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Poster Communications (PC01-PC94)

PC-01

Investigation of a4b2 Nicotinic Acetylcholine Receptor Subunits in a Nicotine-Preferring Rat Lines

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AIM: Nicotine is the main addictive agent in tobacco dependence. Studies suggest that phenotypic traits such as nicotine preference, dependence, and withdrawal may be heritable. We have been selectively breeding a nicotine-preferring (NP) rat line. NP animals prefer to consume oral nicotine more than controls. We aimed to investigate the differences in mRNA levels of a4 and b2 nicotinic receptor subunits expressed in mesocorticolimbic system of NP rats.

METHODS: Adult male Sprague-Dawley (control) and NP rats (31st generation) were divided into four groups: Control+Water, NP+Water, Control+Nicotine, NP+Nicotine (n=10-17/group). Using two-bottle choice approach, nicotine solution was added to one of the bottles and only water to the other, allowing nicotine-receiving groups to freely prefer nicotine. Water-receiving groups were given only water in both bottles. Nicotine was administered at 10mg/L for the first 2 weeks and 20mg/L for the next 3 weeks. Animals were decapitated. Prefrontal cortex (PFC), striatum, and ventral tegmental area (VTA) were dissected. α4 and β2 mRNA levels were measured by real-time PCR. ANOVA, post-hoc Tukey and t-tests were used for analysis.

RESULTS: NP rats, compared to controls, consumed ($p<0.001$) more nicotine over 5-week nicotine treatment. Nicotine consumption ($p<0.001$) was higher especially in the 4th and 5th weeks. In PCR analysis, a4 mRNA levels in PFC ($p=0.002$) and b2 mRNA levels in PFC ($p=0.004$) and VTA ($p=0.030$) were decreased in NP+Nicotine group compared to Control+Nicotine group.

CONCLUSIONS: Chronic nicotine in NP rats downregulates α4 and β2 mRNA levels in PFC and VTA. Downregulation at mRNA level may reduce a4b2 nicotinic receptors on GABA neurons in PFC and VTA leading to reduced activity in GABA neurons. Decreased GABA activity may enhance dopaminergic neuron activity in VTA, increasing nicotine's rewarding effects and consumption in NP rats. (Supported by BAP-TTU-2023-31906; Ethics # : HADYEK-2023-056).

Keywords: Nicotine, Nicotinic acetylcholine receptors, Rat lines

PC-02

The Potential Effect of Melatonin Administration on Cerebellar Alterations Induced by Ovariectomy in Female Rats

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AIM: Menopause is a natural stage of aging marked by a sharp decline in estrogen levels, leading to symptoms that affect quality of life in many women. The cerebellum appears to be a specific target for estrogen, and its function may be significantly influenced by hormonal changes. Estrogen deficiency impairs cognitive, emotional, nociceptive, and motor coordination functions. Melatonin, secreted by the pineal gland, protects cells against oxidative stress and may prevent various neurodegenerative disorders. However, data on melatonin's effect on the cerebellum during the postmenopausal period are limited. This study aims to investigate oxidative changes in the cerebellum and the potential effects of melatonin in a rat model of surgical menopause.

METHODS: Twenty female Wistar Albino rats (180–200 g) were randomly divided into three groups: Control (n=6), OVX (n=8), and OVX+Mel (n=6). The control group received no intervention. The OVX group underwent bilateral ovariectomy, followed by 6 weeks of recovery and 7 days of saline injection. The OVX+Mel group underwent the same surgical procedure, followed by 10 mg/kg/day intraperitoneal melatonin for 7 days. After the treatment, body weights were recorded, and cerebellar tissues were collected for analysis.

RESULTS: MDA levels were significantly higher in the control and OVX groups compared to the OVX+Mel group ($p<0.05$). GSH levels were lower in the OVX group than in the OVX+Mel group ($p<0.05$). The cerebellum-to-body weight ratio was highest in the control group, and significantly decreased in both OVX and OVX+Mel groups.

CONCLUSIONS: Melatonin may have a protective effect against cerebellar oxidative stress in the postmenopausal period. Additionally, the reduced cerebellum/body weight ratio in postmenopausal groups may indicate volume loss due to estrogen deficiency.

Keywords: Cerebellum, Melatonin, Menopause, Oxidative stress

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PC-03

Investigation of the Effect of Dual Deletion and Pharmacological Inhibition of RhoGTPases Rac1 and Rac3 on Dendritic Spine Dysgenesis in a Diabetic Peripheral Neuropathy Model: Preliminary Data

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AIM: Diabetic Peripheral Neuropathy (DPN) is a common complication of diabetes, causing a decrease in quality of life. Neuropathic pain is associated with structural changes in dendritic spines. Rac1 and Rac3, which are small GTPases, and PAK1, their effector molecule, are critical proteins that regulate the morphology of dendritic spines. This study investigates the roles of Rac1, Rac3, and PAK1 in DPN pathogenesis to determine potential treatment objectives.

METHODS: To induce the DPN model, leptin knock-out (KO) C57BL/6 obese (ob/ob) male mice were used. Animals are randomly assigned to 6 groups (n=10/group): 1) wt/wt control, 2) ob/ob control, 3) ob/ob + Romidepsin (PAK1 inhibitor) 1 mg/kg, 4) ob/ob + romidepsin 5 mg/kg, 5) ob/ob + AAV6-GFP, 6) ob/ob + AAV6-CRE. Dynamic Plantar Aesthesiometer (DPA), Hot Plate, Rotarod, Grip Strength and Open Field tests were used at the beginning (6-7th weeks) and at the end of the study (11- 12th weeks) to assess neuropathy. Dendritic and cellular changes will be evaluated by histological and molecular analyses in the sciatic nerve, dorsal root ganglia and dorsal horn neuron tissues.

RESULTS: Behavioural tests of wt/wt and ob/ob control groups have been completed, and tissue samples have been taken. It was shown that sensory neuropathy and anxiety-like behaviours were developed in ob/ob mice ($p < 0.05$). In ob/ob mice, mechanical allodynia was demonstrated by DPA, and thermal hypoalgesia was demonstrated by the Hot Plate test. In the Open Field test, ob/ob mice spent less time in the centre zone and showed diminished locomotor activity ($p<0.0001$).

CONCLUSIONS: Ob/ob mice have developed mechanical allodynia, thermal hypoalgesia, and anxiety-like behaviours associated with DPN. These findings support the successful implementation of the DPN model. Samples taken for histological and molecular analyses will be studied after all groups are completed.

This study is supported by TÜSEB (Project No: 40758).
Keywords: Diabetic neuropathy, PAK1,Transgenic mice, Rac1, Rac3

PC-04

Investigation of the effect of platelet-rich plasma (PRP) on epileptic seizure activity in an experimental temporal lobe epilepsy model

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AIM: Epileptic seizures result from a reduced neuronal excitability threshold, disrupting the excitatory/inhibitory balance in favor of excitation. Temporal lobe epilepsy (TLE), the most common focal epilepsy, involves abnormal electrical discharges due to progressive brain dysfunction. This study investigated the effects of Platelet-Rich Plasma (PRP) on seizures in a PTZ-induced rat model of TLE.

METHODS: 60 male Wistar albino rats; “Control Group” (C; n=10): intraperitoneal (i.p.), intravenous (i.v.) physiological saline every other day and per oral(p.o.) physiological saline every day; “Epilepsy Group” (PTZ; n=10): i.p.40mg/kg pentylenetetrazole (PTZ) every other day; “Valproic Acid Group” (VPA; n=10): p.o.300 mg/kgVPA every day; “Suppressed Epilepsy Group-I”(VPA+PTZ; n=10): p.o.300 mg/kgVPA every day and i.p.40mg/kg PTZ every other day 30 minutes after the administration of p.o.300 mg/kgVPA; “Platelet-Rich Plasma Group” (PRP; n=10): i.v.0.35m lPRP injection every other day; “Suppressed Epilepsy Group-II” (PRP+PTZ; n=10): i.v.0.35ml PRP injection every other day and i.p.40 mg/kg PTZ was administered every other day 30 minutes after i.v. 0.35 ml PRP administration. Following PTZ administration, seizure activity of animals in the Epilepsy and Suppressed Epilepsy groups were recorded with video for 30 minutes in observation cages. The convulsion phase was scored using the Racine scale. Rats with three consecutive stage 4/5 seizures received a challenge dose 10 days later to assess kindling. Data normality was tested with Kolmogorov-Smirnov/Shapiro-Wilk; One-Way ANOVA or

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Kruskal-Wallis with Tukey's post hoc was applied based on distribution (HMKÜ HADYEK 2024/09-02).

