dose. Citicoline treatment improved histopathological scores ($p=0.033$,$p=0.033$) and reduced contractil activity in 100 and 250 mg/kg doses ($p=0.034$, $p=0.014$).

CONCLUSIONS: These findings indicate that citicoline may exerts protective effects against intestinal injury caused by I/R in rats. This study was supported by Zonguldak Bülent Ecevit University Scientific Research Projects Coordination Unit. Project Number: '2021-64154304-01'

Keywords: Citicoline, Intestinal ischemia, Reperfusion injury

PC-28

Dapagliflozin Exhibits a Protective Effect Against Hepatic İschemia-Reperfusion Injury in Rats

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AIM: Hepatic ischemia-reperfusion injury (IRI) is a pathological condition commonly encountered during liver transplantation and certain surgical procedures. Oxidative stress and inflammation play a significant role in the pathogenesis of hepatic IRI. This study aims to investigate the effects of the antioxidant dapagliflozin (Dapa) on hepatic IRI.

METHODS: Adult male *Sprague Dawley* rats (300-350 grams) were randomly divided into four groups (n=10, each): Sham, IRI, Dapa1+IRI and Dapa10+IRI. For 5 days prior to the surgical procedures, Sham and IRI groups were administered saline, while Dapa1+IRI and Dapa10+IRI groups received two different doses of Dapa (1 and 10 mg/kg, respectively) by oral gavage. Subsequently, sham group underwent laparotomy, while the IRI, Dapa1+IRI and Dapa10+IRI groups were subjected to 30 minutes of total hepatic ischemia followed by 2 hours of reperfusion. Plasma ALT and AST levels as well as hepatic TNF-α, IL-1β and NF-κB levels were measured using the ELISA method. Levels of SOD, GSH, CAT, MDA and GSH-Px in liver tissue were determined using spectrophotometric methods. Data were evaluated using the Kruskal Wallis H test. Multiple comparisons were evaluated using the Mann Whitney U test with Bonferroni correction.

RESULTS: Hepatic IRI significantly reduced the levels of antioxidants such as SOD, GSH, CAT and GSH-Px, while significantly increasing the plasma ALT and AST levels and hepatic MDA, TNF-α, IL-1β and NF-κB levels ($p<0.05$). Pre-treatment with Dapa led to a significant reduction in plasma levels of AST and ALT as well as hepatic MDA, TNF-α, IL-1β and NF-κB levels, in addition to a significant increase in hepatic antioxidant markers (SOD, GSH, CAT, GSH-Px) ($p<0.05$).

CONCLUSIONS: Dapa exhibited a protective effect against hepatic damage induced by IRI in rats by reducing oxidative stress and inflammatory response.

Acknowledgments: This research was supported by Inonu University Scientific Research Projects Unit (project no: TSG-2024-3564).

Keywords: Dapagliflozin, Hepatic ischaemia, Inflammation, Oxidative stress

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PC-29

Role of Glucagon-Like Peptide-1 Receptors and Nitric Oxide in the Effect of Oxytocin on Small Intestinal Fasting Myoelectric Activity of Rats

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AIM: Migrating myoelectric complex (MMC) is a motility pattern that occurs in the stomach and small intestine during fasting and forms the origin of fasting peristalsis. It is claimed that activation of glucagon-like peptide-1 receptors(GLP-1Rs) and nitric oxide(NO) release have an inhibitory role in the tonic control of MMC. In our previous study, we demonstrated the inhibitory effect of oxytocin administration on MMC activity in fasted rats. Aim of our study was to investigate the possible role of GLP-1Rs and NO in the effect of peripherally administered oxytocin on MMC activity in fasted rats.

METHODS: The experiments were started after the approval of the OMÜ Animal Experiments Local Ethics Committee (HADYEK, 2022/25) was received. For MMC recording, bipolar electrodes were placed at three different sites, 10 cm apart, in the jejunum of 42 male Sprague-Dawley rats (275-325 g) under ketamine+ chlorpromazine anesthesia. Animals were randomly divided into 6 groups with 7 rats in each group.Following the 7-day recovery period, experiments were performed after an 18-hour fasting period. Oxytocin(16 µg/kg), nitric oxide synthase inhibitor Nomega-Nitro-L arginine [L-NNA(5 mg/kg)], GLP-1R antagonist exendin 9-39(200 µg/kg) or physiological saline [FTS(2 ml/kg)] which is the solvent of all these substances, was administered intraperitoneally(i.p.) to each group following the recording of one-hour of basal myoelectric activity. In the combination groups, L-NNA (5 mg/kg) or exendin 9-39(200 ug/kg) was administered i.p. 5 minutes before oxytocin administration. One-way analysis of variance(ANOVA) test was performed for statistical analysis and Tukey-Kramer post-hoc test was used for multiple comparisons between groups.

RESULTS: The inhibitory effect of oxytocin on MMC activity did not change with L-NNA pre-application but decreased with exendin 9-39 pre-application($p<0.01$). Exendin 9-39 and L-NNA alone did not cause a significant change in MMC activity.

CONCLUSIONS: Our findings suggest that GLP-1Rs play a role in the inhibitory effect of exogenously administered oxytocin on MMC activity in fasted male rats.
Keywords: Glucagon-like peptide-1, Migrating myoelectric complex, Small intestinal motility, Nitric oxide, Oxytocin, Rat

PC-30

Anti-Inflammatory, Antioxidant and Anti-Apoptotic Effects of GnRH Antagonist Cetrorelix in Rat Ulcerative Colitis Model

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AIM: Cetrorelix (CTX), which is a synthetic decapeptide used to prevent early luteinizing hormone surges in assisted reproduction, has shown anti-inflammatory and antioxidant effects in different disease models. This study aimed to investigate the effects of CTX, a gonadotropin-releasing hormone (GnRH) antagonist, in acetic acid (AA)-induced ulcerative colitis model in rats.
METHODS: Four groups were formed randomly with 8 rats in each group. Control group was administered saline (1ml), whereas colitis groups were administered 5% (pH:2.3) acetic acid (AA) intrarectally. Control group was treated with saline (0.1ml/100g; intraperitoneally); AA colitis groups were treated either with saline or CTX (100µg/kg/day) or sulfasalazine (100mg/kg/day; positive control) used in the treatment of ulcerative colitis, intraperitoneally once a day for 3 days following colitis induction. On the 3rd day, tissue wet weight and macroscopic score measurements were performed on 8-cm colonic tissues. Histological and biochemical parameters [myeloperoxidase (MPO), malondialdehyde (MDA), glutathione (GSH), chemiluminescence, 8-hydroxy-2'-deoxyguanosine (8-OHdG), caspase-3 and pro-inflammatory cytokines (tumor necrosis factor-alpha, interferon-gamma, interleukin (IL)-1beta, IL-6 and IL-8)] were evaluated in tissue samples. Data were analyzed with ANOVA followed by Tukey's multiple-comparison test. This study was approved by the University of Health Sciences Animal Ethics Committee.
RESULTS: When compared with the control group, a decrease in antioxidant GSH levels and an increase in all other parameters were observed in the saline-treated colitis group ($p<0.05$). CTX treatment significantly decreased macroscopic and microscopic damage scores, tissue wet weight, chemiluminescence, 8-OHdG, caspase-3 and cytokine levels ($p<0.05$), but had no effect on MPO, MDA and GSH levels. In the sulfasalazine-treated group, improvement was detected in damage parameters except MDA and GSH levels ($p<0.05$).
CONCLUSIONS: Cetrorelix, which shows anti-inflammatory, antioxidant and anti-apoptotic effects in the experimental AA-colitis model, can be considered as a therapeutic agent in ulcerative colitis. Our study was supported by University of Health Sciences Research Fund (2022/201) and TUBITAK (122S979).
Keywords: Apoptosis, Acetic acid, Cetrorelix, Oxidative stress, Ulcerative colitis

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PC-31

Investigation of The Effects of Sinapic Acid on Ethanol-Induced Gastric Injuries

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AIM: This study aims to investigate the protective effects of sinapic acid (SA) against ethanol (ETH)-induced gastric mucosal damage. The study evaluates whether the antioxidant, anti-inflammatory, and anti-apoptotic properties of sinapic acid can reduce damage to the gastric mucosa.

METHODS: In the experiments, 48 Wistar albino rats were used and divided into 6 different groups: Control, ETH, ETH+OMEP (omeprazole), ETH + SA 20 mg/kg, and ETH + SA 40 mg/kg. Gastric mucosal damage was induced in the rats using ETH.Biochemical and histopathological analyses were performed on the stomach tissues obtained at the end of the experiment. The measured parameters included Total Antioxidant Status (TAS), Total Oxidant Status (TOS), Glutathione (GSH), Superoxide Dismutase (SOD) levels, Malondialdehyde (MDA) levels, Myeloperoxidase (MPO), Tumor Necrosis Factor-alpha (TNF-α), Interleukin-1 beta (IL-1β), IL-6, and Bax protein expression. For the biochemical analysis of group differences, one-way ANOVA and Tukey HSD tests were used as multiple comparison tests. A p-value of 0.05 was considered statistically significant. For histopathological results, Kruskal-Wallis and Mann-Whitney U tests were preferred.

RESULTS: ETH application caused significant damage to the gastric mucosa in the rats, resulting in indicators of oxidative stress and inflammation such as increased levels of MDA ($p<0.05$), MPO ($p<0.05$), TOS ($p<0.05$), TNF-α ($p<0.05$), IL-1β ($p<0.05$), and elevated expression of IL-6 and Bax. However, SA treatment reduced these adverse effects, increasing GSH ($p<0.05$) and SOD ($p<0.05$) levels, decreasing MDA ($p<0.05$) levels, and suppressing IL-6 and Bax expression. Additionally, SA also reduced mucosal bleeding and edema.

CONCLUSIONS: Our study demonstrated that SA has a protective effect against ethanol-induced gastric mucosal damage. SA protects the gastric mucosa and reduces damage through its antioxidant, anti-inflammatory, and anti-apoptotic properties. These findings suggest that sinapic acid could be a potential agent for the treatment of gastric ulcers.
Keywords: Ulcer, Sinapic acid, Inflammation, Oxidative stress

PC-32

The Effect of *Myrtus communis* Extract on High Fat Diet Induced Liver Damage in Rats

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AIM: It is known that high-fat diet (HFD) causes liver damage. This study aimed to reveal the possible protective effects of *Myrtus communis* (MC) extract on the liver tissue of HFD-fed rats.

METHODS: Wistar albino male rats (2 months old, 200-250 g) were divided into 3 groups (control, HFD, HFD+MC). Animals in the control group were fed with standard chow, and animals in the HFD and HFD+MC groups were fed with HFD (4 months). MC extract (100 mg/kg) was administered in the HFD+MC group by orogastric gavage for 1 month, starting from the 3rd month. 8-hydroxy-2-deoxyguanosine (8-OHdG), glutathione (GSH) and myeloperoxidase (MPO) activities were examined by biochemical methods in liver samples obtained from rats at the end of the experiment. Hematoxylin&Eosin, Sirius Red, Periodic Acid Schiff staining, as well as Nuclear Factor-kappa B (NF-κB), Glial Fibrillary Acidic Protein (GFAP) and smooth muscle alpha-actin (α-SMA) immunohistochemistry were performed. Sections were evaluated by light microscope and statistically analyzed with one-way ANOVA and Tukey's multiple comparison tests.

RESULTS: Liver tissue 8-OHdG and MPO levels increased in HFD group compared to controls ($P<0.01$) and decreased with MC extract application ($P<0,01$). It was observed that the decrease in tissue GSH levels in the HFD group ($P<0.001$) increased in the HFD-MC group ($P<0.01$). In addition, hepatocyte damage, decrease in glycogen distribution, and increased collagen distribution and GFAP, α-SMA and NF-κB immunoreactivities were observed in the HFD group compared to the control group ($P<0.01$). It was observed that histological damage decreased with MC application ($P<0.05$).

CONCLUSIONS: Our results reveal that MC extract has healing effects on liver damage caused by HFD in rats through antioxidant and anti-inflammatory mechanisms. These effects should be supported by further experimental and clinical studies. This study was supported by the Scientific Research Projects Unit of Marmara University (TTU-2020-10030).
Keywords: High Fat Diet, Myrtus communis Extract, Liver

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PC-33

Investigation of the Relationship Between Gastric Myoelectric Activity Measurements and Gastric Emptying Rate in Healthy and Diabetic Gastroparetic Individuals

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AIM: The study aimed to investigate the relationship between gastric myoelectric activity and gastric emptying rate in healthy and diabetic gastroparesis (D-GP) patients, and to evaluate the clinical use of electrogastrography (EGG) techniques.

METHODS: The study was conducted on 40 male subjects, including 20 healthy individuals and 20 with symptomatic D-GP. Gastric myoelectric activity was recorded using cutaneous EGG. After fasting blood samples were collected, preprandial (30 min) and postprandial (60 min) EGG recordings were obtained after consuming a standard test meal (450 kcal). The next day, gastric emptying rate (GER) was assessed using ultrasound-based antral area measurements at 15 and 90 minutes post-meal.

RESULTS: Fasting glucose and HbA1c levels were significantly higher in the D-GP group ($p<0.001$). In both pre- and postprandial periods, dominant frequency (DF) and normogastria percentages were lower in the D-GP group ($p<0.001$), while bradygastria was higher ($p<0.001$). No significant differences were found for tachygastria. Postprandial power change (PPC) was not significantly different between groups. The D-GP group showed significant antral dilation and a decrease in GER ($p<0.001$). A positive correlation was found between GER and PPC in the D-GP group.

CONCLUSIONS: Reduced postprandial power and rhythm disturbances in D-GP patients were associated with slower gastric emptying. These findings suggest that EGG combined with antral area measurements could help differentiate diabetic gastroparesis.
This study was supported by Dicle University Scientific Research Projects Coordination (DUBAP) with project number TIP.20.012.

Keywords: Gastric myoelectric activity, Diabetes, Gastric emptying rate

PC-34

JAK inhibitor Baricitinib Attenuates Kidney Injury in Sepsis Model Induced by Cecal Ligation and Puncture

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AIM: The Janus kinase-signal transducer and activator of transcription (JAK/STAT) pathway is an essential signaling pathway for the signaling of many important cytokines involved in sepsis. Baricitinib is one of the JAK inhibitors used in the treatment of inflammatory disorders. In this study, we investigated the effects of baricitinib on kidney injury in a sepsis model induced by cecal ligation and puncture (CLP).

METHODS: Forty male Spraque-Dawley rats were divided into 4 groups of 10 animals per group. The cecum of the groups that underwent CLP was ligated with a surgical thread in the distal region so as not to disrupt intestinal transit, and then punctured with a needle and the fecal contents were allowed to spread into the abdominal cavity. Among the three CLP groups, the first group received solvent, the second group received baricitinib at a dose of 3 mg/kg and the third group received baricitinib at a dose of 10 mg/kg. After 24 hours, the kidneys of the sacrificed animals were examined histopathologically. Blood urea nitrogen (BUN), creatinine, tumor necrosis factor alpha (TNF-α), interleukin beta (IL-1β), interleukin 18 (IL-18) levels were determined in serum.

RESULTS: Serum BUN, creatine, TNF-α, IL-1β, IL-18 levels increased in the CLP group compared to the control group ($p<0,05$). Increased serum BUN, creatinine, TNF-α, IL-1β, IL-18 levels in CLP group decreased in both 3 mg/kg and 10 mg/kg baricitinib treated groups ($p<0,05$). Histopathologic histopathologic examination of the kidney tissue revealed damage in the CLP group compared to the control group ($p<0,05$). Kidney damage in the CLP group decreased in both baricitinib 3 mg/kg and 10 mg/kg groups.

CONCLUSIONS: In this study, we found that 2 different doses of baricitinib (3 mg/kg and 10 mg/kg) showed protective properties by reducing inflammation and kidney damage in CLP-induced experimental sepsis model.

Keywords: Sepsis, Cecal ligation and puncture, Baricitinib, JAK inhibition

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PC-35

Capsaicin Reduces Kidney Injury in a Sepsis Model Induced by Cecal Ligation and Puncture

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AIM: Sepsis is a serious health problem closely associated with multiple organ failure, with the kidneys being among the most affected organs. Transient Receptor Potential Vanilloid 1 (TRPV1) channels are related to inflammation, and capsaicin, a TRPV1 agonist, possesses antimicrobial, anti-inflammatory, and antioxidant properties. This study aims to investigate the effects of capsaicin on kidney damage in a cecal ligation and puncture (CLP)-induced sepsis model.

METHODS: Male Sprague-Dawley rats weighing 250-320 grams (n=50) were divided into five groups: Control, CLP, Cap2, Cap6, and Cap30. In the CLP procedure, the distal part of the cecum was ligated and punctured to allow the spread of fecal content into the peritoneum. The treatment groups received intraperitoneal capsaicin at doses of 2, 6, or 30 mg/kg, respectively. Rats were sacrificed 24 hours after CLP, and blood and kidney tissue samples were collected. Serum BUN and creatinine levels were measured, and histopathological and immunohistochemical analyses were performed. This study was approved by the Inonu University Animal Research Ethics Committee (protocol no: 2023/5-8).

RESULTS: A significant increase in BUN and creatinine levels was observed in the sepsis group compared to the control group ($p<0.05$). BUN levels decreased in the groups treated with 6 and 30 mg/kg capsaicin, while creatinine levels decreased in all treatment groups in a dose-dependent manner ($p<0.05$). Histopathological examination revealed glomerular degeneration, tubular damage, and inflammation in the CLP group, which were reduced by capsaicin treatment. Immunohistochemical analysis showed a decrease in TNF-α, IL-1β, IL-6, CASP3, TLR4, p-NF-κB, and p-IκB-α levels in the treatment groups ($p<0.05$).

CONCLUSIONS: Capsaicin reduced kidney damage and exhibited anti-inflammatory effects in the CLP-induced sepsis model. This study was supported by Yozgat Bozok University Scientific Research Projects Unit (project no: THD-2023-1192).

Keywords: Sepsis, Cecal Ligation and Puncture, Capsaicin, Kidney

PC-36

Caftaric Acid Reduces Ischemia-Reperfusion Mediated Kidney and Lung Injury

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AIM: Caftaric acid (CA) is a phenolic compound present in various plants, known for its pharmacological properties, including antioxidant and anti-inflammatory effects. Oxidative stress and inflammation are key contributors to ischemia-reperfusion (IR) injury. This study aimed to evaluate the effects of different doses of CA on mitigating kidney and lung daage induced by oxidative stress in an IR model.

METHODS: Thirty-two Wistar Albino rats were used and divided into 4 groups (n=8).Sham, IR, and CA treatment groups receiving 40 mg/kg and 80 mg/kg doses. In IR Bilateral kidney arteria and veins were held with atraumatic microvascular clamp for 1 h. Later, allowing blood circulation for 24 h by opening the clamps in reperfusion period. Incision was closed with silk 3/0 suture.After the experimental period, kidney and lung tissues were collected for biochemical, histopathological, and immunohistochemical analyses. Statistical analysis was performed using one-way analysis of variance (ANOVA), followed by post-hoc Tukey tests for inter-group comparisons, with a significance level set at $p<0.05$.

RESULTS: In the IR group, oxidant parameters (myeloperoxidase (MPO), malondialdehyde (MDA), total oxidant status (TOS), and oxidative stress index (OSI)) were elevated, while antioxidant activity (total antioxidant status (TAS) and superoxide dismutase (SOD)) decreased. Additionally, immunopositivity for microtubule-associated protein light chain 3 (LC3), Cyclooxygenase-2 (COX-2), and Caspase-3 was markedly increased in the IR group, with a concurrent reduction in antioxidant levels. However, CA treatment improved LC3, COX-2, and Caspase-3 immunopositivity, reduced oxidant levels, and enhanced antioxidant capacity. These findings were corroborated by histopathological observations.

CONCLUSIONS: Based on our results, CA appears to be highly effective in protecting the kidneys and lungs from oxidative damage in a renal IR model.

Keywords: Ischemia-reperfusion, Caftaric acid, Kidney, Lung

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PC-37

Protective Effects of Apelin-13 on the Hearing System: Normative Data in a Diabetic Rat Model

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AIM: Diabetes can damage the hearing system by affecting glucose metabolism and cochlear circulation. Auditory brainstem response(ABR) recording can be used diagnostically at 80 dB nHL and to determine hearing thresholds by reducing sound intensity and for screening the presence of wave V at 35 dB nHL. This study aims to examine the effects of apelin-13 on the hearing system in STZ-induced diabetic rats and create normative data for ABR.

METHODS: In the study, 32 male Wistar albino rats were randomly divided into sham, diabetes, apelin, and diabetes+apelin groups. Diabetes and diabetes+apelin groups received a single intraperitoneal dose of 45 mg/kg STZ. The apelin and diabetes+apelin groups received 50 µg/kg apelin-13 intraperitoneally for seven days. ABRs were recorded for all animals under anesthesia. Wave latencies I, II, III, IV, and V were recorded bilaterally at 16, 24, and 32 kHz at 80 dB nHL. Descriptive statistical analyses and Mann-Whitney U tests were used to compare wave latencies between ears and groups, with significance set at $p<0.05$.

RESULTS: The mean and standard deviation values for wave latencies I, II, III, IV, and V at 16, 24, and 32 kHz at 80 dB nHL were calculated for both ears. No significant differences were observed between groups at any frequency ($p>0.05$). Within-group ear comparisons showed no significant differences in wave latencies at 16 and 32 kHz, but significant differences at 24 kHz for wave latencies II, III, IV, and V ($p=0.002$, $p=0.001$, $p=0.008$, $p=0.047$).

CONCLUSIONS: The study concluded that diabetes and apelin do not cause changes in high-intensity ABRs, and normative data were obtained for auditory system evaluation using diagnostic ABRs at 80 dB nHL. It is recommended that studies evaluating the effects of diabetes on the auditory system should not use diagnostic ABR recordings at 80 dBnHL but rather evaluate the effects at hearing threshold levels.

Keywords: Auditory brainstem responses, Diabetes, Animal model

PC-38

Ramelteon Reduces Oxidative Damage in Diabetic Mice

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AIM: Diabetes is characterized in literature as a disease that arises from insufficient insulin secretion, deficiency, or disruptions in its metabolism. Research indicates inadequate sleep can hinder insulin secretion and elevate glucose levels, leading to oxidative damage in body. Ramelteon used to treat insomnia, is known to enhance neuronal activity. While various studies suggest that Ramelteon possesses anti-inflammatory properties, its impact on diabetes and oxidative-damage associated with it remains unexplored. This study aims to clarify the effect of Ramelteon administration on oxidative-damage induced by diabetes.

METHODS: In the study, male Balb-C mice (ethical approval 2024/8-1) were randomly divided into four groups (n=10): control, diabetes, diabetes+Ramelteon (3-6 mg/kg). Streptozotocin (150 mg/kg) was administered intraperitoneally (ip) to all groups except the control group, which remained normoglycemic. Mice with blood glucose levels exceeding 250mg/dL after 72-hours were considered diabetic. No injections were given to control group. Twenty-one days after the onset of diabetes, respectively, saline, 3 and 6mg/kg/day of ip Ramelteon were administered to the diabetic groups for 15-days. Finish of the experiment, animals were decapitated, and their pancreatic tissues were harvested. Levels of MDA and GSH, SOD and CAT enzymes, were measured in the pancreatic tissues. Data were analyzed using Kruskal-Wallis H test, with multiple comparisons performed using Mann-Whitney U test with Bonferroni correction; $p<0.05$ was considered statistically significant.

RESULTS: In diabetic mice, prolonged hyperglycemia led to a significant increase in MDA levels in pancreatic tissues, which was notably reduced by Ramelteon administration ($p<0.05$). The activities of SOD and CAT enzymes, along with GSH levels, were significantly decreased in the diabetic groups ($p<0.05$). However, in the Ramelteon-treated groups, the diminished GSH levels and the activities of SOD and CAT enzymes were significantly elevated ($p<0.05$).

CONCLUSIONS: Study results show Ramelteon may have an antioxidant effect by reducing diabetes and inflammation-oxidative damage caused by diabetes.
This study was supported by TUBITAK 1002-A (323S449) and 2211-A National PhD Scholarship Program.

Key Words: Ramelteon, Diabetes, Oxidative Damage, Melatonin.

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PC-39

Inhibition of Transient Receptor Potential Ankyrin 1 Channels Reduces Renal Ischemia Reperfusion Injury

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AIM: Transient receptor potential ankyrin 1 (TRPA1), a calcium-permeable non-selective cation channel, has been shown to play a role in modulating inflammation after tissue injury and TRPA1 expression is altered in renal tissue after ischemia reperfusion (IR). In this study, we investigated the effects of TRPA1 agonist ASP7663 and TRPA1 antagonist HC-030031 on renal IR injury.

METHODS: A total of 40 male Sprague Dawley rats were divided into 4 groups (Control, IR, IR+ASP7663, IR+HC-030031). No surgical procedure was performed on the animals in the control group. Both kidneys of rats subjected to IR were subjected to 45 minutes ischemia followed by 24 hours reperfusion. One of the two IR groups received 3 mg/kg dose of ASP7663 and the other received 30 mg/kg dose of HC-030031. At the end of the experiment, urea and creatine (Cre) were measured from the serum of the animals. Toll-like receptor-4 (TLR4), phosphorylated nuclear factor-kappa B (p-NF-κB), phosphorylated IκB-α, tumor necrosis factor alpha (TNF-α), interleukin 1 beta (IL-1β), caspase-3 levels were measured immunohytochemically in the kidney tissue. Histopathologic examinations were also performed in the kidney.

RESULTS: Serum urea, creatinine levels and renal tissue TLR-4, p-NF-κB, phosphorylated IκB-α, TNF-α, IL-1β, caspase-3 levels were significantly increased in the IR group compared to the control group ($p<0,05$). Histopathologic examinations showed increased damage in the IR group compared to the control group ($p<0,05$). Renal tissue TLR-4, p-NF-κB, phosphorylated IκB-α, TNF-α, IL-1β, caspase-3 levels, histopathologic damage and serum urea, creatine levels were significantly decreased in the group treated with TRPA1 antagonist HC-030031 compared to the IR group ($p<0,05$).

CONCLUSIONS: In this study, we found that TRPA1 antagonist HC-030031 showed protective properties by reducing inflammation and apoptosis in renal IR injury. This study was supported by Yozgat Bozok University BAP unit (project no: TÇD-2023-1097).
Keywords: Ischemia-reperfusion, Kidney, TRPA1 channels, ASP7663, HC-030031.

PC-40

Evaluation of the Effect of Allium Tuncelianum (Tunceli Mountain Garlic) Plant Extract on Behavioral, Antioxidant and Metabolomic Parameters in Rats

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AIM: Allium species are important plants in terms of nutrition and bioactivity. The aim of the study was to evaluate the effect of *Allium tuncelianum* (AT) (Kollmann) Özhatay, B. Mathew & Şiraneci ethanol extract on behavioral, antioxidant and metabolomic parameters in rats.
METHODS: A total of 24 Wistar albino male rats were divided into 4 different groups (n=6). The groups were determined as C, AT100, AT400 and diazepam. Ethanol extract was applied to AT groups at doses of 100 and 400 mg/kg, and distilled water was administered to the control. All administrations were performed orally for 10 days. Elevated plus maze, rotarod and hotplate tests were performed. Oxidative stress parameters were examined in brain, liver and kidney tissues. Untargeted metabolomic analyses were performed in plasma samples.
RESULTS: In liver tissue, diazepam group had significantly lower CAT and GSH-Px levels compared to control group; also, CAT activity was significantly lower compared to AT400 group ($p<0.05$). In kidney tissue, diazepam group had significantly lower CAT enzyme activity compared to control group and AT400 group ($p<0.05$). In brain tissue, diazepam group had significantly lower GSH-Px enzyme activity compared to control group ($p<0.05$). According to GC–MS and LC-qTOF-MS metabolite analysis results, fumaric acid, malic acid, vanillic acid, quercetin-3-arabinoside, hydrocinnamic acid and gallocatechin were determined in the extract. When AT100 and control groups were compared, significant differences were detected in trehalose degradation, phosphatidylinositol phosphate metabolism and spermidine biosynthesis. No significant difference was observed in behavioral tests.
CONCLUSIONS: The present results indicate that AT extract did not cause oxidative stress or bring about significant changes in behavioral parameters. However, it caused significant differences in plasma metabolites and pathways.
Keywords: Allium, antioxidant, Anxiety-like behavior, Hot plate, Metabolomics, Rotarod

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PC-41

Effects of Chronic Cold Stress and Oxytocin on Anxiety-Like Behavior and Antioxidant System

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AIM: The stress response is an essential survival strategy for adjusting to changing conditions. One model used to examine stress and its effects is exposure to cold environments. Oxytocin, which stimulates uterine contraction during labor and milk ejection during lactation, also participates in the control of anxiety, pain and stress responses by directly affecting neurons. Anxiety-like behaviors and locomotor activity in rodents are commonly assessed using open field tests. This study aimed to investigate the effects of chronic cold stress exposure and exogenous oxytocin administration on anxiety-like behaviors, locomotor activities and antioxidant systems.

METHODS: Control (CNT), oxytocin (OT), chronic cold stress (CS), and chronic cold stress + oxytocin (CSO) groups (n=5 for each) comprised 20 male Wistar Albino rats weighing 250–350 g. Rats in CS and CSO groups were placed in cold environment (4 oC) for 2 hours per day for 21 days. Beginning on day 17, rats in the OT and CSO groups administered intranasal oxytocin (1 µg/µl; 2x10 µl) once daily for 5 days. A 5-minute open field test was performed on day 22. Rats were sacrificed after the experiments. Plasma SOD and GSH levels were measured.

RESULTS: OT group's distance moved ($p<0.01$) and average speed ($p<0.02$) were higher than CNT group's in the open field test. OT group spent more time in the center than other groups, but the difference was not statistically significant. No significant difference between the groups was found when examining the number of defecations. There was no statistically significant difference in the levels of SOD and GSH between the groups in the ELISA assays.

CONCLUSIONS: Our findings showed that anxiety-like behaviors, locomotor activities and antioxidant systems in rats exposed to chronic stress were not different from controls. This suggests that, unlike acute stress, chronic exposure to cold provides homeostasis by strengthening the organism's stress coping mechanisms.

Keywords: Cold stress, Oxytocin, Anxiety, Antioxidant

PC-42

Measuring the Electrodermal Activity Level in University Students Using the Beck Anxiety Test

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AIM: Electrodermal activity (EDA), originating from sweat glands and adjacent epidermal and dermal layers, indicates sympathetic activity and can be recorded from the skin surface using electrodes. Stress from various stimuli increases sympathetic activity, causing anxiety symptoms. Increased eccrine sweat gland activity due to sympathetic stimulation can be observed by measuring EDA levels. EDA measurements were conducted with the Biopack system on students aged 17-25 took the Beck Anxiety Scale. This study aims to examine EDA test results by gender and through questions stimulating cognitive activity during measurements at certain moments.

METHODS: The study sample included 69 participants (40 females and 28 male) agreed to participate the research from Başkent University Faculty of Medicine. Participants completed a demographic information form and the Beck Anxiety Scale, with scores categorized as mild (5-9 points), moderate (10-14 points), and severe (15+ points). Electrodes were attached to the index and middle fingers of the using the Biopack MP36R device. A pulse oximeter device was connected to the and pulse and oxygen saturation (SpO_2) changes were recorded. During the measurements, the participants were asked three questions from a sample of questions prepared by the researchers at 90th,120th and 150th seconds and the participants were asked to answer yes or no to these three questions only with eye movements.

RESULTS: The average age of participants was 20.4 ± SD1.9 years. An increase in EDA frequency from 0.02 to 0.06 Hz ($p<0.001$) was observed. There was no significant difference between genders or between participants with moderate and severe anxiety levels.

CONCLUSIONS: According to the findings in gender-differentiated students obtained with the EDA circuit, it was determined that the EDA frequency measured after asking questions was higher than the basal frequency. In the study, an increase in sympathetic activity was demonstrated through EDA measurement in participants with stimulation of cognitive activity.

Keywords: Electrodermal activity, Beck anxiety test, Sympathetic arousal, Pulse

PC-43

Poster was not presented at the meeting.

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PC-44

Effect of Spexin on Cell Viability in a Diabetic Neuropathy Model: An *in vitro* Study

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AIM: Diabetic neuropathy (DN), which targets sensory, autonomic, and motor neurons of the peripheral nervous system, is one of the most common chronic complications of diabetes. Nociceptors sense pain stimuli in the DN, and the cell bodies of nociceptors are located in the dorsal root ganglion (DRG). Spexin (SPX) is a peptide hormone involved in many metabolic processes, such as nociception, nutrition, and reproduction. However, it shows activity in the brainstem, trigeminal ganglia, and cerebral cortex, which are known to be closely related to nociceptive transmission. The effects of SPX, which has been emphasized as having antinociceptive activity in previous studies, on cell viability in diabetic DRG neurons are unknown. The aim of this study was to investigate the efficacy of SPX in an in vitro model of DN.

METHODS: DRG neurons used in the study were isolated from 2-3-day-old Wistar Albino rats by enzymatic and mechanical procedures. An in vitro model of DN was established using DRG neurons exposed to high glucose (45 mmol/L) for 24 hours. SPX was administered to DRG neurons at various doses (0.1, 1, 10, 100, and 1000 ng/ml) with high glucose for 24 hours to see how it affected the viability of cells. The MTT assay was used to determine cell viability. Cell viability (EC50) was calculated using Graphpad Prism 8 software. In comparisons between groups, the IBM SPSS-24 package program was used, and a $p<0.05$ value was considered statistically significant.

RESULTS: It was determined that 1, 10, 100 and 1000 ng/ml concentrations of SPX administered together with high glucose significantly increased the cell viability of DRG neurons ($p<0.05$).

CONCLUSIONS: As a result of this study, SPX was found to increase cell viability in DRG neurons. SPX may show potential as a new therapeutic target in DN. This study was supported by the TUBITAK with project number 124S122.
Keywords: Spexin, Diabetic Neuropathy, Dorsal Root Ganglia

PC-45

The Neuroinflammatory and Neuroprotective Roles of Apelin-13 in D-Glutamic Acid-induced Excitotoxicity in SH-SY5Y Cell Line

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AIM: Excitotoxicity, resulting from the excessive accumulation of glutamate in the extracellular space, leads to neuronal cell death. This study investigates the protective effects of Apelin-13 on D-glutamic acid-induced excitotoxicity in SH-SY5Y human neuroblastoma cells, an in vitro model for neurodegenerative diseases. Unlike the commonly studied L-glutamic acid, this research focuses on understanding the specific impacts of D-glutamic acid.