RESULTS: The challenge dose administered 10 days after 17 alternate-day injections of 40 mg/kg i.p.PTZ was evaluated using the Racine scale. Stage 4/5 seizures were observed in the PTZ group($p<0.05$), stage1/2 seizures were observed in the VPA+PTZ group ($p<0.05$), and stage 2/3seizures were observed in the PRP+PTZ group ($p<0.05$).

CONCLUSIONS: To fully understand the effect of PRP on epileptic activity, further molecular analyses focusing on cellular mechanisms related to epileptogenesis are required.

This study was supported by TUSEB (Project no:42606).
Keywords: Epilepsy, Platelet-rich plasma, Seizures

PC-05

Investigation of Central Pathways in the Stimulatory Effects of Radiofrequency Field Application on Gastric Motility in Rats

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AIM: Radiofrequency fields (RFA; 3 kHz–300 GHz), to which all living organisms are commonly exposed in daily life For multiple purposes", including tumor ablation in cancer treatment, pain management, musculoskeletal rehabilitation, brain stimulation techniques, and supportive therapies for neurological disorders. The aim of this study was to investigate the role of central autonomic signaling in gastric motility stimulated by 2600 MHz RFA.

METHODS: In anesthetized rats, a strain gauge transducer was placed serosally on the stomach to examine the effect of RFA on gastric motility. Another group of rats, bilateral retrograde tracer microinjections were made into the dorsal motor nucleus of the vagus (DMV), and seven days after the procedure, hypothalamic and medullary brainstem sections were obtained from control and RFA-exposed rats. RFA-mediated neuronal activation and the localization of these cells were assessed by immunohistochemistry, while the chemical profiles of the activated cells were evaluated using immunofluorescent double-labeling techniques.

RESULTS: RFA application was found to stimulate spontaneous gastric motility. Compared to control animals, RFA induced c-Fos expression in the hypothalamus and dorsal vagal complex (DVC) regions. RFA did not stimulate cholinergic DMV cells, but it activated approximately 36% of adrenergic cells in the nucleus tractus solitarius (NTS). It was also observed that RFA activated the paraventricular nucleus (PVN), ventromedial nucleus (VMN), and arcuate nucleus (ARC) regions of the hypothalamus. Approximately 33% of hypothalamic PVN cells projecting to the DMV were found to be activated as a result of RFA application.

CONCLUSIONS: Our findings suggest that the central mechanisms underlying the stimulatory effects of RFA on gastric motility are independent of the vagal cholinergic pathway and are mediated via PVN-driven peptidergic and/or NTS-driven adrenergic pathways.

This study was supported by the TÜBİTAK-1001 program under project number 124S103.
Keywords: Dorsal vagal complex, Hypothalamus, Gastric motility, Radiofrequency field

PC-06

Investigation of the Effect of Platelet-Rich Plasma (PRP) on Motor Activity in Cuprizone-Induced Experimental Multiple Sclerosis Model

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AIM: Multiple Sclerosis (MS) is a chronic, autoimmune and demyelinating disease of central nervous system. Inflammation and demyelinating lesions that develop in the brain and spinal cord lead to myelin deterioration and inhibition of axonal conduction. The disease is influenced by genetic and environmental factors, beginning with sensory deficits and progressing to motor dysfunction and neuropsychiatric symptoms. MS pathology is characterized by inflammation, demyelination, reactive gliosis, and neuroaxonal damage. Neuroinflammation,microglia activation,oxidative stress and iron accumulation play important roles in MS pathology.

METHODS: In this study,PRP was administered to the groups determined against cuprizone-induced experimental MS model. 40 Wistar albino male rats, 10-12 weeks old were randomized into 4 groups (Control (n=10), Cuprizone (n=10), Cuprizone+PRP (n=10), PRP (n=10). 600mg/kg cuprizone was given orally by gavage for 28 days to the Cuprizone and Cuprizone+PRP groups. 0.35ml of PRP

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was given intravenously four days a week for 21 days to the Cuprizone+PRP and PRP groups.In order to examine the effects on motor activity,open field and rotarod tests were performed at the end of the experimental procedures.In this way, it was aimed to test the locomotor activity changes caused by the experimental MS model, PRP and PRP applied against the experimental MS model.In statistical analyses, the normality of the data was analyzed using the Shapiro-Wilk test. Post-hoc Tukey tests were used for normally distributed data and Kruskal-Wallis/Mann-Whitney U tests were used for non-parametric data.

RESULTS: When the distance covered in the open field test was evaluated, the distance covered by the cuprizone group decreased significantly compared to the control (p<0,05), Cuprizone+PRP (p<0,0001),PRP (p<0,05) groups. When the Rotarod test latency data was examined, it was found that the latency of the cuprizone group decreased significantly compared to the control (p<0,001), Cuprizone+PRP (p<0,0001), PRP (p<0,001) groups.

CONCLUSIONS: According to the data obtained, in order to fully understand the pathophysiology of MS the data must be supported by molecular and electrophysiological analyses regarding the cellular processes associated with MS pathophysiology.
(This project is supported by TÜBİTAK (Project No: 124S034)
Keywords: Demyelination, Motor activity, Multiple Sclerosis, Platelet-rich plasma

PC-07

The Relationship between Adiponectin, Aquaporin-7 and TNF-A Levels and Hematological Parameters in Obese Children

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AIM: This study aimed to investigate the effects of childhood obesity on hematological parameters and serum levels of adiponectin (ADP), aquaporin-7 (AQP7), and tumor necrosis factor-alpha (TNF-α).

METHODS: A total of 159 children participated, including 99 patients and 60 healthy controls. Patients were classified into two groups: overweight/obese (Group 1, n=39) and morbidly obese (Group 2, n=60), while healthy participants formed Group 3. Serum ADP, AQP7, and TNF-α levels were measured using the ELISA method. Routine hematological parameters were compared across groups. Data were analyzed with SPSS 28.01, using Kruskal-Wallis and Mann-Whitney U tests for group comparisons, and Spearman's correlation for associations.

RESULTS: Significant differences were found among groups in age and body mass index (BMI) (p<0.001). Mean corpuscular volume (MCV) was lower in morbidly obese children than in the overweight group (p=0.007). Mean platelet volume (MPV) was higher in both obese groups compared to controls (p<0.001). White blood cell count (WBC) was elevated in morbidly obese participants compared to both overweight and controls (p=0.011). Neutrophil counts were higher in morbidly obese than controls (p=0.004). Red cell distribution width (RDW) differed significantly only between overweight and morbidly obese groups (p=0.033). No significant differences were found in lymphocyte count or glucose levels (p>0.05). ADP levels were highest in controls, significantly lower in both overweight and morbidly obese children (p<0.001). AQP7 levels were also highest in controls and lowest in overweight children (p<0.001). TNF-α levels showed no significant differences (p=0.532). Correlation analysis revealed weak but significant positive associations between age and BMI (r=0.437, p<0.001), ADP and AQP7(r=0.387, p<0.001), ADP and TNF-α(r=0.228, p=0.004), as well as TNF-α and AQP7(r=0.287, p<0.001).

CONCLUSIONS: Childhood obesity significantly alters hematological and biochemical parameters, reducing ADP and AQP7 levels. These biomarkers may serve as potential indicators for the diagnosis and monitoring of obesity in children.
Keywords: Adiponectin, Aquaporin-7, Childhood obesity, Hematological parameters, TNF-α.