METHODS: SH-SY5Y cells were treated with varying concentrations of D-glutamic acid and Apelin-13, followed by cell viability tests (MTT) and imaging at 12th and 24th hours. DT, KYN, T-SH, AOPP, and AGE were analyzed using biochemical methods. IL-10, IL-1β, TNF-α, TGF-β1 and BDNF were determined using ELISA. GraphPad-Prism was used for statistical analysis. Data normality assessed with Shapiro-Wilk test and homogeneity with Levene-test. One-way-ANOVA and post-hoc Tukey tests were used comparisons. Kruskal-Wallis and post-hoc-Dunn tests were used for non-normal data. $P<0.05$ was considered statistically significant.

RESULTS: MTT analyses revealed that D-glutamic acid exhibited significant cytotoxic effects at doses of 10 mM and 20 mM, reducing cell viability by over 50%. However, Apelin-13 treatment, especially at 2 µg/mL, mitigated these effects, increased cell viability, and reduced inflammatory cytokine levels (IL-1β, TNF-α). Additionally, Apelin-13 increased the levels of anti-inflammatory cytokines (IL-10,TGF-β1) and brain-derived neurotrophic factor (BDNF), demonstrating its neuroprotective role. The oxidative stress markers significantly elevated by D-glutamic acid were effectively reduced by Apelin-13.

CONCLUSIONS: The neuroprotective effects of Apelin-13 are associated with the regulation of cAMP/PKA and MAPK signaling pathways, increased BDNF synthesis, and the reduction of oxidative stress and inflammatory responses. This study is the first to demonstrate the effects of D-glutamic acid on SH-SY5Y cells.It highlights the potential of Apelin-13 as a therapeutic agent against excitotoxicity-induced neuronal damage and emphasizes its ability to modulate critical molecular pathways involved in inflammation and oxidative stress.Further in vivo studies are needed to explore the long-term neuroprotective effects of Apelin-13 in the treatment of neurodegenerative diseases. This study was supported by Istanbul University-Cerrahpaşa Scientific Research Projects Unit (Project-Number:TSA-2023-37359).
Keywords: Apelin-13, Excitotoxicity, D-Glutamic Acid, Neuroinflammation, SH-SY5Y cell line

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PC-46

Effects of Zinc Deficiency and Supplementation on Molecular Functions in Hippocampus Tissue in a Rat Experimental Multiple Sclerosis (MS) Model

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AIM: The aim of this study was to investigate how dietary zinc status affects hippocampal ZnT3, NOGO-A, IL-6 and SESN2 gene expression levels and hippocampal MDA and GSH levels in a rat experimental MS model.

METHODS: The study was conducted on 46 adult male Wistar rats and was approved by the local ethics committee. The animals used in the study were divided into 5 groups (G) (Control 6, other groups 10). G1, Control. G2, Sham-MS: Carboxy-methyl-cellulose (CMC) solution in which Cuprizone was dissolved was administered to the rats via gavage daily for 8 weeks. In order to create MS, animals in G3, 4 and 5 were administered cuprizone in CMC solution via gavage daily for 8 weeks at a rate of 1% of their feed intake. G4 was fed a zinc deficient diet (50 µg/kg zinc). G5 was given zinc sulfate (5 mg/kg/day) intraperitoneally (ip). At the end of the applications, ZnT3, NOGO-A, IL-6 and SESN2 gene expressions were determined by Real-Time-PCR method and MDA and GSH levels were determined by ELISA method in hippocampus tissue samples of sacrificed animals.

RESULTS: The highest MDA and lowest GSH levels and the lowest ZnT3 and highest NOGO-A gene expression were obtained in Groups 3 and 4 ($p<0.05$). Zinc supplementation significantly decreased MDA and NOGO-A gene expression values in Group 5 ($p<0.05$) and significantly increased GSH and ZnT3 gene expression values ($p<0.05$). The highest IL-6 and SESN2 gene expression values were obtained in G3 and G4 ($p<0.05$). Zinc supplementation significantly decreased IL-6 and SESN2 gene expression values in Group 5 ($p<0.05$).

CONCLUSIONS: The results of the current study show that dietary zinc status significantly affects some molecular parameters in the hippocampus tissue in a rat experimental MS model. Zinc supplementation may be effective in preventing pathological processes occurring in hippocampal tissue in an experimental MS model.

Keywords: Multiple sklerosis, Cuprizon, zinc hippocampus, oxidative stress.

PC-47

Investigation of the Effects of Dapagliflozin in an Experimental Cerebral Ischemia-Reperfusion Model in Rats

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AIM: Stroke is among the most common neurological disorders worldwide and is a leading cause of mortality and disability. The aim of this study is to investigate the effects of the SGLT2 inhibitor Dapagliflozin (Dapa) in the middle cerebral artery occlusion (MCAO) model in rats.

METHODS: *Sprague Dawley* male rats (weighing 280-320 grams) were divided into four groups (n=10): Sham, cerebral ischemia (CI), CI+Dapa1mg/kg and CI+Dapa10mg/kg. For 7 days prior to the surgical procedure, sham and CI groups received oral saline, while CI+Dapa1mg/kg and CI+Dapa10mg/kg groups received two different doses of Dapa (1 and 10 mg/kg) by oral gavage. Rats were trained for 3 days before the surgical procedure to perform motor/sensorimotor tests (rotarod, sticky tape removal and grip strength test). Subsequently, the sham group underwent a sham operation and CI, CI+Dapa1mg/kg and CI+Dapa10mg/kg groups underwent a 60-minute MCAO procedure. During the 72-hour reperfusion period, all groups were assessed for neurological deficits and motor/sensorimotor performance. Following this, the animals were euthanized and the infarct area in the brain was determined using the triphenyltetrazolium chloride (TTC) staining method. BDNF and TrkB protein levels were assessed using western blotting.

RESULTS: Comparisons between groups indicated that Dapa facilitated the recovery of motor and sensorimotor deficits caused by CI ($p<0.05$). Dapa treatment resulted in a reduction in the infarct area compared to the CI group ($p<0.05$). Additionally, it was determined that Dapa activated the BDNF/TrkB signaling pathway ($p<0.05$).

CONCLUSIONS: This study demonstrates that Dapa administration reduces neuronal damage caused by ischemic stroke.
Acknowledgements: This study was supported by Inonu University Scientific Research Projects Unit (Project no: TDK-2024-3557).
Keywords: Cerebral ischemia, Dapagliflozin, Neuroprotection

PC-48

Erythropoietin Exerted an Anxiolytic Effect by Regulating Monoaminergic Neurotransmitters and Brain-Derived Growth Factor in Young and Aged Rats

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AIM: Erythropoietin (EPO) is a hormone that has hematopoiesis and cell protective effects. The present study aimed to investigate the effects of Darbepoetin alfa on anxiety-like behaviors, locomotor activity, and brain neurotransmitter-neurotrophic factor mRNA levels in young and aged rats.
METHODS: Adult 32 male Wistar Albino rats were used. They were divided into 4 groups young adult control(12-week-old, n=8), EPO-treated young adult (12-week-old, n=8), aged control (2-year-old, n=8), and EPO-treated aged (2-year-old, n=8). Darbepoetin alfa(EPO-derivation) 2 microgram/kg was administered intraperitoneally once a week for four weeks. Behaviors were analyzed in open field test and elevated plus maze test. Serotonin, noradrenaline, dopamine, and brain-derived neurotrophic factor(BDNF) mRNA levels in the prefrontal cortex and striatum were analyzed by RT-PCR. Anova and Tukey tests were performed as statistical tests.
RESULTS: Anxiety-like behaviors(freezing-grooming time, stretched-attend posture, anxiety index) were significantly decreased in aged rats receiving EPO treatment ($p<0.05$). While there was no difference between EPO-treated young adults and young controls in terms of freezing and itching duration, stress-induced tense posture and anxiety index decreased in EPO-treated young adults ($p<0.05$).
Time spent in the open field and time spent in the open arm increased in the groups receiving EPO ($p<0.05$). It was observed that locomotor activity was impaired in old rats, and this was improved by EPO treatment ($p<0.05$). Serotonin, dopamine, noradrenaline, and BDNF mRNA levels were significantly increased in both the prefrontal cortex and striatum in young and aged subjects after EPO treatment ($p<0.05$).
CONCLUSIONS: Darbepoetin alfa, a derivative of erythropoietin, was found to reduce anxiety-like behaviors in young and aged subjects by regulating brain neurotransmitters and BDNF. Locomotor activity in the vertical and horizontal direction, which deteriorates with age, was also significantly improved. Although 2 mcg of darbepoetin alfa showed positive effects on the central nervous system in elderly subjects, more studies are needed to examine its long-term effects.
Keywords: Anxiety-like behaviors, BDNF, Erythropoietin, Monoaminergic neurotransmitters, Aged rats

PC-49

Analysis of Dopamine Signalling in the Nucleus Accumbens of Opioid Dependent Rats Using Biosensors and Fibre Photometry

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AIM: G protein coupled receptor activation-based (GRAB) biosensors are a novel method in experimental neuroscience research. Overactivation of dopamine, a major neurotransmitter in the central nervous system, in the nucleus accumbens (NAC) plays an important role in the physiopathology of main addiction mechanisms. In this study, we aimed to record dopaminergic activity in the NAC using GRABDA sensors and fibre photometry system in rats with experimental opioid addiction and to provide methodological standardisation.

METHODS: Two groups of adult Wistar rats were used in this study. GRABDA sensors were microinjected sterotaxically into the left NAC region of anaesthetised animals and fibre photometric ferules were placed in the same area. After the 15th day, physiological saline was subcutaneously injected into the control group and morphine at a dose of 10 mg/kg was subcutaneously injected into the addiction group for 5 days. Dopaminergic signal activity from GRABDA biosensors was recorded using a fibre photometer system. The effect of opioid antaonist naloxone on basal dopamine signal activations was also determined. One-way analysis of variance was used for statistical evaluation of the findings.

RESULTS: Basal dopaminergic activity level was significantly higher in the morphine dependence group compared to the control period ($p<0.001$). Naloxone administration significantly decreased the signalling activity compared to the morphine dependence groups ($p<0.01$).
CONCLUSIONS: At the end of this study, the analysis of dopaminergic activity in the central nervous system was performed using a fibre photometer system and GRABDA biosensors. The significantly higher detection of dopaminergic activity in NAC in opioid dependence, which was chosen as a model, shows that the method can be standardised in terms of the efficiency of the biosensor and recording system, sterotaxic localisation of the site of application, dosology, suitability of the fibre.
Keywords: Biosensor, Dopamine, Fibre photometry, Nucleus accumbens, Opioid addiction, Rat

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PC-50

Memory Performance in Female Rat Offspring Born to Mothers Fed a Zinc-Deficient Diet is Associated with Dietary Zinc Status

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AIM: The aim of this study was to investigate the possible effects of maternal zinc deficiency and dietary zinc status on cognitive performance in offspring female rats born to mothers fed a zinc-deficient diet.

METHODS: The study was conducted on 40 female Wistar rats and was approved by the local animal ethics committee. The first three groups in the study were obtained from mothers fed a zinc-deficient diet during pregnancy and until they were separated from their offspring. Group 1 was fed a zinc-deficient diet (2.8 mg/kg zinc). Groups 2 and 4 were fed standard rat chow. The animals in Group 3 were provided with zinc supplementation (5 mg/kg/day intraperitoneal zinc sulfate). Group 4 was used as the control group. Memory performance in the study was evaluated with the Morris water maze test.

RESULTS: At the beginning of the study, no significant difference was observed between the groups in terms of memory performance in the platform finding training for the purpose of accustoming the animals to the tests. In the intragroup comparisons of the tests performed from the 1st day to the 4th day for training purposes, it was determined that the animals showed better memory performance on the other days compared to the first day as the tests were repeated ($p<0.05$). In the measurements made at the end of the applications; the memory performance impairments in the parameters of “time until the target quadrant is first reached, time until the platform is first reached, total swimming distance and swimming speed” in the rats fed with a zinc deficient diet (G1) were prevented with zinc supplementation ($p<0.05$).

CONCLUSIONS: The present study has shown that the impaired memory performance in female rats fed a zinc-deficient diet after maternal zinc deficiency was induced can be corrected with zinc supplementation.

Keywords: Maternal zinc deficiency, Memory performance, Zinc deficient diet

PC-51

Can the Right Brain Hemisphere’s Rapid Sensory Processing Capability Speed up the Reaction Time of the Left Hand?

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AIM: Based on the knowledge that different types of auditory stimuli are integrated with different brain hemispheres in cerebral lateralization, in our study we aimed to investigate the effect of the known superiority of the right hemisphere in the process of processing non-verbal sounds on reaction time. For this purpose, we tested the right and left hand reaction times against a non-verbal auditory stimulus in sympathetic activation generated through exercise in sedentary young people.

METHODS: Thirty right-handed volunteer students participated in this study, which received ethics committee approval. Participants' blood pressure and heart rate were measured before and after exercise, and a treadmill exercise was performed in the form of doubling the resting heart rate and continuing the exercise for 5 minutes in this way. The finger tapping test against a non-verbal sound stimulus was tested separately for each hand before and after exercise. The sound stimulus was applied in 2 different ways, at fixed and random intervals. The data were analyzed using the paired t-test for time-dependent comparisons, as they have a normal distribution.

RESULTS: In both stimulus types, right and left hand reaction speeds increased significantly after exercise compared to before exercise. In the sound stimulus given at fixed intervals; although the right hand reaction speed was higher than the left hand; the difference between the two hands was not significant before and after exercise. In the sound stimulus given at random intervals, the left hand reaction speed was found to be faster than the right both before and after the exercise ($p<0.01$).

CONCLUSIONS :Although the left hemisphere is more competent than the right hemisphere for motor control, in this study, it was evaluated that the speed of the right hemisphere in sensory processing and its increased activation with excessive attention applied to the left hand accelerated the left hand reaction time.

Keywords: Exercise, Cerebral Lateralization, Right Brain, Attention, Auditory Reaction Time

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PC-52

Transgenerational Effect of Nicotine Consumption on the TCF7L2 Signalling Pathway and Glucose Metabolism

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AIM: The role of the TCF7L2 signaling pathway in glucose metabolism is known for the pancreas, its precise function in different brain regions remains largely unknown. Therefore, the aim of this study was to elucidate the transgenerational effect of nicotine consumption on the TCF7L2 pathway and glucose metabolism.

METHODS: Selectively bred high nicotine preferring rats (F30), and naive controls were divided into four groups (n=10/group, all male). The nicotine consumption was measured using a two-bottle-free-choice-paradigm, containing tap water with or without nicotine. Nicotine was administered at 10 mg/L for the first two weeks and increase to the 20 mg/L for the next four weeks. Food was removed 12 hours before animals were as decapitated, and the mRNA expression levels of Tcf7l2, Bdnf, Gsk3β, Glp1-r, and Chrna7 genes in the NAc, VTA, mHb, and pancreas were analyzed using qRT-PCR. Fasting blood glucose levels were determined using strips, while insulin and glucagon levels were measured via ELISA.

RESULTS: Nicotine consumption resulted in a decrease of Tcf7l2, Glp1-r and Bdnf; and an increase of Gsk3β and Chrna7 gene expressions in the NAc, VTA and mHb brain regions. Nevertheless, although no difference could be detected for Gsk3β; Tcf7l2 and Glp1-r gene expression levels showed an increase in the pancreas (all, $p<0.05$). Nicotine consumption also resulted in elevated fasting blood glucose and insulin levels ($p<0.05$); and, reduction in circulating glucagon levels.

CONCLUSIONS: Nicotine decreases Tcf7l2, Glp1-r, and Bdnf while increasing Gsk3β and Chrna7 gene expression in the NAc, VTA, and mHb brain regions. Concurrently, it increases Tcf7l2 and Glp1-r, and decreases Gsk3β in the pancreas. These changes elevate fasting blood glucose and insulin levels, highlighting nicotine's potential role in disrupting glucose metabolism. This work was supported by Ege University Scientific Research Projects Coordination (TS-DKT-2023-2852-to-B.K.) and approved by Ege University Animal Experiments Ethics Committee (EUHADYEK-2022-072R1).

Keywords: Nicotine, Nicotine Prefer Rat Lines (NP), Glucose Metabolism, TCF7L2, Brain, Pancreas.

PC-53

Evaluation of Pathophysiological Processes in Neuronal Cells in an Experimental Cerebral Ischemia Reperfusion Injury Model

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AIM: Ischemia-reperfusion (IR) is a comprehensive pathophysiological process in all tissues, many of whose molecular steps have not been adequately elucidated. This study aimed to determine new targets for the treatment of cerebral IR by comparing different ischemia and IR processes.

METHODS: In the study, 50 Spraque-Dawley rats were divided into Sham, SI(60), SI(90), SI(60)+R, SI(90)+R groups. Different ischemia groups were created as 60 and 90 min focal SI (except Sham group) and 24-hour reperfusion processes. At the end of the IR processes, the infarct area was determined with triphenyltetrazolium chloride (TTC). Mitophagy, autophagy, apoptosis, inflammation and oxidative stress markers from brain tissues were determined in ischemic and ipsilateral lobes by Western Blot and ELISA method.

RESULTS: There was no significant change in the ischemic area in the SI groups compared to the Sham group. The increase in the ischemic areas of the SI/R groups is statistically significant ($p\leq0.05$). When the SI and SI/R groups are compared, the increase in oxidative stress, mitophagy and autophagy markers during the reperfusion process is statistically significant ($p\leq0.05$). When the 60 and 90-minute SI and SI/R groups are compared, the increase in apoptosis and inflammation markers in the long-term ischemia groups is statistically significant ($p\leq0.05$).

CONCLUSIONS: Our study findings indicate that the reperfusion process in SI/R injury triggers oxidative stress, mitophagy and autophagy pathways. The increase in the SI process causes an increase in apoptosis and inflammation. Therefore, the use of protective agents before the reperfusion process in SI treatment may affect the treatment results and processes. This research was supported by Inonu University Scientific Research Projects Unit with project number TOA-2024-3716.

Keywords: Cerebral ischemia, Reperfusion, Mitophagy, Autophagy, Apoptosis, Inflammation

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PC-54

Gallic Acid Protects SH-SY5Y Cells Against MPP+-Induced Neurotoxicity by Reducing Apoptosis

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AIM: Gallic acid (GA), a type of phenolic acid, has been associated with a wide range of neurological disorders. The aim of this study was to investigate the protective effect of GA against 1-methyl-4-phenylpyridinium (MPP+)-induced toxicity in human neuroblastoma SH-SY5Y cells, which are widely used in molecular studies related to Parkinson's disease.

METHODS: In this study, human neuroblastoma cell line SH-SY5Y cells were used to investigate the protective effect of GA. SH-SY5Y cells were treated with predetermined concentrations of GA (100, 50, 25 µM) and MPP+ at 2mM and 1mM concentrations, followed by incubation for 24 and 48 hours. At the end of 24 and 48 hours of incubation, CCK-8 viability test was performed. To examine the effects on apoptosis in the cell, the protective effect of 100, 50, 25 µM GA against 1mM MPP+ exposure was measured using the Annexin-V apoptosis test with flow cytometry.

RESULTS: CCK-8 results show that GA prevents MPP+-induced cell death in a concentration-dependent manner. In cells treated with 1mM MPP+, it was found that 25µM GA application increased cell viability by 34.7% and 55% at 24 and 48h incubations, respectively. In SH-SY5Y cells, 1mM MPP+ was used for apoptosis test since 2 mM MPP+ killed nearly 80% of the cells. According to apoptosis results, 25 µM GA was found to be the most protective against MPP+-induced apoptosis. While the live cell rate was 11.1% and 8.4% for 24h and 48h in MPP+ application, the live cell rate was found to be 14.8% and 13.4%, respectively.

CONCLUSIONS: Our results showed that GA exerted neuroprotective effects against MPP+-induced neurotoxicity in SH-SY5Y cell line in a dose-dependent manner. GA also suppressed apoptosis by reducing MPP+-induced cytotoxicity in SH-SY5Y cells. Therefore, our research reveals a new alternative with potential protective effects for neurons in PD.
Keywords: Apoptosis, Gallic acid, MPP+, Neuroprotective, Parkinson

PC-55

Deciphering the Role of Optogenetic Manipulation of A11 Neurons on Motor Activity After Spinal Cord Injury

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AIM: Spinal cord injury is a neurodegenerative condition with high mortality risk, leading to loss of motor, sensory, and autonomic functions. Dopamine, a key modulator of the spinal cord, is primarily provided by the diencephalospinal pathway from dopaminergic A11 neurons. This study aims to examine the impact of cell type-specific optogenetic manipulation of tyrosine hydroxylase-expressing A11 neurons, the primary source of spinal dopamine, on motor coordination and locomotor activity after spinal cord injury.

METHODS: In this study, we used 8–12-week-old male Th-cre transgenic mice (Jackson Laboratory Stock No: 008601) were injected with cre-dependent rAAV2/1-EF1α-FLEX-hChR2(H134R)-EYFP-WPRE-HGHpA (n=6), rAAV2/1-EF1α-DIO-iChloC-2A-dsRed (n=6) or rAAV2/1-hSyn-DIO-mCherry (n=6) recombinant adeno-associated viruses and fiber optic implantation was performed. After completion of transgene expression, motor coordination and locomotor activities of Th-cre mice before and after spinal cord injury and after optogenetic stimulation were observed by Basso mouse scale, horizontal ladder rung walking test and open field test. For optogenetic manipulation, 20-Hz photoexcitation was applied at 473 nm wavelength with 10-ms pulses per second repeated every 4 seconds. Statistical differences between the groups were analyzed by independent sample t-test and $p<0,05$ was considered statistically significant.

RESULTS: Motor coordination and locomotor activity were significantly ($p<0,05$) decreased in all mice with spinal cord injury model. Optogenetic stimulation of tyrosine hydroxylase-expressing dopaminergic A11 neurons increased motor coordination and locomotor activity, whereas inhibition of these neurons suppressed motor activity ($p<0,001$).

CONCLUSIONS: Our results show that endogenous dopamine innervation of the spinal cord by optogenetic stimulation of cell type-specific and recombinant adeno-associated viruses-mediated tyrosine hydroxylase-expressing A11 neurons significantly improves impaired locomotor activity after spinal cord injury and sheds light on the therapeutic effect of the diencephalospinal pathway on spinal cord injury.
Keywords: A11 neurons, Dopamine, Spinal cord injury, Optogenetics, Tyrosine hydroxylase

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PC-56

Effects of SIRT2 Inhibition on Inflammation and Autophagy in Different Brain Regions in a D-Galactose-Induced Accelerated Aging Model

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AIM: Aging is associated with increased inflammation and decreased autophagic activity in the brain. In this study, we aimed to investigate the effects of the SIRT2 inhibitor AGK2 on the expression of proteins related to inflammation and autophagy in different brain regions in a D-Galactose (D-Gal)-induced accelerated aging model.

METHODS: A total of 32 three-month-old male Sprague-Dawley rats were used and divided into four groups: Control, D-Gal, D-Gal+DMSO, D-Gal+AGK2. For the accelerated aging model, D-Gal (150 mg/kg/day, 0.5 mL 0.9% saline) was administered subcutaneously for 10 weeks. The control group received only saline, and the experimental groups received D-Gal, D-Gal prepared with 4% DMSO:PBS, AGK2 (10 μM/bw) and D-Gal prepared with 4% DMSO:PBS. In the brain, hippocampal, frontal, and temporal cortex tissues were isolated. SIRT2 and LC3 protein expression were analyzed by Western Blot, and TNF-α and IL-1β by ELISA. SIRT2 mRNA expression was shown by q-PCR. One-way ANOVA or Kruskal-Wallis H was used for statistical analysis ($p<0.05$).

RESULTS: D-Gal increased SIRT2 mRNA expression in the hippocampus and frontal cortex ($p<0.001$), and SIRT2 protein expression only in the hippocampus ($p=0.009$). In the D-Gal+AGK2 group, hippocampal LC3 expression was significantly lower ($p=0.006$, $p=0.006$, $p=0.006$) and higher in the frontal cortex ($p=0.006$, $p=0.006$, $p=0.033$) compared to the other groups (control, D-Gal+DMSO, D-Gal). D-Gal administration increased TNF-α and IL-1β levels in the hippocampus, while AGK2 administration reversed this in the hippocampus and frontal cortex ($p<0.05$). No significant differences were found between groups in the temporal cortex.

CONCLUSIONS: Our current findings suggest that SIRT2 may play a region-specific role in the regulation of pro-inflammatory cytokine levels and autophagy in the aging brain.
This study was supported by the Scientific Research Projects Coordination Unit of Gazi University (Project ID: 7926, Project Code: TYL-2022-7926).
Keywords: D-Galactose, Aging, Inflammation, LC3, Autophagy

PC-57

The Role of Myeloid Derived Growth Factor in a Model of Parkinson's Disease in Mice

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AIM: Parkinson's disease (PD) is the second most common neurodegenerative disorder in the elderly. Current treatments primarily alleviate symptoms by restoring striatal dopamine levels.Recent studies suggest that Myeloid Derived Growth Factor (MYDGF), secreted by bone marrow-derived monocytes and macrophages, may offer a potential treatment for neurodegenerative diseases.In this study, we aimed to investigate the neuroprotective effects of MYDGF in an in vivo PD model by increasing or decreasing its protein level via lentiviral vectors.

METHODS: The study was approved by Istanbul Medipol University Animal Research Ethics Committee (13.02.2023-08).In our study, 32male C57BL6/J mice aged 8-12 weeks were anaesthetised with isofluorane(1,5%).Lv-MYDGF (to increase MYDGF expression), Lv-GFP (control of Lv-MYDGF), sh-MYDGF (to inhibit MYDGF expression) or scRNA (control of sh-MYDGF) produced after molecular cloning were injected intrastriatally (n=8/group).An in vivo PD model was established by injection of 10μg 6-hydroxydopamine 7days after lentivirus injection.Rotation, open field and light/dark field tests were performed on days 7,14,21,28 after the experimental PD model.After the mice were sacrificed on day28, dopaminergic neuron survival was examined from coronal brain sections. Student's t-test was used for statistical analysis and $p<0,05$ was considered statistically significant.

RESULTS: As a result of our study, dopaminergic neuron survival decreased,motor asymmetry increased, locomotor activity, anxiety and exploratory drive decreased in the Lv-MYDGF group compared to the Lv-GFP group ($p<0,001$). Furthermore, in the sh-MYDGF group in which MYDGF expression was inhibited, dopaminergic neuron survival was increased ($p<0,05$), motor asymmetry was decreased, locomotor activity, anxiety and exploratory drive were increased ($p<0,05$) compared to the scRNA group.

CONCLUSIONS: The data of our study show that inhibition of MYDGF expression has a neuroprotective effect in an in vivo PD model.It is thought that MYDGF may play a role in the development and pathophysiology of the clinical symptoms of PD and the development of new strategies targeting MYDGF may provide an important advance in the treatment of PD.
Keywords: MYDGF, Parkinson's Disease, Neuroprotective Effect

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PC-58

Investigation of Antiepileptic Activity of Ambroxol Hydrochloride in Pentylenetetrazole Kindling Epilepsy Model

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AIM: It was aimed to evaluate the antiepileptic activity of ambroxol hydrochloride in experimental temporal lobe epilepsy induced by pentylenetetrazole kindling epilepsy model.

METHODS: 55 male Wistar albino rats were divided into 4 groups as Control Group(C;n=10:per oral(p.o.) physiological saline was administered every day and intraperitoneal (i.p.) physiological saline was administered every other day), Epilepsy Group(PTZ; n=15:i.p.40 mg/kgPTZ was administered every other day), Valproic Acid Group (VPA+PTZ;n=15:p.o.300 mg/kg VPA was administered every day and i.p.40mg/kgPTZ dose was administered 30 minutes after VPA application every other day), Ambroxol Hydrochloride Group(AH+PTZ; n=15: p.o 800 mg/kg AH was administered every day and i.p. 40 mg/kg PTZ dose was administered 30 minutes after AH administration every other day). AH was dissolved in physiological saline. Animal behavior in PTZ, VPA+PTZ and AH+PTZ groups were recorded for 30 minutes post-pentylenetetrazole injection, and the convulsion stage was assessed using Racine's scale. All animals were subjected to open field and social interaction tests. One-way ANOVA and Tukey post hoc tests were used for statistical analysis. $P<0.05$ was considered significant.

RESULTS: The challenge dose was administered after 10 days following 14 injections of 40 mg/kg i.p. PTZ given every other day. The challenge dose was scored in stage 4/5 ($p<0.001$) in the PTZ group, stage 1/2 ($p<0.05$) in the VPA+PTZ group, and stage 2/3 ($p<0.05$) in AH+PTZ group. Locomotor activity did not decrease in PTZ group compared to control group ($p=0.051$). The mobility of AH+PTZ group was found to be considerably reduced in comparison to control group ($p=0.035$). In comparison to control group, frequency of social interactions was found to be considerably reduced in PTZ and AH+PTZ groups (PTZ: $p<0.05$; AH+PTZ: $p<0.05$).

CONCLUSIONS: The findings of study indicate that Ambroxol Hydrochloride can partially mitigate hyperexcitability in a kindling model of epilepsy.
(This study was supported by ESOGU-BAP (Project: TSA-2022-2237) and TUBITAK (Project:223S427)(HMKÜ HADYEK 2023/07-1).

Keywords: Epilepsy, Seizure, Ambroxol hydrochloride, Behaviour.

PC-59

Investigation of Semaphorin 7A Protein Role in Temporal Lobe Epilepsy Model

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AIM: This study aimed to evaluate semaphorin (Sema) 7A protein in rats induced experimental temporal lobe epilepsy model.

METHODS: Fortyfive male Wistar albino rats were divided into 4 groups: Control Group (C; n=10), which received daily oral administration of physiological saline for 47 days, and intraperitoneal physiological saline for the first 36 days (every other day) and on the 47th day; Valproic Acid Group (VPA; n=10), which received daily oral administration of 300mg/kg VPA for 47days; Suppressed Epilepsy Group (VPA+ pentylenetetrazole, PTZ; n=10), which received daily oral administration of 300mg/kg VPA for 47 days and intraperitoneal administration of 40 mg/kg PTZ for the first 36 days (every other day) and on the 47th day; and Epilepsy Group (PTZ; n=15), which received intraperitoneal administration of 40mg/kg PTZ for the first 36 days (every other day) and on the 47th day. Behaviors of animals in the PTZ and VPA+PTZ groups were recorded for 30 minutes post-administration of PTZ, and the convulsion stage was assessed using Racine's scale. All animals were subjected to marble burying and nestlet shredding tests. Semaphorin 7A was evaluated using ELISA, and gene expression levels were assessed via qRT-PCR in tissue samples from the cerebral cortex and hippocampus. One-way ANOVA and Tukey post hoc tests were used in the statistical analysis. $P<0.05$ was considered significant (HMKÜ HADYEK 2020/04-8).

RESULTS: No significant difference was seen between groups in the levels and expression of Sema 7A in the cerebral cortex and hippocampus, as determined by ELISA and qRT-PCRstudies. The PTZ group experienced a notable reduction in the duration of cotton exploration and identified fewer marbles than the Control ($p=0.05$; $p<0.01$), VPA ($p<0.01$) and VPA+PTZ ($p<0.01$) groups.

CONCLUSIONS: The non-significant increase of Sema7A protein in cerebral cortex and hippocampus induces synthesis of inflammatory cytokines, leading to inflammatory reactions that may provoke neuronal hyperexcitability and repeated seizures. The overall levels of Sema 7A protein were analyzed in study. Sema7A needs to be evaluated with cell typing in advanced molecular analysis.
Keywords: Epilepsy, Seizure, Semaphorin 7A, Behaviour.

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PC-60

Myrtenal Exhibits Protective Effects in Rats with Acute Ischemic Stroke

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AIM: The majority of strokes are caused by cerebral ischemia (CI) due to cerebral embolism. Oxidative stress and inflammation play a significant role in the pathophysiology of stroke. Myrtenal (Myrt) is a monoterpene derivative found in the essential oils of various plants. In preclinical studies, Myrt has been reported to possess antioxidant, anti-inflammatory and neuroprotective properties. The aim of this study was to investigate the protective effect of Myrt in the CI model induced by middle cerebral artery occlusion (MCAO) in rats.

METHODS: *Sprague Dawley* male rats (3 month) were divided into three groups: Control (n=10), CI (n=12) and Myrt+CI (n=12). Myrtenal (40 mg/kg) or a vehicle (Tween 80 (0.05%)) was administered intraperitoneally to the animals daily for 28 days prior to surgery. Rats were trained to perform motor/sensorimotor tests (rotarod, adhesive removal and grip strength test) for 3 days prior to the surgery. After the training period, a 60-minute MCAO operation was performed on the CI and Myrt+CI groups, while a sham operation was performed on the control group. During the 24-hour reperfusion period, neurological deficit scoring and motor/sensorimotor tests were conducted in all groups. Subsequently, the animals were euthanized and the infarct area in the brain was evaluated using the triphenyltetrazolium chloride staining method.

RESULTS: Group comparisons revealed that Myrt pretreatment resulted in an improvement of the motor and sensorimotor deficits induced by CI ($p<0.05$). Additionally, Myrt administration led to a reduction in the infarct area caused by CI ($p<0.05$).

CONCLUSIONS: These findings demonstrate that Myrt exerts a neuroprotective effect against ischemic stroke.
Acknowledgement: This study was supported by the Health Institutes of Türkiye (Project no: 36022).

Keywords: Stroke, Cerebral Ischemia, Myrtenal

PC-61

The Effects of Levetiracetam Treatment with Probiotic and Prebiotic Supplements on Motor and Cognitive Behaviors in a Post-Traumatic Epilepsy Model

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AIM: Post-traumatic epilepsy (PTE) leads to various behavioral and neuropsychiatric dysfunctions like depression, learning-memory deficiencies, anxiety and motor coordination impairments. This study aims to investigate effects of prebiotic, probiotic, and synbiotic supplements on behavioral changes caused by PTE and levetiracetam(LEV) treatment using a rat model of PTE.

METHODS: Male, 10-12 weeks old, 200-240 grams Sprague-Dawley rats were divided into 6 groups(n=8). Except for control group, all groups were subjected to traumatic brain injury using weight-drop method. Seven days later, PTE was induced with intraperitoneal injections of subconvulsant doses of pentylenetetrazol(PTZ, 30+15+15 mg/kg) at 30-minute intervals. For 28 days, 100 mg/kg LEV or LEV+1g/kg inuline; LEV+10x109/kg VSL#3, or 1g/kg inuline+10x109/kg VSL#3 were administered orally. PTZ-induced seizure induction was performed once a week for 4 times. In last week of treatment, locomotor activity and anxiety changes were assessed using open field and elevated plus maze, learning and memory performance using radial arm maze and passive avoidance, motor coordination using rotarod and pain threshold using dynamic and thermal plantar tests. Data were statistically analyzed using Kruskal-Wallis followed by Mann-Whitney U test.

RESULTS: Compared to control group, significant increase in anxiety levels was observed in LEV group ($p<0.05$). It was found that application of probiotics with LEV reversed this effect. When examining data on motor coordination, no significant difference was observed in LEV alone or prebiotic and probiotic combination groups compared to control group. Similarly, no significant difference was detected in learning and memory performance analysis between any group and control group.