PC-08

Effects of Humanin Administration on Live Spermatozoon Ratio and Mitochondrial Membrane Potential in a Paroxetine-Induced Sexual Dysfunction Model

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AIM: Spermatogenesis forms the basis of male fertility. Morphological or functional disruptions during spermatogenesis adversely affect male reproductive health. Gonadotropin therapy is a principal endogenous treatment for infertility arising from such disruptions. Mitochondria and mitochondria-derived peptides exhibit abundant expression in the testes across various species. Notably, the mitochondria-derived peptide humanin has been suggested to play a role in spermatogenesis. While reproductive parameters are known to be affected in paroxetine-induced sexual dysfunction models, sperm parameters may also be compromised. This study aimed to investigate the effects of humanin on sperm parameters in a paroxetine-induced sexual dysfunction model.

METHODS: Forty healthy, sexually active Sprague-Dawley male rats (3–4 months old) were randomly divided into five groups: control, sham, humanin, paroxetine, and paroxetine+humanin. Paroxetine and paroxetine+humanin groups received oral paroxetine (20 mg/kg/day) for eight weeks. Sexual dysfunction was confirmed via sexual behavior testing at week four. Humanin and paroxetine+humanin groups subsequently received subcutaneous humanin (0.25 mg/6 µL/day) via mini-osmotic pumps for four weeks. At the end of the experiment, sperm samples from the cauda epididymis were analyzed using flow cytometry to assess live/dead sperm ratios and mitochondrial membrane potential (MMP). Data were analyzed using one-way ANOVA.

RESULTS: Humanin administration significantly increased MMP, which was reduced by paroxetine, compared to controls ($p<0.05$). Similarly, humanin restored the decreased proportion of live sperm induced by paroxetine ($p<0.05$). In the paroxetine+humanin group, humanin preserved the proportion of live sperm.

CONCLUSIONS: MMP and live sperm ratio are indicators of sperm motility and mitochondrial functionality. Our results suggest that humanin may enhance both parameters, indicating a potential protective role of humanin on sperm quality.
This study was supported by TÜBİTAK (Project No: 122S419).

Keywords: Humanin, Mitochondrial membrane potential, Paroxetine, Spermatogenesis, Sperm viability

PC-09

The Effects of Positive and Negative Mood Induced by Short Film Clips on Cognitive Performance and Autonomic Nervous System Activity

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AIM: Sudden mood changes in daily life can influence cognitive functions, potentially leading to significant consequences in various domains such as work performance and traffic safety. This study aims to investigate the effects of positive and negative mood induced through short film clips on reaction time, response inhibition, and heart rate variability (HRV).

METHODS: Fifteen healthy individuals (8 females, 7 males) aged between 18 and 35 years participated in the study. The procedure began with a resting period (10-min), followed by the presentation of film clips (5-min) from the neutral, sadness, and amusement categories in a randomized order. Auditory reaction times and the go/no-go test were administered during rest and after each film clip, while HRV was recorded throughout the experiment. Data were analyzed using the Wilcoxon test.

RESULTS: In HRV analysis, the sadness film clip increased the LF/HF ratio compared to the resting condition (3.60±2.46 vs. 2.51±1.74, $p= 0.011$). In the Go/No-Go test, following the amusement film clip, both total and no-go error rates in the non-dominant hand were elevated compared to rest (2.53±2.45 vs 1.73±2.28, $p=0.038$; 2.40±2.29 vs 1.60±2.23, $p= 0.032$, respectively). In the Go/No-Go task, following the sadness film clip, the no-go error rate in the non-dominant hand increased compared to the resting condition (2.60±2.90 vs 1.60±2.23, $p=0.039$). However, positive and negative mood inductions did not affect reaction times.

CONCLUSIONS: Negative mood induced an increase in sympathetic activity. While mood changes did not affect reaction time, they adversely impacted response inhibition.

Keywords: Emotion, Heart rate variability, Reaction time, Response inhibition

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PC-10

Comparison of Body Dissatisfaction According to Nutritional Habits of Medical School Students

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AIM: Factors such as increased interaction with social media use, housing-nutritional differences, and/or working conditions make individuals to question and to change their body images. This study aimed to compare the body dissatisfaction of medical faculty students according to their nutritional habits.

METHODS: Data on demographic and anthropometric characteristics of 111 volunteer 1st, 2nd and 3rd-year students of Medical Faculty of University of Health Sciences (UHS) were collected; body mass indices (BMIs) were calculated. To evaluate students' attitudes towards healthy nutritional habits, the attitude scale for healthy nutrition (ASHN); to determine their anxiety levels about their social appearance, the social appearance anxiety scale (SAAS) were used. Statistical analysis was performed using SPSS-25.0 program. This study was approved by UHS Hamidiye Scientific Research Ethics Committee (2025-05/03).

RESULTS: 58.6% of the participants were female, with a mean age of 20.86±1.42 years and a mean BMI of 22.52±3.77 kg/m². While 67.6% of the participants were 3rd-year students, 14.4% were 1st-year and 18.0% were 2nd-year students. 45.9% of students lived in dormitories; 41.4% lived with their families; 12.6% lived in student-houses. The mean ASHN total-score of the participants was 74.59±11.0; the mean SAAS total-score was 34.01±14.87. Positive-nutrition(PN) subscale-scores of females were higher than males (p=0.020). The ASHN total-scores and PN and negative-nutrition(NN) subscale-scores were higher in students living with their families compared to those living in dormitories and student-houses (p=0.003, p=0.007, p=0.016, respectively). As the BMI values increased, the subscale-score of feelings towards nutrition decreased (p=0.032; r=-0.204). Low-negative-correlation was found between total-score of SAAS and ASHN total, PN and NN subscale-scores (p=0.008, r=-0.251; p=0.012, r=-0.237, respectively).

CONCLUSIONS: Social appearance anxiety can significantly affect individuals' attitudes towards healthy eating and eating behaviors, especially positive/negative nutrition tendencies and emotional eating attitudes. It is recommended to create programs that promote healthy living and support body image in universities.
Keywords: Body image, Housing status, Medical students, Nutritional habits, Social appearance anxiety

PC-11

Evaluation of Healing Process in Infected Ischemic Wound Rats That are Threated with *L.Plantarum*

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AIM: This study aimed to evaluate the effects of *Lactobacillus plantarum* application for 21 days on wound healing in rats with ischemic and infected ischemic wound models through morphological, microbiological, histopathological, and molecular analyses.

METHODS: The study was conducted on 2–4-month-old male rats.Two main experimental groups were established: the ischemic wound group and the infected ischemic wound group. The ischemic wound group consisted of the control group (İ1,n=18), *L.plantarum* group (İ2,n=18), antibiotic group (İ3,n=18). The infected ischemic wound group consisted of the control group (E1,n=18), *L.plantarum* group (E2,n=18), and antibiotic group (E3,n=18). Photographs of the wound areas were taken on days 1, 3, 5, 7, 14, 21 and three animals from each group were sacrificed at each time point. Wound tissue samples were collected and microbiologically analyzed to evaluate the bacterial flora in these regions. Histopathological analyses and RT-qPCR were determine gene expression levels. Macroscopic wound size measurements were carried out using ImageJ software based on the wound photographs. Statistical analyses were performed using two-way ANOVA. $p<0.05$ was considered statistically significant.

RESULTS: Morphological evaluations showed that wound

areas were significantly smaller in the *L.plantarum*treated groups compared to the other groups ($p<0.05$). Histopathological analyses revealed that *L.plantarum*treated groups showed statistically significant differences compared to the other groups specifically, increased angiogenesis and granulation in the proliferative phase, and enhanced fibrosis and collagen deposition in the remodeling phase ($p<0.05$).
Regarding IL1 expression, levels were lower in the *L.plantarum*treated groups on days1, 3, 5, 7. IL8 levels showed significant differences on days1, 5, 7, 14. In the infected ischemic wound group, IL8 levels were higher in the *L.plantarum*treated group than in the other groups ($p<0.05$).

CONCLUSIONS: In rats with ischemic and infected ischemic wound models, the use of *L.plantarum*demonstrated positive effects on wound healing. These findings provide an important molecular foundation for identifying new therapeutic targets, particularly for chronic wounds such as diabetic foot ulcers, which are difficult to treat. This study was supported by TÜBİTAK 002220S322.
Keywords: Experimental study, Ischemic wound, Infected ischemic wound, Lactobacillus plantarum, Wound healing.

PC-12

Modulatory Effects of Curcumin and Vitamin B12 on Angiogenesis Using the Ex-Ovo CAM Assay: A Physiological Investigation Relevant to IC/BPS

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AIM: Interstitial Cystitis/Bladder Pain Syndrome (IC/BPS) is a painful condition characterised by pelvic discomfort and urinary disturbances. Research has shown that abnormal angiogenesis could be a leading cause of this condition. Curcumin is widely used in research for its anti-inflammatory and anti-angiogenic properties, while Vitamin-B12 is potentially pro-angiogenic.
This study aimed to observe the angiogenic properties of curcumin and vitamin-B12, using the ex-ovo Chorioallantoic Membrane (CAM) assay, which requires no ethical approval and provides visual results on vascular dynamics.

METHODS: The experiment were conducted in three separate groups (n=6 each, repeated in two experimental runs): untreated control, vitamin-B12 (1000 µg/ml), and curcumin (1000 µg/ml). Fertilized chicken eggs were incubated for 72 hours, then on embryonic day 4 (ED4), the CAM method was initiated in a sterile petri dish, at 37°C humidified incubator, and viability was monitored daily by visual recording of heartbeat and presence of angiogenesis. From ED7 onwards, sterile discs soaked with curcumin or vitamin-B12 were placed onto the CAM daily. Angiogenesis was analysed using ImageJ software, continuing until the end of the ethical period (ED14).

RESULTS: Curcumin-treated CAMs showed a marked reduction in vascular density and branching in comparison to both control and B12 groups, indicating an anti-angiogenic effect ($p<0.05$). In contrast, vitamin B12-treated CAMs, displayed enhanced vessel growth and increased vascular branching.

CONCLUSIONS: This study shows strong anti-angiogenic and pro-angiogenic properties of curcumin and Vitamin-B12, respectively. Nanoparticles of curcumin formulations have been tested for IC/BPS experimental animal models, however this study is the first to use 99% pure supplements to evaluate angiogenic effects in a physiologically relevant model. The model effectively evaluated angiogenic responses to these supplements. Curcumin's anti-angiogenic properties may be evaluated in other animal models for the disease.
Keywords: Angiogenesis, Chorioallantoic Membrane (CAM), Curcumin, Interstitial Cystitis, OTC supplements, Vitamin B12.

PC-13

Investigating the Effects of Expectation on Decision-Making Processes in the Brain via Event Related Potentials

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AIM: Some of the stimuli that living beings encounter during their lives show a repetitive pattern. These stimuli, which serve as cues, create an expectation in living beings and have a decisive influence on the decisions they will make in the future. Event-related potentials (ERPs) are among the fundamental research methods used to investigate cognitive activity in the brain due to their high temporal resolution. In this study, we aimed to investigate the effects

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of expectation on decision-making processes in the brain using event-related potentials through the visual oddball paradigm.

METHODS: ERPs were recorded from 13 healthy volunteers using two different visual stimulus paradigms via 12 Ag-AgCl electrodes. Participants were first subjected to the classic oddball paradigm. In the modified oddball paradigm used, a visual cue stimulus preceded all target stimuli. However, the probability of a target or standard stimulus following the visual cue stimuli within the paradigm was equal. The amplitude and latency values of the ERP components in the average responses to target stimuli in the oddball paradigm and to target and standard stimuli following visual cue stimuli were measured and analyzed using ANOVA for repeated measures. Reaction times for responses to target stimuli were compared using a paired t-test, while commission and omission errors were compared using a Wilcoxon signed-rank test.

RESULTS: The data we obtained showed that reaction times to expectation-related target stimuli were significantly shorter (p=0.037). Compared to those in the classic oddball paradigm, the amplitudes of expectation-related P3 potentials were lower (p=0.020) and their latencies were shorter (p=0.002). Similarly, the amplitudes of expectation-related N2 potentials were lower (p=0.001) and their latencies were shorter (p=0.030).

CONCLUSIONS: Our findings show that the expectation effect created by the cue stimulus enables decision-making processes in the brain to occur with fewer resources and in a shorter time.

Keywords: Expectation, Event-related potentials, N2 potential, P3 potential

PC-14

Effects of Cherry (*Prunus avium L.*) Leaves and Stems Extract on Intestinal Smooth Muscle Contraction

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AIM: Sweet cherry (*Prunus avium L.*) leaves (PL) and stems (PS) have long been utilized in traditional medicine due to their diuretic, antioxidant, and anti-inflammatory properties. The study aimed to investigate the effect of PL and PS ethanol extracts on the contractile response in rat intestinal smooth muscle.

METHODS: In this study, the in vitro effects of PL and PS on the contractility of isolated rat duodenal smooth muscle were investigated. Duodenal segment strips obtained from female Sprague-Dawley rats were mounted in an organ bath system containing Krebs solution and continuously aerated at 37°C. Cumulative concentrations of acetylcholine (10^{-7}–10^{-3} M) and potassium chloride (20–100 mM) were applied to establish dose–response curves. Submaximal concentrations were determined as 10^{-4} M for acetylcholine and 80 mM for KCl. PL and PS extracts were administered at various concentrations (0.05, 0.1, 0.2, 0.4, 0.8, and 1.6 mg/ml) into the organ bath. After each extract dose, contractile responses induced by using submaximal concentrations of either acetylcholine or KCl were subsequently recorded.

RESULTS: The 0.1 mg of PL and PS extracts significantly ($p < 0.05$) increased the contractions of isolated duodenal smooth muscle (725.83 ± 52.67). In contrast, the contractile responses at 0.4 mg (516.04 ± 34.15) and 1.6 mg (528.29 ± 46.89) doses were reduced, with changes not reaching statistical significance.

CONCLUSIONS: The extracts of cherry stems and leaves enhanced the contractile responses induced by ACh and KCl in intestinal smooth muscles. ACh stimulates intracellular calcium release through muscarinic receptors, whereas KCl activates voltage-dependent calcium channels via membrane depolarization. These findings suggest that the extracts may potentiate contractile responses by facilitating calcium influx or release through both pathways. However, as specific inhibitors were not employed, the exact mechanism could not be conclusively determined; therefore, further studies are required to elucidate the mechanisms involved.

Keywords: Intestine, Organ Bath, Prunus avium, Smooth muscle, Sweet cherry

PC-15

Comparison of Heart Rate and Heart Rate Variability During Acute Mental Stress and Jaw Clenching in Individuals with Bruxism and Healthy Controls

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AIM: Awake bruxism (AB) is characterized by repetitive parafunctional behaviors, such as jaw clenching, during wakefulness. The underlying mechanisms of AB has not been revealed yet, but it's closely associated with elevated stress and anxiety levels. The strong association between jaw muscle contraction and parasympathetic activity has led to the hypothesis that jaw clenching may serve as a stress-coping strategy in some individuals. This raises a previously unexplored question: could subjects with AB experience autonomic nervous system (ANS) dysregulation? This study aims to investigate ANS modulation in individuals with bruxism under acute mental stress and clenching conditions.

METHODS: Heart rate, time domain heart rate variability (HRV) parameters, and respiration rate were measured by using MP36BIOPAC system during baseline, acute mental stress, and a modified version of maximum voluntary clenching task that is thought to mimic clenching episodes. Bilateral electromyography was measured to monitor masseter muscle activity. State/trait anxiety and perceived stress levels of the participants were evaluated by using related questionnaires. Participants were university students categorized into three groups based on bruxism scales and dental examination: AB (N=11, 5F), mixed bruxism (MB, N=12, 8F), who have both AB and sleep bruxism complaints, and controls (N=10, 5F). One-way ANOVA and repeated-measures ANOVA were used to assess group differences and condition effects.

RESULTS: According to our preliminary findings, AB group showed similar physiological changes to control group across conditions. However, during the clenching task, one HRV parameter in the MB group differed from the other groups ($p<0.05$).