CONCLUSIONS: In the experimental PTE model, it was observed that administration of probiotics with LEV prevented anxiety due to LEV, and both probiotics and prebiotics applied for PTE treatment did not adversely affect motor functions, cognitive performance, or pain threshold levels.
Acknowledgement: The presented study was approved as ethically by SBU-HADYEK at the meeting dated 09/03/2023.

Keywords: Behavior, Post-traumatic epilepsy, Prebiotic, Probiotic,

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PC-62

Effect of 3',4'-Dihydroxy Flavonol (DiOHF) Treatment on Retinal Neurogenesis and Damage in Experimental Focal Brain Ischemia-Reperfusion in Rats

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AIM: The reduction or disappearance of blood supply to a part of the body for various reasons is defined as ischemia. Neurons are deprived of oxygen and energy after an ischemic stroke, resulting in cell death. 3', 4'-dihydroxyflavonol (DiOHF) is a synthetic flavonoid and its protective effect has been determined in different ischemia-reperfusion studies. This study was conducted to determine the effect of 1 week of 3',4'-Dihydroxyflavonol supplementation on neurogenesis in retinal tissue following cerebral ischemia-reperfusion in rats.

METHODS: This study was carried out on male Wistar-albino rats to be obtained from Selçuk University Experimental Medicine Research and Application Center. In the study in which a total of 28 rats were used, the groups were formed as Control (n=6), Sham (n=6), Ischemia-Reperfusion (n=8) and Reperfusion+DiOHF (n=8) and DiOHF was administered for 1 week after the carotid arteries of the rats were ischemized by ligation for 30 minutes. At the end of the study, retinal tissue from animals sacrificed under general anaesthesia was frozen and immunofluorescence labelling was performed with H&E and DAPI staining to evaluate the possible retinal damage after IR with carotid artery occlusion and the therapeutic effect of DiOHF drug.

RESULTS: After ischemia/reperfusion, histologic changes in the retinal morphology of rats were minimal, whereas disruption in the laminar architecture of the retina was observed. After IR injury, irregular cell borders and occasional cell loss were observed in the retinal ganglion cell layer. While these ganglion cell losses were reversed after 1 week of DiOHF treatment, the irregularity between the retinal layers persisted.

CONCLUSIONS: The study shows that focal cerebral ischemia in rats causes significant retinal structure deterioration, but 1 week of DiOHF treatment is effective in preserving the morphological structure by reversing ganglion cell losses.
Keywords: Brain ischemia-reperfusion, DAPI immunostaining, H&E staining, 3' 4'-Dihydroxyflavonol (DİOHF), Neurogenesis, Retina

PC-63

The Effect of 2-Week Naringin Administration on Neurogenesis After Cerebral Ischemia- Reperfusion in Ovariectomized Rats

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AIM: Cerebral ischemia-reperfusion is a condition that occurs when blood flow is restored after a transient interruption and can lead to impaired brain function.The aim of this study was to determine the effect of 2-week naringin supplementation on neurogenesis after cerebral ischemia-reperfusion in ovariectomized female rats.

METHODS: Experimental groups consisting of 36 female Wistar-albino rats with Ethics Committee Approval (Ethics Committee No: 2023-03) were formed as follows: 1-Control group: No anaesthesia or surgical procedure was performed. 2-Ovariectomy-Sham Brain I/R Group: After ovariectomy under general anaesthesia, carotid artery regions were opened and closed and sham I/R was performed, followed by vehicle administration for 2 weeks. 3-Ovariectomy-I/R Group: After ovariectomy, carotid arteries were ligated for 30 minutes under general anaesthesia and reperfused for 2 weeks after ischemia. 4-Ovariectomy-I/R Sham Treatment Group: After ovariectomy, carotid arteries were ligated under general anaesthesia and ischemia was performed for 30 minutes, followed by reperfusion and carrier administration for 2 weeks.5-Ovariectomy-I/R Naringin Treatment Group: After ovariectomy, carotid arteries were ligated and ischemia was applied for 30 minutes under general anaesthesia, followed by reperfusion and Naringin administration for 2 weeks. NeuN levels were determined by immunohistochemical staining and anti-NeuN antibody labelling in hippocampus tissue samples taken from anesthetized animals. Kruskal-Wallis variance analysis was used for group comparisons. Mann-Whitney U test was applied for $p<0.05$ level. $P<0.05$ level was considered statistically significant.

RESULTS: When the anti-NeuN antibody level was examined, the anti-NeuN antibody levels decreased in the I/R and I/R+Solvent groups ($P<0.01$). In the I/R+Naringin group, which was subjected to 2 weeks of naringin application, a significant increase was observed compared to the ischemia groups ($P<0.01$), but did not reach the levels of the control and sham groups.

CONCLUSIONS: The results of the study showed that NeuN levels, which are effective in neurogenesis, were significantly suppressed as a result of I/R-induced damage; however, 2-week intraperitoneal naringin supplementation had a positive effect on neurogenesis in ovariectomized rats.
Keywords: Brain ischemia-Reperfusion, Naringin, NeuN, Neurogenesis

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PC-64

Increased Release of Inflammatory Cytokines in Spinal Cord Tissue in a Cuprizone Induced Rat Multiple Sclerosis (MS) Model Is Prevented by Zinc Supplementation

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AIM: MS is a chronic autoimmune disease of the central nervous system characterized by neuroinflammatory processes, leading to demyelination and neurodegeneration. There is no study investigating the relationship between zinc, which plays a critical role in the immune system, and inflammatory cytokines that occur in MS. The aim of this study was to investigate the effect of dietary zinc status on inflammatory cytokine release in spinal cord tissue in a rat Multiple Sclerosis model induced by Cuprizone.

METHODS: The study was carried out on 46 adult male rats of the genus Wistar. The animals used in the study were divided into 5 groups (G) (Control 6, other groups 10). G1, Control. G2, Sham-MS: Carboxy-methyl-cellulose (KMS) solution in which Cuprizon was dissolved was given to rats by gavage daily for 8 weeks at the rate of 1% of daily feed consumption. MS was formed by giving 1% of the daily feed consumption cuprizon in KMS solution by gavage to the animals in G3, 4 and 5 for 8 weeks. G4 was fed with a zinc deficient (50 µg/kg zinc) diet. G5 was given intraperitoneal (ip) zinc sulfate (5 mg/kg/day) supplementation. MS formation in animals was determined by Rotarod tests and Myelin Basic Protein (MBP) gene expression analysis. TNF-α, IL-1β and IL-6 levels were determined in spinal cord tissue samples of animals by ELISA method (pg/g tissue).

RESULTS: The highest levels of TNF-α, IL-1β and IL-6 in spinal cord tissue were detected in G3 and G4 ($P<0.05$). Zinc supplementation prevented the increase in the parameters mentioned in G5 and restored them to control values ($P<0.05$).

CONCLUSIONS: The findings of the present study indicate that physiological doses of zinc supplementation in a rat experimental MS model may reduce the severity of the disease by regulating the release of inflammatory cytokines.
Keywords: Cuprizone, İnflammatory cytokines, Multiple sclerosis, Spinal cord, Zinc

PC-65

The Effect of 2-Week Naringin Administration on Frontal Cortex Calbindin and Tubulin Values After Cerebral Ischemia-Reperfusion in Ovariectomized Rats

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AIM: Cerebral ischemia-reperfusion is a condition that occurs when blood flow is restored after a temporary interruption and can lead to impaired brain function. This study aimed to determine the effect of 2-week naringin supplementation on frontal cortex calbindin and tubulin after brain-ischemia reperfusion in ovariectomized female rats.

METHODS: Experimental groups consisting of 36 female Wistar-albino rats were formed as follows: 1-Control group: No anesthesia or surgical procedure was performed. 2-Ovariectomy-Sham Brain I/R Group: After ovariectomy under general anesthesia, carotid artery regions were opened and closed and sham I/R was performed, followed by vehicle administration for 2 weeks (2 weeks, 1 ml 0.25% carboxymethylcellulose). 3-Ovariectomy-I/R Group: After ovariectomy, carotid arteries were ligated for 30 minutes under general anesthesia and reperfused for 2 weeks after ischemia. 4-Ovariectomy-I/R Sham Treatment Group: After ovariectomy, carotid arteries were ligated under general anesthesia and ischemia was performed for 30 minutes, followed by reperfusion and carrier administration for 2 weeks. 5-Ovariectomy-I/R Naringin Treatment Group: After ovariectomy, carotid arteries were ligated and ischemia was applied for 30 minutes under general anesthesia, followed by reperfusion and Naringin administration for 2 weeks. PCR determined calbindin and alpha/beta-tubulin levels in frontal cortex tissue samples obtained from anesthetized animals. Results were defined as mean ± standard deviation. Kruskal-Wallis analysis of variance and Mann-Whitney U test for $p<0.05$ level were used for intergroup comparisons. $P<0.05$ level was considered statistically significant.

RESULTS: Frontal cortex calbindin and alpha/beta-tubulin levels were significantly reduced by I/R. However, 2 weeks of naringin administration was observed to increase calbindin and alpha/beta-tubulin levels.

CONCLUSIONS: Our results show that the impairment of neurogenesis in the frontal cortex in brain I/R after ovariectomy in female rats was significantly improved by 2 weeks of naringin supplementation.
Keywords: Brain ischemia-reperfusion, Calbindin, Tubulin, Naringin

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PC-66

The Effect of Idebenone in Rats with Neuropathic Pain Model Induced by Sciatic Nerve Ligation

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AIM: Idebenone is a drug used in the treatment of symptoms of vascular and degenerative cerebral pathologies due to its antioxidant and anti-inflammatory effects. There is limited data regarding the efficacy of idebenone on pain. The aim of our study was to investigate the effect of idebenone on neuropathic pain, in which oxidative stress and inflammation play a role in the pathogenesis, in a rat sciatic nerve ligation model.

METHODS: In our study, a total of 42 adult male Sprague-Dawley rats were used, with seven rats in each group. For the neuropathic pain model, the rats' left sciatic nerve was ligated at three separate points, spaced 1 mm apart, using chromic catgut. The rats in the sham group underwent the entire surgical procedure except sciatic nerve ligation. The rats were administered 50, 100, 200 mg/kg idebenone (IDE), 10 mg/kg pregabalin or physiological saline by oral gavage for 14 days starting from the 1st day after sciatic nerve ligation. Mechanical pain (Randall-Selitto Claw test) and thermal pain (Hot-Plate test) were evaluated 24 hours after the last application. One-way analysis of variance (ANOVA) test was used for statistical analysis and Tukey-Kramer post-hoc test was used for multiple comparisons between groups.

RESULTS: Sciatic nerve ligation significantly decreased mechanical and thermal pain thresholds compared to the sham group ($p<0.001$ and $p<0.05$, respectively). Administration of 100 and 200 mg/kg idebenone and 10 mg/kg pregabalin attenuated the decrease in mechanical threshold ($p<0.01$-0.001) and completely prevented the decrease in thermal threshold ($p<0.001$). 50 mg/kg idebenone administration did not change the decrease in both pain thresholds with SSL.

CONCLUSIONS: Our findings show that idebenone has a decreasing effect on mechanical and thermal hyperalgesia induced by sciatic nerve ligation in rats. Further studies are needed to determine the mechanisms through which idebenone exerts its antihyperalgesic effect.

Keywords: Hyperalgesia, Idebenone, Neuropathic pain, Pain, Rat, Sciatic nerve ligation

PC-67

Curcumin and Ascorbic Acid's Neuroprotective Efficacy Against Rotenone-Induced Parkinson's Model in SH-SY5Y Cells

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AIM: Rotenone is a pesticide widely used to create experimental models of Parkinson's disease. This study aims to investigate the protective effects of curcumin and ascorbic acid in a rotenone-induced toxicity model in SH-SY5Y cells. While the effects of curcumin and ascorbic acid on Parkinson's disease have been studied individually, the combined neuroprotective effects of these agents in a rotenone-induced Parkinson's model have not been investigated.

METHODS: The human neuroblastoma cell line SH-SY5Y was used. Curcumin and ascorbic acid were applied as pretreatment agents for 2 hours. To induce neurotoxicity, a 24-hour rotenone application was performed. Cell condition was assessed using MTS cell proliferation and colony formation capacity assays. Statistical analyses were performed using one-way ANOVA with SPSS v15.0.

RESULTS: The neurotoxic dose determination study with rotenone established a 24-hour IC50 dose of 500 nM, which was used for subsequent model applications ($p<0.0001$). In the MTS test, it was found that pretreatment with 10, 50, and 100 nM curcumin, and 50 and 100 nM ascorbic acid significantly preserved cell viability and proliferation capacity against 500 nM rotenone exposure ($p<0.0001$). Additionally, combinations of 10 nM curcumin + 50 nM ascorbic acid, 50 nM curcumin + 50 nM ascorbic acid, and 10 nM curcumin + 100 nM ascorbic acid also significantly preserved cell viability against rotenone toxicity ($p<0.0001$). Consistent with the MTS assay results, the colony formation capacity was also significantly preserved with 10 and 50 nM curcumin, 50 and 100 nM ascorbic acid, and their combinations against rotenone toxicity ($p<0.0001$).

CONCLUSIONS: The findings demonstrate that curcumin and ascorbic acid provide significant protection against rotenone-induced neurotoxicity in the SH-SY5Y cell line. These results suggest that the combination of these two agents could be a potential neuroprotective strategy in the treatment of Parkinson's disease.

Keywords: Neurotoxicity, Rotenone, Curcumin, Ascorbic Acid, Parkinson’s Model

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PC-68

Investigation of Depression-Like Behaviour of Maternal and Offspring Rats Exposed to Maternal Separation Stress

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AIM: The connection established with the mother at a young age is extremely important for the child's development. A healthy bond with the mother contributes to the emotional, mental and social development of the child. The stress of separation from the mother is a natural stress response seen in humans as well as in other animal species. This stress can cause mental health problems such as anxiety disorders and depression. Investigating the effects of maternal separation stress not only on male rat pups but also on their mothers is beneficial in terms of examining the interaction between offspring and mother.

METHODS: Groups were determined as control pups (n=10); control mother (n=10); maternal separation pups (n=10); maternal separation mother (n=10). Maternal separation stress was induced between 08:00 and 12:00 in the morning. During the stress protocol, the mother was removed from the cage and placed in another cage and reunited with her offspring at the end of the procedure. At the end of the stress protocol, depression-like behaviours of the animals were examined by forced swimming test (porsolt). The data obtained were evaluated with one-way anova test.

RESULTS: According to the results obtained, there is a statistically significant difference between the groups for the swimming variable (p=0,030). When the post hoc test was performed to determine the source of this difference, there was a difference between the stressed pup and the control mother (p=0,048). There was also a difference between the stressed mother and the stressed male pup in the immobility time parameter (p=0,042).

CONCLUSIONS: 21-day maternal separation stress did not show a difference between stressed and control mothers in terms of depression-like behaviour, but the fact that we observed this difference between male pups and mother suggests that there is a difference in depression-like behaviour studies, especially in terms of interaction between mother and pups.

Keywords: Depression, Maternal separation, Stress, Mother, Infant

PC-69

Effects of Mitochondrial Transfer on Post-Stroke Brain Damage and Anxiety

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AIM: Stroke is the second leading cause of death worldwide. Mitochondrial dysfunction is among the main events occurring in pathophysiology of ischemia. The demonstration of mitochondrial transport from astrocytes to neurons after stroke suggests that providing healthy mitochondria to neurons after stroke may have therapeutic potential. This study aims to determine the effects of post-stroke mitochondrial transfer on neuronal survival, glial scar formation, brain atrophy and anxiety.

METHODS: C57BL-6 mice were induced with 30 minute ischemia using the middle cerebral artery occlusion model. After brain ischemia, the animals were divided into three groups: control, instrastriatal mitochondrial injection and intraarterial mitochondrial injection groups. Mitochondria isolated from healthy mice brains using Percoll density gradient. The number of isolated mitochondrial particles was determined by flow mitometry. For intrastriatal mitochondrial injection, 5 x 10^5 mitochondrial particles were administered by stereotaxic method. For intraarterial mitochondrial injection, 5 x 10^6 mitochondrial particles were administered via tail artery. To determine anxiety, elevated O maze and light-dark tests were applied to animals 3 days before ischemia and on days 7, 14, 28 and 42 after ischemia. On 55th day after ischemia, experimental animals were sacrificed and brains were collected. Neuronal survival and striatal atrophy occurring after stroke were determined by NeuN staining from brain sections, and glial scar was determined by GFAP staining.

RESULTS: Intraarterial mitochondrial injection in the light-dark test increased the time spent on the light side after stroke compared to control group ($p<0.05$). There was no difference between the groups in elevated O maze. Intraarterial and intraarterial mitochondrial injection increased neuronal survival after strokecompared to the control group ($p<0.001$). Intraarterial mitochondrial injection reduced striatal atrophy and glial scar formation after stroke ($p<0.05$).

CONCLUSIONS: The results show that providing healthy mitochondria to the ischemic tissue after stroke alleviates ischemic damage, reduces striatal atrophy and glial scar formation, and improves anxiety.

Keywords: ischemic stroke, Mitochondria transfer, Mitochondrial dysfunction

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PC-70

Does Taurine Prevent Blood Brain Barrier Impairment in Rats Administered with Intracerebroventricular Amyloid Beta 1-42 Injection?

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AIM: Blood brain barrier is an unit that protects brain parenchyma by restricting substance transport between blood and brain.Blood brain barrier breakdown in neurodegenerative diseaese causes an imbalance in substance transport between blood and brain. Blood barrier breakdown that occurs during Alzheimer's disease results in deterioration of removing amyloid beta from brain. This study aims to investigate the possible changes in tight junction molecule Zonula Occludens 1(ZO-1) that is a part of blood brain barrier and astrocytic biomarker Glial Fibrillary Acidic Protein (GFAP) in neurodegenerative process induced by intracerebroventricular injection of Amyloid Beta 1-42(Aß 1-42) and taurine's effect on these changes.

METHODS: 250-300 gr Wistar rats were divided into four groups as Control (n=6), Taurine (n=6), Aß 1-42 (n=6) and Aß 1-42+Taurine (n=6). Stereotaxic injection of icv Aß 1-42 (5µg/5µl) was performed for Aß 1-42 and Aß 1-42+Taurine, icv PBS injection (5µl) was performed for Control and Taurine groups for each ventricle. 300 mg/kg of Taurine was applied with oral gavage to the Taurine and Aß 1-42+Taurine groups for 28 days. Morris Watermaze Test and Open Field Test were used to evaluate cognitive functions and locomotor activity and anxiety behaviour. In brain tissue, ZO-1 and GFAP levels were measured by Western blot. Non parametric tests were applied for statistical analyses. $P<0.05$ was considered as significant. (Ethical approval G.Ü.ET-23.043 and supported by Gazi University BAP TYL-2023-8731).

RESULTS: There were no significant differences in behavioural tests and brain GFAP levels among groups. In ZO-1 levels, there was a significant decrease in Aß 1-42 group compared to Control group ($p<0.05$). Although taurine supplementation approximate ZO-1 levels to the control, it was found statistically non-significant.

CONCLUSIONS: In neurodegenerative processes like Alzheimer's disease, blood brain barrier disruption can occur without altering the cognitive behaviour. Although taurine's moderate improvement is seen on blood brain barrier, further studies are needed in this topic.

Keywords: Aß 1-42,astrocyte,GFAP, Taurine, Tight junction protein, ZO-1

PC-71

Effect of Envıronmental Enrıchment on Braın Inflammatory Response in a Chronıc Unpredıctable Mıld Stress Model

Ece Durmuş, Hale Sayan Ozaçmak

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AIM: Longterm exposure experimental animals various stressors causes neurobehavioural changes including learning and memory impairments. Chronic stress has been shown to cause functional and morphological impairments in various brain regions experimental animals such as hippocampus,prefrontal cortex and amygdala.Chronic unpredictable mild stress (CUMS) is reported to cause microglial activation in brain and increase production of inflammatory cytokines.Environmental enrichment (EE) environment can prevent brain aging mechanisms and increase in pro-inflammatory markers in experimental animals.This study, it was aimed to investigate the effects of environmental enrichment inflammatory responses in brain after CUMS.

METHODS: Approval of Zonguldak Bülent Ecevit University Animal Experiments Ethics Committee was received. It was supported by Zonguldak Bülent Ecevit University BAP unit as project number 2023-26259946-03. This study, 4 groups were formed with 8 rats in each group: Control, CUMS, environmental enrichment, environmental enrichment + CUMS. Rats in stress group were exposed to randomly applied stresses 7 days a week for 3 weeks to create a chronic mild stress model. The rats in EE and EE+CUMS groups were housed in special cages measuring 110 x 75 x 70 cm containing toys and tunnels that increase physical activity and social interaction. Interleukin (IL)-6, IL-1β, Tumour necrosis factor (TNF)-α,Nuclear factor kappa B (NF-κB) protein levels in hippocampus, prefrontal cortex tissue were analysed ELISA method. Statistical analyses were performed Kruskal Wallis and Bonferroni, and $p<0.05$ value was considered significant.

RESULTS: Chronic stress group had significantly higher IL-6 protein levels in hippocampus compared to EE group ($p<0.05$). IL-1β level in hippocampus of control group was found to be significantly lower than in EE+stress group ($p<0.05$). No statistically significant difference was observed in terms of parameters measured in cortex tissue samples in all groups.

CONCLUSIONS: Environmental enrichment was found to be an effective method to reduce increased inflammatory response in hippocampus with CUMS. Results suggest that environmental enrichment applications are effective in preventing chronic stress-induced neurobehavioural changes by reducing neuroinflammatory response.

Keywords: Environmental enrichment, Rat, Stress

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PC-72

Investigation of the Effect of Rupatadine on Oxytocin-induced Contractions of Isolated Human Myometrium

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AIM: Rupatadine, a second-generation antihistamine with H1 receptor antagonist properties, is frequently used in allergic reactions. Histamine is known to be a moderately effective simulator of uterine contractions. This effect is evident in human myometrium contractions. Although H1 receptors are commonly found in the uterus as well as in many peripheral tissues, the effect of rupatadine on uterine contractions is unknown. The aim of this study was to investigate the effect of rupatadine on oxytocin-induced contractions in human myometrium.

METHODS: Myometrium strips obtained during caesarean section operations from individuals whose consent was obtained after ethics committee approval were used in this study. Isometric contractions were induced by applying 2 grams of tension to the strips placed in an isolated organ bath containing Krebs solution. Amplitude (mg), frequency (number of contractions in 30 minutes) and peak area (AUC) parameters of contractions indoced by oxytocin (1nmolL) recorded as control values. Following the 30-minute period, rupatadine at concentrations of 0.04mg/ml and 0.2mg/ml was administered to different groups and the changes on contraction parameters were determined. One-way analysis of variance was used for statistical evaluation of the findings.

RESULTS: Administration of 0.04mg/kg rupatadine produced a non-significant mild inhibition on oxytocin-induced contractions ($p>0.05$). While 0.2mg/ml rupatadine did not change the frequency of contractions, it significantly decreased the amplitude and AUC parameters ($p<0.01$).

CONCLUSIONS: The results of this study showed that rupatadine has an inhibitory effect on human myometrium contractions under in vitro conditions. This effect appears to be dose dependent.

Keywords: Isometric contractions, Myometrium, Rupatadine

PC-73

The Relationship Between CTRP Levels, Plasma Lipids, Trp64Arg Gene, and β3-AR in Preterm Birth

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AIM: This study aimed to compare the Trp 64 Arg gene expression in beta-3 adrenoreceptors (β3-ADR) in pregnant women who gave preterm birth with that of healthy pregnant women and to determine relationship of gene levels with adipokines and plasma lipids.

METHODS: Forty pregnant women diagnosed with preterm labor and 40 healthy pregnant women who completed their pregnancies normally were included in this study. C1q/tumor necrosis factor-related protein levels and plasma lipid levels were determined in blood samples taken from all individuals participating in the study by ELISA method. Gene expressions were evaluated by the RT-PCR method. IBMSPSS Statistics 26.0 program was used in the analyses. Independent Samples t-test, Mann-Whitney U test, Pearson Chi-Square test, Yates's Corrected Chi-Square test and Fisher's Exact Chi-Square test were used in statistical analyses.

RESULTS: A significant decrease in β3-AR gene level and an increase in Trp64Arg gene frequency ($p<0.05$) were found in the study group compared to the control. A decrease in serum CTRP3 levels in the study group compared to the control ($p<0.05$), and the opposite increase in CTRP4 levels ($p<0.05$) were found. An increase in LDL levels ($p<0.05$) and a decrease in TC levels ($p<0.05$) were observed in the study group.

CONCLUSIONS: In this study, where the relationship between CTRP levels and preterm birth was investigated for the first time, it was observed that there was a relationship between CTRPs and HDL and LDL levels and that the decrease in CTRP3 levels in preterm birth cases ($p=0.026$) increased CTRP4 levels as a defense mechanism ($p=0.040$). Decreased β3-AR levels ($p=0.014$) and increased Trp64Arg gene frequency were detected in the placenta. The study was approved by the Inonu University Malatya Clinical Research Ethics Committee with approval dated 18.05.2022 and numbered 2022/43. This study was supported by Inonu University Scientific Research Projects Unit (Project No: TDK-2022-3013).
Keywords: CTRP, Preterm Birth, Lipids, Trp64Arg Gene, β3-AR.

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PC-74

Examination of Serum Isthmin-1 Levels in Patients with Polycystic Ovary Syndrome

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AIM: Polycystic Ovary Syndrome (PCOS) is a common endocrine and metabolic disorder characterized by insulin resistance, affecting 8-13% of women of reproductive age and potentially causing infertility. A thorough understanding of the etiopathogenesis of PCOS is crucial for the development of effective treatment strategies. Adipokines are peptide hormones that regulate energy metabolism and play significant roles in the etiology of various metabolic diseases. Isthmin-1, a newly discovered adipokine, has been shown to play a role in glucose homeostasis, with recent studies demonstrating its beneficial effects, such as stimulating glucose uptake and improving insulin resistance. This study aims to elucidate the potential relationship between PCOS and Isthmin-1.

METHODS: The target population included women diagnosed with polycystic ovary syndrome (PCOS). Exclusion criteria encompassed severe psychiatric disorders, a history of malignancy, neurological diseases, and other endocrine disorders besides PCOS. A total of 30 women diagnosed with PCOS who met these criteria, along with 30 healthy female volunteers with similar demographic characteristics (age, height, weight, and body mass index), were enrolled as the control group. Serum Isthmin-1 levels were measured using the ELISA method. Student's t-test was employed for between-group comparisons, and Pearson's correlation test was used for correlation analyses. A p-value of <0.05 was considered statistically significant.

RESULTS: Compared to the control group, there was no significant difference in serum Isthmin-1 levels in PCOS patients (Control: 3.354±0.3367 ng/mL and PCOS: 2.287±0.2720 ng/mL, p= 0.1828).

CONCLUSIONS: The lack of insulin resistance among the PCOS patients in our study may have contributed to the absence of a significant difference in Isthmin-1 levels between the groups. Further comprehensive studies investigating the potential role of Isthmin-1 in the pathogenesis of PCOS may contribute to the development of innovative approaches for the diagnosis and treatment of this syndrome.
This study was supported by the Scientific Research Projects of Firat University (Project no: TF.23.17).
Keywords: Isthmin-1, Polycystic Ovary Syndrome, Adipokine

PC-75

Salivary Urea, Uric Acid and Creatinine Levels in Chronic Renal Patients

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AIM: Chronic Kidney Disease (CKD) is a disease that is common in older ages, is irreversible, progressive, has a high mortality rate and is characterized by loss of kidney function. In CKD, uremic metabolites such as urea, uric acid and creatinine accumulate in the blood. These metabolites can be reflected in body fluids such as saliva, but there is not enough information about their reflection levels in saliva. The aim of the study is to reveal the relationship between the blood and saliva levels of these metabolites (urea, uric acid, creatinine) that accumulate in the blood in CKD.

METHODS: Before starting the study, ethics committee permission numbered 2022/14 was obtained. Then, chronic kidney disease patients (n=35) and healthy individuals (n=35) were included in the study. Blood and saliva samples of the participants were taken in the morning (09:00-12:00) and measured using a spectrophotometric device. Non-normally distributed data were examined with the Mann-Whitney U test, and normally distributed data were examined with the Independent Sample T test. The correlation between blood and saliva was examined with the Spearmann Rho coefficient. A value of p<0.05 was considered significant.

RESULTS: No relationship could be detected between blood and saliva creatinine levels in CKD. In CKD, urea levels (r=0.370) and uric acid levels (r=0.414) in blood and saliva were positively correlated (p<0.05).

CONCLUSIONS: Findings reflecting the relationship between urea and uric acid levels in blood and saliva in CKD show that saliva may be a potential non-invasive marker in revealing uremia in CKD. It is also thought that it may be useful to investigate the possible reasons why creatinine in the blood is not reflected in saliva in CKD.
This study was supported by İnönü University Scientific Research Projects Unit (No: 2022/2974).

Keywords: Chronic Kidney Disease, Creatinine, Saliva, Urea, Uric Acid

PC-76

Poster was not presented at the meeting.

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PC-77

Histological Examination of the Effects of Agomelatine in an Experimental Abortion Model

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AIM: Early pregnancy complications often include abortion, which is typically treated with progesterone administration and bed rest. However, the efficacy of these treatments remains inconclusive. Therefore, it is important to explore new therapeutic approaches. In this context, the aim of this study is to histologically demonstrate the potential therapeutic effect of agomelatine, known for its beneficial effects on the female reproductive system, on abortion.

METHODS: Eighty intact female Sprague-Dawley rats, aged 8-10 weeks with regular estrous cycles, were used. Eight groups were formed: control, sham, abortion, melatonin, agomelatine, progesterone, melatonin + progesterone, and agomelatine + progesterone (n=10). Administration of agents via oral gavage began on the first day of pregnancy. Melatonin was administered at 10 mg/kg/day, agomelatine at 10 mg/kg/day, and progesterone at 3.02 mg/kg/day for 14 days. An experimental abortion model was created by administering mifepristone (50 mg/kg) on the 11th day of pregnancy. Decapitation was performed on the 14th day without anesthesia. Uterine tissues fixed in 10% formalin were subjected to Hematoxylin & Eosin staining for histological examination. Statistical analyses were conducted using One-Way ANOVA/Kruskal-Wallis and post-hoc Tukey tests.

RESULTS: Histological examinations of uterine tissues revealed statistically significant differences between the abortion group and the treatment groups. Parameters such as decidual inflammation, congestion, cytotrophoblast, and syncytiotrophoblast showed higher histological changes in the treatment groups compared to the abortion group ($p<0.0001$). Decidual necrosis was higher in the treatment groups compared to both the abortion and control groups ($p<0.0001$).

CONCLUSIONS: The findings of the study suggest that the administration of agomelatine, either alone or in combination with progesterone, could be considered a potential approach for the treatment of abortion. These findings may provide a significant foundation for future research and could shed light on the development of treatment protocols. This study was supported by TUBITAK (Project No: 123S215).
Keywords: Abortion, Agomelatine, Histology, Pregnancy, Rat

PC78

Investigation of the Efficacy of Agomelatine on Depression-like Behaviors in an Experimental Abortion Model

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AIM: Abortion is a serious health issue associated with the risk of fetal loss in the early stages of pregnancy, leading to both physical and psychological effects. Classical treatments for abortion often result in side effects such as depression, which can negatively impact patients' quality of life. Agomelatine is an antidepressant classified as *Category B*, known for its positive effects on the female reproductive system. The primary aim of this study is to demonstrate the efficacy of agomelatine on depression-like behaviors in an experimental abortion model using the forced swim test (FST).
METHODS: Eighty female Sprague-Dawley rats were used in the study. The animals were randomly divided into eight groups (n=10). The groups were as follows: control group (K), abortion group (Ab)(mifepristone 50mg/kg/day), progesterone group (P)(3.02 mg/kg/day), melatonin (10mg/kg/day)(M), melatonin + progesterone (MP), agomelatine (10mg/kg/day)(A), agomelatine (10mg/kg/day)+ progesterone (3.02 mg/kg/day) (AP). With FST, each group's swimming times and inactivity periods were recorded. Statistical analysis was performed using one-way analysis of variance(ANOVA), and the Tukey test was used for post-hoc evaluation.

RESULTS: According to the results of the FST; Swimming times were found to be higher in the M, MP, A and AP groups compared to the control group. In addition, the swimming times of A and AP were found to be higher than in the other treatment groups compared to Ab ($p<0.01$). In terms of duration of inactivity, a decrease was observed only in the agomelatine group compared to the control group ($p<0.01$).
CONCLUSIONS: Agomelatine was found to have positive effects on depressive behaviors, which are a cause of abortion. In particular, it has been shown to improve depression caused by progesterone. In this context, we think that agomelatine may be a potential agent in further studies in abortion cases where depression-like behaviors are included in the etiopathogenesis. This study was supported by TÜBİTAK (grant # 123S215).
Keywords: Abortion, Agomelatine, Forced swimming test, Pregnancy, Rat

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PC79

Investigation of the Effects of Agomelatine on Cyclophosphamide-Induced Testicular Toxicity

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AIM: Cyclophosphamide (CP) is an agent used in the treatment of cancer and certain autoimmune diseases, known to induce various side effects including testicular toxicity. This study aims to evaluate the role of agomelatine against CP-induced testicular toxicity.

METHODS: Three month old male *Sprague Dawley* rats were randomly divided into four groups (n=10): i) control group received oral saline for 14 days, ii) CP group received oral saline for 14 days and a single dose of CP (200 mg/kg, intraperitoneally) on the 14th day, iii) Agomelatine group received agomelatine (40 mg/kg, orally) for 14 days, iv) CP+Agomelatine group received agomelatine (40 mg/kg, orally) for 14 days and a single dose of CP (200 mg/kg,intraperitoneally) on the 14th day. Levels of FSH, LH and testosterone in the plasma, as well as the levels of TNF-α, IL-1β and NF-κB in the testes were measured using the ELISA method; levels of SOD, GSH, CAT, MDA and GSH-Px in the testes were measured using spectrophotometric methods.

RESULTS: CP significantly decreased SOD, GSH, CAT and GSH-Px levels in testicular tissue, while increasing MDA, TNF-α, IL-1β and NF-κB levels ($p<0.05$).Pretreatment with agomelatine significantly attenuated these adverse changes induced by CP ($p<0.05$). CP administration resulted in a significant reduction in plasma FSH, LH and testosterone levels ($p<0.05$). In the CP+Agomelatine group, FSH, LH and testosterone levels were further reduced compared to the CP group ($p<0.05$). Additionally, agomelatine administration in healthy animals decreased FSH, LH and testosterone levels compared to the control group ($p<0.05$).