CONCLUSIONS: Preliminary results suggest that ANS modulation under different conditions seem to be comparable in the AB group and controls. However, in individuals with the MB group, who have more severe temporomandibular complaints, clenching-related ANS modulation may be less effective.

This study was funded by Scientific Research Projects Commission of Bahçeşehir University. Project No: BAP.2023-02.28

Keywords: Anxiety, Bruxism, Heart rate, Heart rate variability, Maximum voluntary teeth clenching task, Perceived stress.

PC-16

The Effect of Disulfiram on Histopathological and Behavioral Changes Induced by Ethanol-Related Brain Damage

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AIM: Alcohol consumption can exert toxic effects on the central nervous system, leading to neurodegeneration and behavioral disorders. Although disulfiram (DSF) is a drug used in the treatment of alcohol dependence, its potential neuroprotective effects have not been clearly demonstrated. This study aimed to investigate the effects of disulfiram on ethanol-induced neurodegenerative changes and behavioral impairments.

METHODS: A total of 28 rats were randomly divided into four groups: Control, EtOH, EtOH+DSF, and DSF. The EtOH groups received 5 g/kg of oral ethanol three times a week for 14 days. The EtOH+DSF group was administered ethanol along with DSF at a dose of 100 mg/kg. The DSF group received only DSF. Anxiety- and depression-like behaviors were assessed using the Open Field Test (OFT), Elevated Plus Maze (EPM), and Forced Swim Test (FST). Total brain tissues were stained with hematoxylin-eosin (H&E) and toluidine blue (TB) for histopathological evaluation. Neuronal damage parameters were evaluated as pyknotic neurons, vacuolization, edema, microhemorrhage, increased glial cell density, disorganization of neuronal arrangement, and loss of Nissl granules. ANOVA and Kruskal-Wallis tests were used for statistical analyses.

RESULTS: In the EPM test, no significant differences were observed between groups in time spent in open arms, number of open arm entries, exploratory head dipping, or stretch-attend posture. In the OFT, the total distance traveled was significantly reduced in the EtOH group ($p<0.0001$). In the FST, ethanol significantly increased immobility time ($p<0.0001$) and decreased latency to immobility ($p=0.0014$). Co-administration of DSF with ethanol partially mitigated these effects ($p=0.01$, $p=0.02$). Histologically, the EtOH group showed marked neuronal damage. TB staining revealed that DSF significantly reduced number of ethanol-induced degenerative neurons ($p<0.01$).

CONCLUSIONS: Ethanol administration increased depression-like behaviors and decreased locomotor activity

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in rats. DSF demonstrated a protective effect against ethanol-induced depression-like behaviors and neurodegeneration.

Keywords: Anxiety, Behavior tests, Depression, Disulphiram, Ethanol

PC-17

Histopathological investigation of the effects of agomelatine on cyclophosphamide-induced testicular damage

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AIM: Cyclophosphamide (CP) is an alkylating agent widely used in the treatment of cancer and some autoimmune diseases. CP is known to have significant toxic effects on testicular tissue. This study aimed to investigate the possible protective effect of agomelatine (AGO) against CP-induced testicular damage at the histopathological level.

METHODS: Three-month-old male Sprague Dawley rats were randomly divided into four groups (n=10): i) The control group received saline by oral gavage for 14 days. ii) The CP group received saline by oral gavage for 14 days, and a single dose of cyclophosphamide (200 mg/kg) was administered intraperitoneally (i.p.) on day 14. iii) The AGO group received 40 mg/kg AGO orally for 14 days. iv) The CP+AGO group received AGO (40 mg/kg) by oral gavage for 14 days, and a single dose of cyclophosphamide (200 mg/kg) was administered intraperitoneally on day 14. All animals were decapitated 24 hours after the last administration. Sections taken from testicular tissues were stained with hematoxylin-eosin and evaluated histopathologically under a light microscope. RESULTS: Testis tissue in the control and AGO groups showed normal histological appearance. In the CP group, vascular congestion in the tunica albuginea and interstitial space, tubular degeneration, interstitial oedema, sloughing of germ cells into the tubular lumen, arrested cells at any stage of division and vacuolisation were observed ($p<0.05$). In the CP + AGO group, a significant decrease in histopathological findings was observed compared to the CP group ($p<0.05$).

CONCLUSIONS: Agomelatine partially preserved the structural integrity of testicular tissue, exerting a protective effect against CP-induced testicular toxicity. The findings suggest that agomelatine may be a potential therapeutic agent for reducing the side effects of CP.

This study was supported by the İnönü University Scientific Research Projects unit (Project No: TDP-2023-3373)

Keywords: Agomelatine, Cyclophosphamide, Testicular damage

PC-18

Evaluation of Caffeine Induced Anxiety in a Virtual Reality Environment

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AIM: The aim of this study is to develop a measurable anxiety model using virtual reality (VR) with both enclosed and open spaces, and to compare this model with the widely used caffeine-induced anxiety model in the literature by examining the effects of different caffeine doses on physiological and psychological responses.

METHODS: Healthy young adult male volunteers were divided into control, low-dose caffeine (200mg), high-dose caffeine (600mg) groups (n=12/group). Participants completed state and trait anxiety tests (STAI I-II). The VR headset provided height and open space experiences, which were recorded on camera. Saliva samples were collected for cortisol measurement at baseline, 45 minutes after caffeine/placebo administration, and after VR session. Heart rate variability (HRV) data were calculated via ECG recordings. ANOVA was used for between-group comparisons, and a linear mixed model was used for repeated measures.

RESULTS: After the VR experience, state anxiety scores increased in all groups, with the highest levels observed in the high-dose caffeine group; however, this increase was not statistically significant ($p=0.869$). In the high-dose-caffeine group, the HRV parameter RMSSD showed significant increase 45 minutes after caffeine intake (+19.7ms, $p=0.001$) and after VR test (+25.8ms, $p<0.0001$). Following the VR experience, the high-dose-caffeine group had significantly lower LF/HF ratio compared to the control-group ($p<0.001$) and the low-dose-caffeine group ($p=0.0015$). Although cortisol levels increased over time ($p<0.05$), caffeine doses didn't significantly alter this response($p>0.05$). VR test increased cortisol levels in all groups; this increase was significant in the control group ($p=0.011$) and in high-dose-caffeine group ($p=0.040$). However, different caffeine doses didn't significantly modify this response.

CONCLUSIONS: High-dose caffeine intake demonstrated

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anxiogenic effects. VR scenarios involving enclosed and open spaces increased anxiety levels across all groups, with more pronounced increase in high-dose-caffeine group. These findings suggest that VR-based model can be integrated into and evaluated within the caffeine-induced anxiety model.

Keywords: Anxiety model, Caffeine, Cortisol, Heart rate variability, Virtual reality

PC-19

Exploration of the Role of Fatty Acid-Binding Protein 7 in the Maintenance of Blood-Brain Barrier Integrity under LPS-Induced Inflammatory Conditions using Knockout Mice

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AIM: The blood-brain barrier (BBB), a highly selective interface between brain parenchyma and circulation, is crucial for the maintenance of neuronal homeostasis. Inflammatory insults induced by septic conditions can disrupt BBB integrity, triggering neurodegenerative processes. Fatty acid-binding protein 7 (FABP7), predominantly expressed by astrocytes, plays a role in fatty acid transport, neurovascular maintenance, and inflammatory modulation. This study investigates the effect of FABP7 on preserving BBB integrity under LPS-induced inflammation using a CRISPR/Cas9-generated FABP7 knockout (KO) mouse model.

METHODS: In this study, FABP7-KO, FABP7-KO+Lipopolysaccharide, FABP7-KO+FABP7, and FABP7-KO+FABP7+LPS groups were studied, with 6 animals per group. FABP7-KO mice received intraperitoneal injections of LPS and/or recombinant FABP7 protein. After 24 hours, BBB permeability was assessed by immunofluorescence detection of Alexa Fluor 594-conjugated albumin tracer penetration into the cerebral cortex and hippocampus. Moreover, immunoreactivity of a key tight junction protein, claudin-5, was determined in the brain regions. Statistical analysis of the data was performed by ANOVA, followed by Tukey's test using GraphPad Prism software.

RESULTS: Compared to wild-type controls, FABP7-KO mice exhibited significantly increased BBB tracer leakage in both the cortex and hippocampus. LPS administration to these mice led to even further increases of tracer penetration into brain regions, while exogenous FABP7 administration significantly reduced tracer extravasation in both LPS-treated and untreated animals. In FABP7-KO mice, the intensity of claudin-5 immunofluorescence significantly increased in both brain regions compared to wild-type animals. LPS administration to these mice further enhanced claudin-5 immunoreactivity, but exogenous FABP7 administration significantly decreased immunofluorescence intensity in both LPS-treated and -untreated animals.

CONCLUSIONS: These results suggest that FABP7 plays a key role in maintaining BBB integrity under physiological conditions and may be a potential target in pathological conditions affecting the brain, including sepsis.
The study was approved by the Local Animal Ethics Committee of Koc University (Reference number: 2021.HADYEK.028).

Keywords: Alexa fluor-594-albumin, Blood-brain barrier, Fatty acid-binding protein 7, Lipopolysaccharide

PC-20

Subjective Evaluation of Exercise-Induced Breast Pain in Female Distance Runners

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AIM: Studies on exercise-induced breast pain are limited in number. In this study, we aimed to determine the frequency and characteristics of breast pain in female distance runners and to evaluate its effects on training and performance.

METHODS: After ethical approval, a 35-item questionnaire on the characteristics of exercise-induced breast pain and factors that may affect it was distributed to female runners affiliated with the Turkish Athletics Federation and to female short-, middle-, and long-distance runners participating in individual races in Edirne. The questionnaire remained open for six months, and percentage, frequency, and Fisher's exact test were used for statistical analysis.

RESULTS: Among the 91 female volunteers who completed the questionnaire, the frequency of breast pain during exercise was found to be 14% (n=13). Regarding those who experienced pain, 61% (n=8) reported experiencing it occasionally, 69% (n=9) felt the pain in both breasts, and the

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severity was mild in 54% (n=7) and moderate in 39% (n=5) of cases. The pain was reported to be mostly brief, sudden, and transient in nature (85%, n=11); the sensation was described as tenderness by 31% (n=4) and as a crushing sensation by 23% (n=3). The association of pain with menstrual cycle was 54% (n=7), its negative effect on performance was 38% (n=5), and 17% (n=3) of the participants reported that they reduced their training intensity. Among the participants, 32% (n=8) reported stress and 20% (n=5) reported excessive exercise as factors influencing the pain. Smoking was 38% (n=5) in participants with pain and 6% (n=5) in participants without pain, and the presence of pain was significantly associated with smoking status (p=0.005).

CONCLUSIONS: In female runners, transient mild to moderate breast pain in both breasts may be related to smoking and menstrual cycle and may have a negative effect on performance.

Keywords: Female athlete, Mastalgia, Running, Smoking

PC-21

Muscle strength, Anaerobic Power and Peak Oxygen Intake Profiles of Elite Rowing Athletes

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AIM: Rowing requires high endurance, anaerobic power, muscle strength, and coordination. Determining the variables that affect performance is crucial for performance development and training planning. Our study aimed to evaluate the anthropometric profiles, anaerobic power, upper-lower extremity isokinetic muscle strength, and cardiopulmonary exercise tests(CPET) of elite Turkish rowers and to reveal the differences between genders.

METHODS: Six male-six female rowers (age:15.7±0.8 and 15.7±1.2years; height:1.8±0.1 and 1.7±0.1m; weight:73.4±8.0 and 63.1±4.0kg, respectively) participated in the study. Anthropometric measurements, basic field tests, CPET, upper-lower extremity Wingate, and isokinetic tests were performed. Female athletes have declared that their menstrual cycles are regular, but the phases within the cycle didn't specified for the test days. Parametric data were analyzed using paired t-tests and ANOVA, nonparametric data were analyzed using the Wilcoxon and Friedman tests, $p<0.05$ indicates significance.

RESULTS: Maximal oxygen uptake(VO_2max) and maximal wattage values during CPET were significantly higher in men($p<0.05$). Both knee 60°/sec extension isokinetic forces(Newton-Meters/kg) were not significant between genders, whereas flexion were higher in men($p<0.05$). Similarly, both shoulder 60°/sec internal rotation isokinetic forces were higher in men($p<0.05$), while no significant difference in external rotation. According to the field tests and upper-lower extremity Wingate test, male athletes were significantly stronger than females. The findings are presented in Table-1.

CONCLUSIONS: In our study, male athletes demonstrated better performance than female athletes, possibly due to gender differences. Anthropometric measurements revealed that male athletes were more muscular than females, and these findings may explain the difference in strength evaluations. In addition to the field test findings, the difference between the two genders was more clearly observed in the anaerobic performances. Literature shows that aerobic capacity (VO_2max: 53.7–62.2ml/kg/min) of high-level rowers in similar age groups closely matches that of our country's athletes. Regular monitoring of high-potential athletes is essential in projects aimed at developing Olympic-level athletes.

Keywords: Cardiopulmonary exercise testing, Isokinetic testing, Olympic rowers, Wingate.

PC-22

Visual and Auditory Reaction Times in University Students Administered the Beck's Anxiety Inventory

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AIM: Anxiety is unpleasant and vague feeling of worry or unease.Individuals with anxiety disorders experience persistent, excessive and inappropriate state of worry.Anxiety can impair attentional and cognitive processes,potentially leading to increased reaction times.This study aimed to examine the effect of anxiety on visual,auditory and Nelson hand reaction times in randomly selected students of Başkent University aged between 18 and 24,categorized according to different levels of anxiety.

METHODS: Data collection performed between 10:00 AM and 4:00 PM.76 university students(60 females,16

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males)voluntarily participated.Demographic information recorded.Edinburgh Handedness Inventory used to determine dominant hemisphere and Beck Anxiety Inventory to assess anxiety levels.Based on Beck Anxiety Inventory scores,participants categorized as:scores of 8–15 as mild,16–25 moderate and 26–63 severe anxiety.Reaction time measurements applied considering dominant hand of each participant.During visual and auditory reaction time tests,participants instructed to press predetermined key with index finger in response visual or auditory stimuli presented on screen.Reaction times recorded in milliseconds (ms). Results of Nelson Hand Reaction Test were converted time values. Collected data were analyzed using SPSS (IBM Corp., Armonk, NY, USA) software version 25. Relationship between anxiety levels and reaction times (visual,auditory,Nelson) was evaluated using ANCOVA analysis,controlling effect of gender.

RESULTS: Of participants, 61 were right-handed, 9 ambidextrous and 6 left-handed.8 participants showed no signs of anxiety, 30 had mild anxiety, 20 moderate anxiety and 18 severe anxiety.Moderate or severe anxiety were identified in 50% of participants,majority of whom were first- and second-year medical students and prevalence of severe anxiety was found higher among female participants.Among all participants,visual reaction time was 300.66 ± 52.29 ms, auditory reaction time 397.92 ± 38.65 ms, Nelson hand reaction time 176.13 ± 17.93 ms.Nelson hand reaction times were significantly longer in severe anxiety group compared to moderate anxiety group (p= 0.005).

CONCLUSIONS: This significant difference may be due to changes that can occur in attention, motor planning and decision-making processes.No statistically significant difference found in visual and auditory reaction times across different anxiety levels.

Keywords: Auditory reaction time, Beck Anxiety Inventory, Finger tapping test, Nelson Hand Reaction Test, Visual reaction time

PC-23

Prediction of Substrate Utilization in Submaximal Exercise Using Basic Physiological and Anthropometric Indicators with Machine Learning

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AIM: Our study aims to predict the highest fat (MFO, g/hour) and carbohydrate (MCO, g/hour) oxidation during submaximal exercise in sedentary individuals with high accuracy using machine learning algorithms, based on easily measurable physiological and anthropometric data in the field. This approach aims to eliminate the need for expensive laboratory equipment, thereby promoting and facilitating personalized exercise planning.