CONCLUSIONS: In conclusion, the findings suggest that agomelatine may mitigate CP-induced testicular damage through its antioxidative and anti-inflammatory properties. Additionally, it is hypothesized that agomelatine administration may inhibit the secretion of FSH, LH and testosterone by affecting the hypothalamic-pituitary axis.
Acknowledgements: This research was supported by Inonu University Scientific Research Projects Unit (Project no:TDP-2023-3373).

Keywords: Agomelatine, Cyclophosphamide, Oxidative stress,

PC-80

Effects of Humanin on Spermatogenesis and Mitochondrial Membrane Potential in Male Rats

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AIM: Spermatogenesis is a lifelong process that requires coordinated mitochondrial and metabolic activities. During the stages of spermatogenesis, mitochondria play an important role in male fertility. Humaninin, a mitochondrial-derived peptide that is abundantly expressed in the testes of many species, has been suggested to play a role in spermatogenesis. The aim of this study was to determine the effect of humanin on sperm parameters.

METHODS: Male Sprague-Dawley rats, 21 days old, weighing 35±2 grams, were divided into 2 groups (n=10) as control and humanin. Humanin were administered intraperitoneally at a dose of 1mg/kg/day for sixty days. At the end of the experiment, sperm motility, abnormal sperm ratios, and flow cytometric analyses were determined from the left epididymis and sperm density was determined from the right epididymis. The normal distribution of the data was confirmed by the Shapiro-Wilk test; Student's t-test was used for parametric data and Mann-Whitney-test for non-normally distributed data.

RESULTS: Humanin administration increased sperm density and motility compared to the control group. The head anomaly and total abnormal sperm rate were found to be decreased in the humanin group. ($p<0.05$). There was no difference in tail abnormality in both groups. The high mitochondrial membrane potential ratio was higher in the humanin group, while the normal and low mitochondrial membrane potential ratios were lower in the control group ($p<0.05$). There was no difference between the ratio of dead to live spermatozoa and the ratio of total acrosamal damage between the two groups.

CONCLUSIONS: The data obtained in our study suggest that humanin may play a role in spermatogenesis and in improving the abnormal spermatozoon ratio. It also showed that it may be effective in increasing mitochondrial membrane potential, which is an indicator of intact mitochondrial functionality for sperm to maintain motility.
This study was supported by TÜBİTAK (Project no:122S419).

Keywords: Humanin, Sperm Parameters, Mitochondrial Membrane Potential

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PC-81

Investigating the Relationship Between Nitric Oxide Activity in the Brain and Reproductive Organs During the Estrous Cycle

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AIM: Nitric oxide (NO), a versatile biological messenger, is an effective molecule in modulating many functions in the ovarian and uterine cycle of the female reproductive system. This study investigated the relationship between NO activity in the brain and reproductive organs during the stages of the rat estrous cycle.

METHODS: A total of 32 Wistar Albino female rats were sacrificed at different stages of the estrous cycle, 8 animals in each group (proestrus, estrus, metestrus, and diestrus) following vaginal smear monitoring. Plasma, brain, uterine, and ovarian tissues were collected. Nitrate and nitrite concentrations, the stable end products of NO, were measured using a colorimetric method to determine NO concentration. Plasma LH, FSH, and estradiol levels were measured using the ELISA method. The data were analyzed using the GraphPad Prism statistical program. Normally distributed data were analyzed with One-way ANOVA, while non-normally distributed data were analyzed using the Kruskal-Wallis test.

RESULTS: The total brain tissue NO level was significantly higher in the metestrus phase compared to the estrus phase ($p<0.05$). The NO level in uterine tissue was significantly higher in the estrus phase compared to other phases ($p<0.01$). NO levels in ovarian tissue and plasma showed no statistically significant difference. Plasma FSH levels were significantly higher in the proestrus phase compared to the diestrus phase ($p<0.01$). Plasma estradiol levels were significantly higher in the proestrus phase compared to other phases ($p<0.001$).

CONCLUSIONS: This study indicates that the high levels of uterine NO during the estrus phase suggest that NO is involved in the menstrual cycle. The increase of NO in brain tissue during the metestrus phase could be associated with premenstrual syndrome in women and, particularly, with migraines that occur with premenstrual attacks.

This study was funded by the Abant İzzet Baysal University Scientific Research Projects. (2012.08.01.43)

Keywords: Nitric oxide, Estrus cycle, Rat

PC-82

Effects of Different Doses of Lavender (Lavandula angustifolia) on Pubertal Development and Hormones in Male Syrian Hamsters (Mesocricetus auratus)

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AIM: The effects of lavender, known for its calming effect, on the nervous system and reproductive system are being investigated. This study examines the development of male offspring exposed to different doses of lavender extract from the pregnancy period onwards.

METHODS: Eight adult female and forty adult male offspring Syrian hamsters in a long photoperiod (16L) were assigned to four groups: the control group, the groups that received 50 mg/kg, the groups that received 100 mg/kg, and the groups that received 200 mg/kg lavender extract applied. Lavender extract was injected to the pregnant females in the experimental group during the last week of pregnancy and throughout the lactation period. From the 15th day after birth, male offspring were separated into groups of 5, with blood samples taken at midday and midnight. The doses were injected for 40 days. Weekly testis measurements were taken. Changes in serum leptin and testosterone hormones taken at the end of the experiment were determined. Testis histology was examined.

RESULTS: The experimental groups showed no significant difference in leptin levels ($p>0.05$), although testosterone levels remained lower than in the control group ($p<0.05$). Testicular weights in the 100 mg/kg and 200 mg/kg groups were significantly lower than in the control group ($p<0.05$). Additionally, there was a decrease in Leydig cells and spermatogenesis in testicular histology in these groups.

CONCLUSIONS: The physiological effects of plant extracts are not well studied, despite the fact that lavender is being used more and more in various fields. However, it is also known that higher dosages lower testosterone hormone levels and suppress the reproductive system in mature animals. This study evaluated the effects of various doses of lavender on the reproductive development of pubertal offspring from pregnancy onward, and for the first time, it was found to have negative impacts on development.

Keywords: Lavender, Leptin, Syrian hamster, Pubertal development, Testosterone

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PC-83

The Effect of Calorie Restriction on Testicular Tissue During Aging Process

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AIM: Aging is associated with free radical damage. Calorie restriction (CR) reduces oxidative stress. This study, aimed to examine the effect of CR on physiological and histological changes in the testicular tissue during the aging.

METHODS: In the study, young (3 months old) (n=12) and old rats (20 months old) (n=12) were divided into two groups as control and experimental groups. While the control group was fed ad libitum, CR group were given a diet containing about 1/3 (~1,303 kcal/kg) of the daily calorie intake of dietary content (14% fat, 52% protein, 34% carbohydrates). Weight change and organ index [(Testicular weight/body weight) × 100] were calculated. Plasma testosterone levels were measured by Chemiluminescent Immunoassay method at the end of 10 weeks. Malondialdehyde (MDA) and glutathione (GSH) was measured in testicular tissue by TBARS method and modified Ellman method respectively. Histological analyses were also performed by hematoxylin-eosin staining. Data were analyzed using one-way ANOVA, paired sample t test, and Pearson'r.

RESULTS: Body weight changes were different in all groups ($p<0.05$). Aging decreased organ index, plasma testosterone and testicular GSH level, while increasing MDA level ($p<0.05$). CR decreased body weight and testosterone levels in young and old rats, increased organ index, decreased testicular weight and MDA level in old rats ($p<0.05$). Plasma testosterone level and weight change were positively correlated, while testicular MDA level and organ index were negatively correlated. Aging caused irregularities and atrophic changes in seminiferous tubules and interstitial space. In the aged group, CR increased seminiferous tubule degeneration and impaired structural integrity in the peritubular space.

CONCLUSIONS: Our present results suggest that young and old rats, CR may positively affect the aging process by reducing oxidative stress although it could increase organ index and decrease testosterone levels.

This project was supported by Gazi University Scientific Research Project Unit (Project No: TCD-2023-8842/Project ID: 8842).

Keywords: Aging, Calorie Restriction, Testosterone, Oxidative Stress

PC-84

Investigation of the Protective Effect of Lacticaseibacillus casei and Its Postbiotic on Liver Tissue in Rats

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AIM: The gut-liver axis, which supports the immune and neuroendocrine system interaction, plays a role in the regulation of symbiosis between intestinal microbiota and liver. Probiotics and their metabolites have been shown to have direct or indirect antioxidant capacities. Postbiotics are defined as non-living microorganisms or their components that provide health benefits to humans. In our study, the possible effects of the probiotic Lacticaseibacillus casei(L. casei) bacteria and its postbiotic culture on rat liver tissue were investigated.

METHODS: Rats were divided into three groups as control(n=8), probiotic (n=12) and, postbiotic (n=12). For 42 days; 0.5 ml/day tap water was given to control group, 0.5 ml/day (9.6 log cfu/rat) of L. casei culture supplement prepared as 10 log cfu/ml was given to probiotic group, and 0.5 ml/day of the liquid prepared by inactivating live bacteria by heat treatment at 121°C for 20 minutes was given to postbiotic group. At the end of the experiment, alanine aminotransferase(ALT), aspartate aminotransferase(AST), albumin were analyzed in the serum, and malondialdehyde(MDA), superoxide dismutase(SOD) and catalase (CAT) were analyzed in the liver tissue (Ethics Number:2024-310).

RESULTS: In serum AST values, a significant decrease was observed in both probiotic and postbiotic groups compared to the control group ($p<0.05$). No significant difference was detected in ALT and albumin values. In liver tissue analyses, it was determined that postbiotic supplementation reduced the MDA level, an oxidative stress marker, more compared to the probiotic group ($p<0.05$). Probiotic supplementation was observed to significantly increase the SOD value compared to the control group ($p<0.05$). No significant difference was detected between the groups in CAT values.

CONCLUSIONS: In conclusion, we think that probiotic L. casei and postbiotic application produced from it may be effective in preventing liver damage by protecting hepatocytes against oxidative damage and that further studies on the gut-liver axis are necessary.

Keywords: Probiotic, Postbiotic, Microbiota, Liver, Antioxidant

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PC-85

Evaluation of the Effect of HMW-PVC Microplastic on rat İnternal Organs and Gene Expression evel

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AIM: Our study aims to investigate the effects of 8-week chronic exposure to High Molecular Weight Polyvinyl Chloride (HMW-PVC) microplastic specially added to the pellets of young rats.

METHODS: A total of 40 young Wistar male rats were used in the study, 30 in the experimental groups (Group 1:15, Group 2:15) and 10 in the control group. Their weights were recorded every 15 days. At the end of the eight week, rat intestines, kidneys and livers were dissected under ketamine-xylazine anesthesia. Intestine, kidney and liver were examined histopathologically. Real-time quantitative PCR was used to examine mRNA expression rates of Cyp3A2, Pepck and Fasn genes in the liver; UT-A1, UT-A2, Renin and Cyp27B1 genes in the kidney; and Muc2, Fabp2 and PepT1 genes in the intestine. For homogeneous and non-homogeneous data, one-way ANOVA with Tukey test and Kruskal-Wallis with Man-Whitney U tests were used.

RESULTS: Our weight analysis revealed that there was no significance between the first group and the control group ($p > 0.05$), but the significance between the second group and the control group was quite high ($p<0.001$). In the experimental groups, there were different levels of portal inflammation in the liver tissue, interstitial nephritis in the kidney and inflamation in intestinal tissue. Additionally, surface epithelial loss, mucus loss, and edema were observed. In RT-PCR analysis; compared to the control group, it was found that muc2, fab2 gene expression decreased in the intestine, while pept1 gene expression increased. While the expression of Cyp3a, Pepck and Fasn decreased in the liver in Group2, UT-A1, UT-A2 gene expression and Cyp27B1 gene expression increased in the kidney in Group1; renin gene expression decreased.

CONCLUSIONS: Since microplastics can enter our organs and cause harmful effects, precautions must be taken against this situation for our health.

Keywords: HMW-PVC, mRNA genes, UT-A, Cyp27B1, Muc2, Fabp2, Pep1, Cyp3a, Pepck, Fasn

PC-86

Effects of Gel-like Cell Protection Matrix Formulation on Cell Homeostasis

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AIM: The failures and various disadvantages associated with animal models in preclinical studies have led to a search for more humanized systems. Among these, humanized cell models have emerged as powerful tools for investigating particular disease mechanisms. However, the transportation of these cells to geographically distant locations still remains as a challenge. This study aims to synthesize a biocompatible hydrogel to ensure the stability and homeostasis of cells, enabling their transportation.

METHODS: Two distinct gelatin-based hydrogel materials were synthesized for the transportation of cells at two different temperatures. Experimental setups were designed for each condition, aiming to maintain cell homeostasis for embedded cells within the gel for up to 7 days under both conditions. To validate the viability of cells within the gel, a negative control group was also established. In the negative control groups, cells were kept in their native environment under the two different conditions, allowing the impact of the gel on cell viability to be assessed. Both quantitative and qualitative analyses were performed at five designated time points.

RESULTS: Viability of the different cell types in the gel was assessed at different time points during 7 days. The findings show that, while there was no significant difference in viability compared to the negative controls during the initial 24 hours due to the adaptation process to the environment and gel, a significant increase in viability was observed in the cells embedded in the gel at the 48-hour mark and beyond, compared to the negative controls ($p<0.05$). This increase was substantiated through both qualitative and quantitative analyses. Additionally, it was demonstrated that the cells maintained viability in the gel at both conditions throughout the 7-day period ($p<0.05$).

CONCLUSIONS: The developed gel effectively maintained the stabilization and homeostasis of the cells during the 7-day period at the transportation process simulated at both conditions.

Keywords: Gel-like cell protection matrix, Cell homeostasis, Hydrogel formulation, Cell transportation, Gelatin-based hydrogel

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PC-87

Investigation of the Effects of Mononuclear Leukocytes on Platelet Functions and Hemostasis

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AIM: Hemostasis is the first response that occurs in the process of repairing tissue damage, and it is a complex event that proceeds primarily through the interaction of platelets, then other cell groups. In addition to indirect communication through secreted factors, platelets have been reported to cluster primarily with monocytes, neutrophils, and to a lesser extent with lymphocytes to form heterogeneous complexes. Our aim in this study is to study the interaction of mononuclear cells (monocytes/lymphocytes) with platelets and hemostasis.
METHODS: In order to evaluate the effect of mononuclear cells on the hemostasis process, thromboelastogram, and aggregometer devices were used. Assessments were made immediately after the mononuclear cells were separated from the blood (0th hour) and after 22 hours of being kept waiting without and with LPS stimulation. The effect of mononuclear cells added to platelet-rich plasma on platelet aggregations stimulated by ADP and collagen and on thromboelastogram parameters were investigated. Paired t-test and Bonferroni Test was used for comparisons.
RESULTS: In ADP and collagen-induced experiments, mononuclear cells significantly decreased maximum aggregation values in both 0th and 22nd hour stimulated and unstimulated conditions. In 0th hour, mononuclear cells did not affect thromboelastogram parameters, while mononuclear cells incubated with and without LPS stimulation for 22 hours significantly changed thromboelastogram parameters and activated hemostasis.
CONCLUSIONS: While mononuclear cells inhibited platelet aggregation in all cases, mononuclear cells incubated with and without stimulation for 22 hours showed hypercoagulant effects in thromboelastogram experiments. It was observed that the effects of mononuclear cells on platelets and hemostasis may differ depending on time. Contradictory findings between thromboelastogram and aggregometer suggested that the measurement system in thromboelastogram should be considered more accurate and reliable because it simulates in-vivo conditions better and is more compatible with other hemostasis tests and clinical situations.

Keywords: Hemostasis, Platelets, Platelet-monocyte aggregation.

PC-88

Comparison of the Cytotoxic Activities of Stachys Lavandulifolia and Stachys Cataonica Species

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AIM: Our study evaluated the essential oil components and cytotoxic activities of two plant species of the genus Stachys found in Türkiye, Stachys lavandulifolia and Stachys cataonica to investigate their potential for use in the treatment.
METHODS: The composition of the essential oils obtained from both plants was determined using a GC-MS system. The essential oil samples were applied to human neuroblastoma cells (SH-SY5Y) and fibroblast cells (L929) at increasing concentrations (0.125, 0.25, 0.5, 1, 2.5, 5 µM) to assess their cytotoxic activities using the MTS method. Using the ELISA method, cell viability was measured in 24 and 48 hours.
RESULTS: S.cataonica contains 41.11% α-pinene, while S.lavandulifolia contains 16.57% α-pinene. In Stachys cataonica, 52 different compounds were determined except α-pinene. The main ones are caryophyllene, humulene and bicyclogermacrene. In S.lavandulifolia, 90 compounds were determined. The main ones are sabinene, myrcene and spathulenol. After 24 hours of application, the IC50 values for the essential oil of S. cataonica were found to be 0.630 µM for L929 cells and 0.251 µM for SH-SY5Y cells. After 48 hours, the IC50 values were 0.627 µM for L929 cells and 0.359 µM for SH-SY5Y cells. For the essential oil obtained from S.lavandulifolia, the IC50 values after 24 hours of application were 0.650 µM for L929 cells and 0.160 µM for SH-SY5Y cells. After 48 hours, the IC50 values were 0.690 µM for L929 cells and 0.240 µM for SH-SY5Y cells. IC50 values were calculated using the GraphPad Prism 8 program.
CONCLUSIONS: Both essential oils demonstrated cytotoxic activity by reducing cell viability in neuroblastoma cells at lower concentrations than healthy cells. However, the cytotoxic activity of S. lavandulifolia on neuroblastoma cells was found to be higher than that of S. cataonica. This study was supported by the Scientific Research Projects Unit İnönü University (Project # TCD-2024-3690).
Keywords: Stachys lavandulifolia, Stachys cataonica, Essential oil, Anticancer activity.