METHODS: The study involved 44 healthy-sedentary males aged 20–30 years (23.7±3.1years; 1.78±0.07m; 85.4±15.1kg; BMI: 26.9±3.5 kg/m²). Anthropometric measurements, cardiopulmonary exercise testing (CPET), and 6-Minute Walk Test (6MWT) were performed. In the CPET, exercise began at 4km/h with 1km/h increments every 6 minutes, ending when fat utilization reached zero(based on RQ values). Machine learning models predicting MFO were developed using anthropometric and 6MWT data. Feature selection included correlation analysis, PCA, Random Forest (RF), and XGBoost. Modeling was performed using SVR, ANN, RF, and XGBoost, with hyperparameters optimized via GridSearchCV.

RESULTS: Among four algorithms, the most successful prediction performance was achieved with the XGBoost. This model has stood out with R^2=0.989 for MFO and R^2=0.998 for MCO scores. RF ranked second in the overall success ranking. According to the variable importance analysis conducted with XGBoost, the most influential variable in predicting MFO was muscle mass (52.7%); this was followed by the heart rate at the 2nd minute of the 6MWT and bone mass. In the prediction of MCO, the ectomorphy value (39.4%) emerged as the variable with the highest impact.

CONCLUSIONS: Our findings indicate that data obtained from body composition and basic exercise tests, particularly through artificial neural networks, can accurately predict MFO and MCO during submaximal exercise. By using data that can be measured in the field, it offers a practical, reliable, and low-cost alternative for creating personalized exercise prescriptions in clinical and field applications for sedentary individuals, especially in conditions where access to expensive laboratory equipment is not possible.

Keywords: Carbohydrate Oxidation, Fat Oxidation, Field-Based Assessment, Machine Learning, Machine Learning Algorithms (ML), Submaximal Exercise

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PC-24

The Neuroprotective and Cognitive Effects of Pirfenidone in a Streptozotocin (Stz)-Induced Alzheimer's Disease Model

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AIM: Alzheimer's disease (AD) is a neurodegenerative condition marked by cognitive deficits, including impairments in memory and orientation. Pirfenidone (5-methyl-1-phenyl-2-[1H]-pyridone) is a compound with demonstrated antifibrotic, anti-inflammatory, and antioxidant properties, primarily by suppressing various cytokines and mediators. This study investigates the effects of pirfenidone on hippocampal morphology, learning, memory, and inflammation in an Streptozotocin (STZ) induced AD model.

METHODS: 28 adult male Wistar albino rats were divided into four groups (n=7): Group 1, control group; Group 2, ICV-SF group; Group 3, ICV-STZ group; and Group 4, ICV-STZ + Pirfenidone (325 mg/kg, i.p) group. The AD model was created by administering STZ (3 mg/kg) intracerebroventricularly (ICV). The ICV-STZ + Pirfenidone group received pirfenidone (325 mg/kg) intraperitoneally for 15 days. Cognitive performance was assessed with the passive avoidance test (PAL). The neuron count in the right hippocampus and the levels of TNF-α, IL-6, and NF-κB in the left hippocampus and blood samples were measured.

RESULTS: The latent period in the ICV-STZ group was significantly reduced compared to both the control and ICV-SF groups (273.33±10.6 vs. 54.83±11.8; 211.33±15.6 vs. 54.83±11.8; $p<0.05$; respectively). The ICV-STZ + Pirfenidone group (325 mg/kg, i.p) showed a statistically significant increase in the latency period compared to the ICV-STZ group (213.33±10.1 vs. 54.83±11.8; $p<0.05$). While TNF-α, IL-6 and NF-κB levels increased in the ICV-STZ group, a decrease in the number of hippocampal neurons was observed. Pirfenidone treatment significantly reduced IL-6 levels (1088.20 ± 1.22 vs. 462.52 ± 1.64; $p<0.001$). Although Pirfenidone decreased TNF-α levels and increased NF-κB levels, these changes were not found to be statistically significant.

CONCLUSIONS: Pirfenidone shows neuroprotective and cognitive benefits in an AD model, suggesting its potential as a complementary treatment for cognitive impairment and neurodegenerative diseases.
This study has been supported by TUBITAK 2209-A (Project no. 1919B012204638).
Keywords: Alzheimer's disease, Hippocampal morphology, Inflammation, Pirfenidone, Streptozotocin

PC-25

The Antiproliferative and Anti-inflammatory Effects of Colchicum Speciosum on Breast Cancer Cells: An *In-vitro* Study

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AIM: According to the World Health Organization, breast cancer is the most common cancer in women. The relationship between breast cancer and cytokines has gained importance through the pro- and anti-tumoral effects within the tumor microenvironment. Resistance to cancer drugs, side effects, and costs require new treatment options. *Colchicum speciosum* (Vargit flower) is a plant that exhibits anti-tumor, antimicrobial, antioxidant, and antidiabetic effects. In our study, it was aimed to investigate the effects of bulb and flower extracts of this plant on MCF-7 breast cancer cells.

METHODS: In the *in vitro* study conducted on MCF-7 cells, the effects of bulb and flower extracts of Colchicum speciosum were evaluated at different concentrations (0.015, 0.03, 0.06, 0.12, 0.24, 0.5 µL) and incubation periods (24, 48, 72 hours) using the MTT (3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyltetrazolium bromide) assay. After the application, the cytokine levels of IL-1β (Interleukin-1 Beta) and IL-10 (Interleukin-10) in the supernatants obtained from MCF-7 cells were measured spectrophotometrically using ELISA kits. IBM SPSS Statistics 25.0 was used for data analysis.

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RESULTS: According to the MTT analysis results, the onion extract of *Colchicum speciosum* reduced cell proliferation more effectively compared to the flower extract. Therefore, only the bulb extract was used in the experiments, and at concentrations of 0.24 and 0.5 µL, a significant decrease was observed compared to the control group ($p<0.001$). For the effective doses of *Colchicum speciosum* onion extract (0.24 and 0.5 µL), IL-1β and IL-10 levels were evaluated. As the application dose and incubation time increased, IL-10 levels showed a marked increase compared to the control group, while IL-1β levels showed a significant decrease.

CONCLUSIONS: The *Colchicum speciosum* plant offers a potential alternative treatment option in breast cancer through its antiproliferative effects and regulation of inflammatory responses. However, these findings need to be clinically validated and supported by more comprehensive studies.

Keywords: Antiproliferative Effect, Breast Cancer, *Colchicum speciosum*, Inflammation

PC-26

Endothelium is Crucial in the Vasorelaxing Effect of Sulodexide in Arteries of Diabetes Mellitus Patients

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AIM: Diabetes mellitus (DM), a complex metabolic disorder, has various vascular complications such as coronary artery disease, largely stemming from endothelial dysfunction, one of the consequences of DM. Endothelial glycocalyx is a key player in the course of DM and its complications. Given that sulodexide (SDX), a glycosaminoglycan, is widely used in DM to prevent/restore endothelial glycocalyx degradation, we sought to examine its potential role besides others, in regulating vascular reactivity among patients with DM.

METHODS: Four arterial rings (3mm) of the left internal mammary arteries of the diabetic (n=16) patients removed for bypass graft surgery, were mounted in Krebs' solution filled baths (at 37°C, pH:7.4, bubbled with 5%CO_2-95%O_2). Two of the rings were tested with intact endothelium and the other two were mechanically denuded of the endothelium. After a 60-minute stabilization period, we assessed maximum contraction responses induced by 80 mM KCl solution. They are challenged by phenylephrine (6×10^{-7}M) following re-equilibration. SDX was applied in 5 min intervals without refreshing solution (0.001 mg/mL, 0.005 mg/mL, 0.01 mg/mL, 0.05 mg/mL, 0.1 mg/mL, 0.5 mg/mL, 1 mg/mL). Viability of the rings was confirmed with KCl after the protocol is over and weighed.

RESULTS: The tonus of the endothelium-denuded rings were higher under basal conditions, however lower when stimulated by phenylephrine ($p\leq0.05$). The vasorelaxing effect of SDX significantly increased with accumulating doses both in endothelium-intact and –denuded rings, however this response was notably less pronounced in the denuded arteries ($p\leq0.05$).