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PC-89

The Effect of Different Zinc Doses on Uterine Contractions and the Possible Roles of the Zinc Finger Protein, ZEB1, in this Effect

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AIM: The aim of this study is to investigate the effect of different zinc doses on uterine contractions and the possible roles of ZEB1, a zinc finger protein, in this effect.
METHODS: The protocol of the study conducted on adult female Wistar rats was approved by the local ethics committee. Measurement of uterine contractions of a total of 20 rats in the isolated organ bath was completed in 5 days, 4 animals per day. The doses to be administered during uterine contractions were as stated below. One of the two uterine muscles removed from the first rats brought to the electrophysiology laboratory for the recording of uterine contractions was used for spontaneous contraction (right uterus) and the other (left uterus) was used for zinc chloride application at a dose of 1 micromol/L. Likewise, one of the removed uterine muscles of the next rats brought to the laboratory (right uterus) was used for zinc chloride application at a dose of 10 micromol/L, and the other (left uterus) was used for zinc chloride application at a dose of 100 micromol/L. Levels of ZEB1, a zinc finger protein, in the uterine tissues of rats used for contraction parameters in isolated organ baths were determined by ELISA method.
RESULTS: In our study, cumulative 1μM and 10μM in vitro zinc applications did not differ from the control group in terms of contraction strength, contraction force and contraction frequency in the uterine muscles, but caused a limited increase in ZEB1 levels ($p<0.05$). However, 100 μM in vitro zinc application resulted in suppression of the same parameters ($p<0.05$).
CONCLUSIONS: The results of the current study show that a 100 μM in vitro zinc dose causes a toxic effect on uterine muscles, suppressing both contraction parameters and ZEB1 levels. In vitro zinc administration has a dose-dependent effect on uterine contractions.
Keywords: Uterine Contractions, Zinc, ZEB1, Rat

PC-90

Evaluation of Exercise Capacity and Quality of Life in Individuals Recovered from COVID-19

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AIM: This study aimed to evaluate cardiopulmonary exercise endurance, autonomic nervous system function, inflammatory status, and quality of life in individuals recovered from COVID-19 compared to those not infected.
METHODS: A total of 100 volunteers, 50 with a history of COVID-19 and 50 without, participated in the study. Cardiopulmonary Exercise Testing (CPET), Spirometry, Heart Rate Variability (HRV), inflammatory markers, and Copeptin levels were assessed. Fatigue Severity Scale (FSS) and Short Form-36 (SF-36) questionnaires were administered. Normality of data was evaluated using the Shapiro-Wilk test; between-group differences were analyzed using the Student's t-test or Mann-Whitney U test. Correlation analysis was used to investigate the relationship between fatigue score and spirometry and CPET parameters in the COVID-19 group. Pearson's correlation coefficient was used for normally distributed variables, and Spearman's for non-normally distributed ones. Correlation coefficients (r) and significance levels ($p<0.05$) were reported.
RESULTS: No significant differences were found in CPET results between groups. Among the COVID-19 group, 56% terminated the test due to fatigue compared to 34% in the control group ($p<0.05$). A significant negative relationship was found between fatigue severity and MVV in those with COVID-19 ($r=-0.326$, $p=0.021$). Weak negative correlations between fatigue severity and FEV1, VO2peak, and PEF were observed but were not statistically significant. HRV analysis revealed lower HF values and higher LF/HF ratios in the COVID-19 group ($p<0.05$). While hsCRP, ferritin, LDH, fibrinogen and D-dimer showed no significant change, lymphocyte counts were significantly lower in the COVID-19 group ($p<0.05$).
CONCLUSIONS: Individuals who recovered from COVID-19 exhibited reduced exercise capacity, respiratory dysfunction, and low-grade inflammation. The significant negative correlation between MVV and fatigue suggests a lasting impact on respiratory capacity. Autonomic dysfunction may also persist post-COVID-19.
This study was supported by Yeditepe University Research Projects and Scientific Activities (Project number: YAP-AP-SAB-22035).
Keywords: COVID-19, CPET, Spirometry, HRV, SF-36, Fatigue

PC-91

Ultrasonography in Embryological Animal Research: A Proposal for a Scoring System

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AIM: This study aims to evaluate the efficacy of abdominal ultrasonography (USG) in monitoring embryogenesis in pregnant rats and to establish a standardized scoring system for assessing developmental toxicity caused by exposure to various agents, enhancing the precision and reliability of developmental toxicity assessments.
METHODS: Copulation was predicted based on vaginal plug/smear results, with the noon following the mating night designated as embryonic day 0 (E0) for positive results. Minimal sedation was administered prior to the ultrasound, and ample gel was applied to avoid abdominal shaving. USG was performed using the Edan Dus 60 ultrasound device during the first trimester with a high-frequency probe to locate the uterus and embryos. Images and videos were captured in multiple planes (sagittal, transverse, and coronal) for comprehensive visualizations. A scoring system was developed to evaluate the severity of findings, incorporating specific criteria for each developmental stage. Both maternal and embryonic anomalies were systematically recorded.
RESULTS: Ultrasound scans at embryonic day 9 (E9) revealed small fluid-filled sacs with detectable heartbeats, neural tube formation, and initial somite segmentation. By embryonic day 13 (E13), more complex structures such as limb buds, organ formations, and dense vascularization were observed. The scoring system effectively identified normal milestones, such as well-defined neural tube and somite formation at E9, and strong heartbeats and proper limb formation at E13. It also highlighted abnormalities, including weak heartbeats and irregular somite segmentation at E9, and slowed growth and organ dysfunction at E13.
CONCLUSIONS: Abdominal ultrasonography is a valid and reliable method for non-invasive daily monitoring of rat embryo development. The scoring system represents a significant advancement in embryological studies, offering a framework for assessing developmental toxicity. USG can identify critical stages and detect abnormalities due to intrauterine exposure, improving experimental protocols and developmental toxicity assessments.
Keywords: Abdominal Ultrasonography, Embryogenesis, Developmental Toxicity, Prenatal Imaging, Embryo Development, Ultrasonographic Scoring

PC-92

Coenzyme Q10 and the Number of Pregnancies: Iinvestigating the Effects of the Coenzyme Q10 Supplementation on Learning-Memory Impairment and Anxiety Associated with Increased Number of Births

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AIM: Women can experience intense physiological and psychological changes during pregnancy and the postpartum period. The present study aimed to investigate whether coenzyme Q10 (Q10) supplementation affects learning memory, and anxiety, which may worsen with an increasing number of pregnancies.
METHODS: Following ethical approval (OMÜ-HADYEK 2024/11, with support from TÜBİTAK), 3-month-old female Wistar rats (n=72) were divided into four groups as virginal and breeding groups—that is, one, two, and three times breeding. Each group consisted of solvent (soybean-oil)- and Q10 (200mg/kg)-applied groups with naive controls. 24 hours after the 10-day administration, subjected to y-maze and elevated-plus-maze test. Statistically, according to the Shapiro-Wilk test, t-test, one-way ANOVA test were applied.
RESULTS: According to y-maze test, breeding rats spent longer in the first arm than virgins ($p<0.05$). Staying time in the first arm was not changed by the drug in the virgins, but it was prolonged in both the naive-control and breeding-drug groups ($p<0.05$); this effect was more pronounced in the three-time breeding group ($p<0.001$). In addition, the parameters of the total number of entries in all arms and the number of alternations decreased in the drug-treated breeding groups ($p<0.01$). In the elevated plus-maze test, there was no significant change in the closed-arm entry in the solvent-given-virgins compared to the naïve group. However, in breeding rats, the number of entries into the closed-arm was significantly increased compared to virgin-naïve controls ($p<0.05$). While the time-spent in the closed-arm was short in controls of each group, among the drug-treated groups, only the three-time-breeding group showed a statistically significant difference ($p<0.05$).
CONCLUSIONS: According to behavioral tests, there were no significant differences between single or multiple births; however, there are statistically significant differences between the virginal and breeding groups. Furthermore, contrary to expectations, the Q10 was adversely affected. We speculate that the dose in the literature or the solvent may be toxic.
Keywords: Anxiety, Co-enzyme Q10, Learning-memory, Number of births, Pregnancy

PC-93

The Effect of Maternal Sleep Quality on Newborn Anthropometric Parameters

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AIM: Poor maternal sleep quality may cause adverse postnatal outcomes such as low birth weight on the fetus. In this study, we aimed to investigate the effects of sleep quality of healthy pregnant women in the third trimester on anthropometric measurements of the newborn.
METHODS: A total of 35 pregnant women and their newborns were included in the study. Participants were recruited from designated family health centers and met the following inclusion criteria: age 18 years or older, willingness to participate, and gestational age between 28 and 32 weeks. Ethical approval for the study was obtained from the Clinical Research Ethics Committee of Süleyman

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Demirel University Faculty of Medicine. Verbal consent was obtained from all participants. Data was collected using a two-part questionnaire including the Pittsburgh Sleep Quality Index (PSQI) and demographic information. Data was presented as median and p-values less than 0.05 were considered statistically significant.
RESULTS: PSQI score was 6.44, and the median was 6. The mean birth weight of the infants was 3260 grams, length was 49.25 cm, and head circumference was 34.6 cm. No significant correlation was found between the PSQI and newborn anthropometric measurements. A negative correlation was found between infant birth weight and the PSQI score, but this correlation was not statistically significant (r=-0.299; p=0.115). There was no significant difference in maternal PSQI scores based on mode of delivery (p=0.128). However, mothers who underwent cesarean delivery had a higher mean PSQI score (6.62) compared to those who had vaginal births (4.40).
CONCLUSIONS: Our findings suggest a potential association between poor maternal sleep quality and decreased birth weight in newborns. However, larger-scale studies are required to confirm this relationship and explore underlying mechanisms.
Keywords: Sleep quality, Pregnant women, Newborn, Anthropometric Parameters

PC-94

The Effects of Living Apart from Their Families on Mood and Eating Habits of Pamukkale University Medical Faculty Students

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AIM: Anxiety, depressive disorders and impaired eating behaviors are interconnected. Macro and micro-nutritional disturbances alter body composition and levels of elements like zinc (Zn), copper (Cu), and magnesium (Mg). Medical students frequently suffer from anxiety and depression due to intense coursework and exam stress, particularly those living away from their families. At Pamukkale University Faculty of Medicine (PAUMF), the Problem-Based Learning (PBL) system encourages active participation in disease scenarios and learning objectives in groups for 4-8 hours weekly, emphasizing social interaction and including courses on communication. Clinical education, such as psychiatry is provided from the first year. This study aims to investigate the effects of living away from family on trace element levels, anxiety, depressive mood and neuritin, BDNF levels in PAUMF students.
METHODS: Following approval from Pamukkale University Non-Interventional Clinical Research Ethics Committee (E-60116787-020-353819), 97 PAUMF students (61 female, 36 male) were categorized into two groups: those living with their families (LWF, n=23) and those living away (A, n=74). Participants were administered the Dutch Eating Behavior Questionnaire (DEBQ), Hamilton Anxiety Rating Scale and Beck Depression Scale. Body composition was analyzed using TANITA BC 418 MA and BMI was calculated. Venous blood samples were collected and serum/erythrocyte Zn, Cu and Mg levels were measured via atomic absorption spectrometry (Perkin Elmer-Analyst400). Plasma BDNF and neuritin levels were determined by ELISA. Data were analyzed using SPSS package program.
RESULTS: There was no significant differences in eating behavior, anxiety or depression levels between the groups. No differences were also observed in body composition, serum/erythrocyte trace element levels or plasma BDNF and Neuritin levels.
CONCLUSIONS: Our findings show that students are successful in maintaining their general health levels under challenging conditions. The education system implemented in our faculty and the appropriate communication environment may contribute to this situation.
Keywords: Trace elements, Medical education, PBL, BDNF, Neuritin

PC-95

Evaluation of the Difference Between BAUN Faculty of Medicine 1st and 2nd Year Students in terms of Stroop, Visual and Auditory Digit Span and Cancellation Test performance

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AIM: Cognitive functions are affected by various factors. The aim of the study was to evaluate some cognitive functions in 1st (D1) and 2nd (D2) year students of the Faculty of Medicine.
METHODS: A total of 46 men and women D1 (n=23) and D2 (n=23) students studying at Balıkesir University Faculty of Medicine participated. Demographic characteristics of the participants were recorded. Stroop, Visual Auditory Digit Span (GISD) and Cancellation Test were applied to all participants to assess cognitive flexibility, memory and attention, respectively. Shapiro-Wilk and Mann-Whitney U tests were used to analyse the data and, $p<0.05$ was considered significant.
RESULTS: In the Stroop Test, no significant difference was found between the groups for the five parts of the test in terms of completion time, number of errors and number of corrections. According to GISD Test, no significant difference was found between the groups for auditory-verbal, visual-verbal, auditory-written and visual-written tests. The regular letters, regular shapes, irregular letters and irregular shapes forms in the Cancellation Test were evaluated in terms of test completion time, no significant difference was found between the groups; however, the number of targets marked was higher in D1 than D2 in the regular letters, irregular letters and irregular shapes forms ($p<0.01$). In the regular shapes form, no significant difference was found between the groups in terms of the number of marked targets.

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CONCLUSIONS: No significant change was observed in terms of cognitive flexibility and memory. It was determined that the attention level of D1 students measured by the marking test was higher than that of D2 students. Considering that the stress level of D1 students may be higher than D2 students due to the adaptation process to new conditions, stress may have had moderate positive effects on attention. Further studies are needed.

Keywords: Cancellation test, Cognitive function, Stroop test, Visual auditory number strings test

PC-96

Psychological Distress Level of Cigarette User Students at Samsun University

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AIM: Free radicals caused by smoking leads oxidative stress-induced damage in the central nervous system. The aim of the research was to investigate the possible depression and anxiety levels that may develop as a result of smoking in undergraduate and graduate students.
METHODS: Depression and anxiety levels of n=310 non-smoker students (control group) and n=223 smoker students (17-30 years old) at Samsun University were determined by using the Kessler Psychological Distress Scale-K10. The Shapiro-Wilks test, the independent samples t-test, the One-Way ANOVA model were used for statistical analyses. Relationships between categorical features were examined by the Pearson chi-square test.
RESULTS: The mean age of non-smoking students was 19.60 and the mean age of smoking students was 20.65. Smoking rate was higher in man students (<0,001). The average score of the non-smokers and the smokers was respectively 25.31 and 29.10 points according to the Kessler Psychological Distress Scale-K10 (p<0.001). There were no significant linear relationship between age and psychological distress score in non-smokers (p=0,188) and in smokers (p=0,209). The duration (<2, 2-<5, ≥5 years) (p=0,358) and the amount (<10, 10-<15, ≥15 cigarette/day) (p=0,189) of smoking had not statistically effect on psychological distress. When non-smokers and smokers were excluded who consumes alcohol, who have serious chronic disease (cancer, diabetes, autoimmune disease etc.), who have first-degree relative with a psychiatric disorder (such as anxiety, depression, major depression, schizophrenia, bipolar disorder), who have fatal illness/dead/missing person from family members/close circle in last 12 months, the scores of the remaining 222 non-smokers were lower than the scores of 99 smokers (p<0.001). Probable well-being (32,4%) and propabl mild mental illness (23,9%) were higher in non-smokers (n=222), while propabl severe mental illness (45,5%) was higher in smokers (n=99) according to score ranges (<0,001). Propabl moderate mental illness was detected with similar frequency in two groups.
CONCLUSIONS: When different situations that may cause anxiety and depression were excluded, it was determined that smoking may cause depression and anxiety in students between the ages of 17-30. Acknowledgement: This study was approved by The Clinical Research Ethics Committee of Samsun University and supported by TUBITAK 2209-A (Project # 1919B012217842).
Key words: Cigarette, Neurodegeneration, Anxiety, Depression

PC-97

How Virtual Heart Ownership Influences Human Physiology?

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AIM: Over the last decade a number of studies showed that by using a full-body ownership paradigm participants can feel ownership over virtual bodies. However, rather than using a full body ownership paradigm, the current study investigates the psychological and physiological changes associate with virtual organ ownership. We hypothesize that presenting a virtual heart in a virtual reality environment, such as the rhythmic visual representation of heartbeats along with synchronized heartbeat sounds and vibrations, can be used to manipulate participants' own heart rate.
METHODS: Sixty-five healthy participants who were all undergraduate student volunteered from İzmir University of Economics. Before the experiment all participants signed a written informed consent and filled a questionnaire about State-Trait Anxiety Inventory and Cardiac Anxiety Scale. During the experiment participants were exposed to controlled heart rhythms changes in a virtual reality setup, while they receive visual feedback from VR glasses, auditory feedback from headphones, and a haptic feedback device was attached to their chest. During the experiment, heart activities were recorded continuously via Photoplethysmogram and pulse-oximetry was attached to their fingers. After synchronous presentation of own and virtual heart, participants heart rates were adaptively manipulated (increased or decreased ±10 bpm) over a 2 min period. Then, every 2 min participants rated their synchronization with their heart rhythm on a seven-point scale. At the end of the experiment, participants filled a presence and interoceptive awareness questionary and repeated the STAI form based on their experience in virtual reality.
RESULTS: The results regarding heart rate variability (HRV) and heart rate (HR) showed that for both increase and decrease manipulation and a significant effect on both the % SDNN scores, % RMSSD scores.
CONCLUSIONS: Manipulated heart rhythms not only affected heart rate but also influenced heart rate variability.

Keywords: Trypophobia, Immune system, Inflammation, Pro-inflammatory cytokines, Heart Rate Variability (HRV)