CONCLUSIONS: Our results underscore a nitric oxide driven vasorelaxing effect in the arteries of the diabetic patients which is among the other effective molecules and importance of endothelial layer in vascular functions. The therapeutic use of SDX may thereby confer cardiovascular benefits, particularly for those with DM, highlighting its potential significance in managing the vascular impairments commonly associated with this condition.

Keywords: Diabetes Mellitus, Endothelium, Glycocalyx, Vascular Reactivity

PC-27

Chronic Sleep Restriction Reduces Levels of the Sestrin 1, 2 and 3 Proteins

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AIM: Insomnia is known to trigger a stress response, yet its underlying mechanisms remain unclear. Sestrin proteins (Sestrin1/2/3) are key regulators that restore cellular homeostasis and repair stress-induced damage. Evaluating the impact of sleep loss on sestrin expression may help clarify the molecular mechanisms linking sleep deprivation and stress. This study aimed to investigate the effects of acute sleep deprivation and chronic sleep restriction on Sestrin1/2/3 protein levels in rat tissues.

METHODS: Thirty-six adult male Sprague–Dawley rats were randomly divided into six groups: Control (K), Acute Sleep Deprivation for 24 h (A-24), 48 h (A-48), 72 h (A-72), and Chronic Sleep Restriction for 2 weeks (KR-2) or 4 weeks (KR-

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4). The control group maintained normal sleep, while acute groups were subjected to 24–72 h of REM sleep deprivation, and chronic groups underwent 18 h/day of REM sleep restriction. Serum corticosterone and Sestrin1/2/3 protein levels in the liver, kidney, testis, and brain hippocampus tissues were measured using ELISA. Data were analyzed using the Kruskal–Wallis test followed by Dunn's post hoc test with Bonferroni correction.

RESULTS: Compared to controls, chronic sleep restriction caused tissue-specific reductions in sestrin proteins. Sestrin1 decreased in the liver of KR-2 and KR-4 groups ($p<0.05$), while Sestrin2 declined in the liver ($p<0.01$) and testis ($p<0.05$) of KR-4 rats. Sestrin3 levels were lower in the testis of KR-2 and the hippocampus of KR-4 ($p<0.05$). No significant changes occurred in acute deprivation groups. Serum corticosterone levels tended to increase in A-72 and KR-4, but without statistical significance.

CONCLUSIONS: Chronic sleep restriction suppressed Sestrin1/2/3 expression in a tissue-dependent manner, suggesting that prolonged insufficient sleep may impair the body's adaptive stress response and increase vulnerability to cellular stress.

This study was supported by the Scientific Research Projects Unit of Trakya University (TÜBAP 2024/49).

Keywords: Sestrin, Sleep deprivation, Sleep restriction, Stress response

PC-28

Fluralaner Exhibits Cytotoxic Effects in Different Types of Human Cancer Cells

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AIM: Cancer is a public health problem that is considered one of the most important causes of death worldwide, with a very high prevalence. Due to the inadequacy of current cancer treatment methods and their serious side effects, drugs used for different pathophysiological conditions have recently been tested by researchers for cancer. In this regard, the use of anti-inflammatory, antiviral, and antiparasitic drugs for various types of cancer has become an important part of pharmacological treatments. It has been shown that isoxazolines, a group of antiparasitic drugs commonly used in veterinary medicine, have anti-inflammatory, antiviral, and antitumor properties. Fluralaner, a new member of the isoxazoline group, is an insecticide that blocks ligand-gated chloride channels and has an ectoparasitic effect. While the effects of fluralaner, both as a member of the isoxazoline group and due to its pharmacological properties, suggest that it may be effective against cancer, studies in this area are quite limited. Therefore, in our study, we aimed to investigate the effect of fluralaner application on cell viability in four different cancer cell lines(LNCaP,A2780,Caco2, and MCF-7).

METHODS: In this study, fluralaner was applied to LNCaP, A2780, Caco2, and MCF-7 cell lines at concentrations of 1, 5, 25, 50, and 100 µM, and changes in cell viability were determined using the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide(MTT) assay method after 24 hours. Following the determination of dose- and time-dependent efficacy based on MTT assay results, the inhibitory concentration 50(LogIC50) value was calculated using GraphPad Prism 8 software, and intergroup comparisons were performed using Kruskal-Wallis H-test.

RESULTS: Fluralaner application showed significant cytotoxic activity at 25, 50, and 100 µM concentrations in the LNCaP cell line after a 24-hour incubation period; A2780, Caco2, MCF-7 cell lines at concentrations of 5, 25, 50,and 100 µM ($p<0.05$).

CONCLUSIONS: These results suggest that fluralaner may possess anticancerogenic activity against A2780, LNCaP, Caco-2, and MCF-7 cells.

This study was supported by the TÜBİTAK "2209/A University Students Research Projects Support Program" (Project No:1919B012429853).

Keywords: A2780, Caco2, Cancer, Fluralaner, MCF-7, LNCaP

PC-29

Investigation of the Cytotoxic Effects of Cetylpyridinium Chloride in A2780 and LNCaP Cell Lines: An *in vitro* Study

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AIM: Cancer is a complex disease characterized by uncontrolled cell division and spread to surrounding tissues. Cetylpyridinium chloride (CPC) is a cationic surfactant

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widely known for its antiseptic and antimicrobial properties. In recent years, mechanisms by which CPC disrupts cell membrane integrity, induces apoptosis, and affects cellular metabolism have suggested that it may have anticancer potential. However, the number of studies investigating the effects of CPC on different cancer cell types is quite limited. In this study, the aim is to evaluate the potential cytotoxic effects of CPC on A2780 (human ovarian cancer cell line) and LNCaP (human prostate cancer cell line) cell lines under *in vitro* conditions.

METHODS: In the study, A2780 and LNCaP cell lines were incubated with CPC at concentrations of 1, 10, 100, and 1000 µM for 24 hours. The effect of CPC on cell viability was determined using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay method, the inhibitory concentration 50 (IC50) value was calculated using Graphpad Prism 8 program. All experiments were performed in eight replicates (n=8). The statistical significance of data was evaluated using the non-parametric Kruskal-Wallis variance analysis, and $p<0.05$ value was considered statistically significant.

RESULTS: In A2780 and LNCaP cell lines, CPC showed a significant cytotoxic effect at concentrations of 10, 100, and 1000 µM ($p<0.05$). The IC_{50} values were determined to be 13.54 µM for A2780 cell line and 14.39 µM for LNCaP cell line.

CONCLUSIONS: This study has demonstrated that CPC produces a significant cytotoxic effect at low micromolar levels in A2780 and LNCaP cell lines. Based on the data obtained, CPC can be considered a promising candidate for development of new cancer treatment strategies; however, further studies are required to elucidate the molecular mechanisms underlying this effect.

This study was supported by the TÜBİTAK-BİDEB 2209-A University Students Research Projects Support Program.
Keywords: A2780, Cancer, Cetylpyridinium Chloride, LNCaP, Cytotoxicity

PC-30

The Arrhythmias Occurred Following Myocardial Ischemia and Reperfusion in Rats Anesthetised by Xylasizine and Kethamine or Urethane and the Effects of Isoproteranol and Epinephrin on These Arrhythmias

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AIM: Urethane anesthesia causes significant animal loss due to low blood pressure prior to coronary ligation in experimental acute myocardial ischemia-reperfusion studies. This study compared the effects of two anesthesia types; xylazine-ketamine combination and urethane on hemodynamic parameters and arrhythmia in a myocardial ischemia-reperfusion model. Additionally, we evaluated the effects of isoproterenol and epinephrine on these parameters under both anesthesia protocols.

METHODS: This study was approwed by animal ethical comitee of Abant İzzet Baysal University,(Protocol number; 2024/10). Forty-eight Sprague-Dawley male rats were used in this study, and three groups; control, Isoproterenol, and epinephrine, were produced in each anesthesia model. Six minutes of ischemia by the ligation of the left coronary artery 2mm away from its originating point from the aorta and six minutes of reperfusion by releasing the artery. Blood pressure and EKG were recorded by using the Biopac Pro 3.7 program software during ischemia and reperfusion. The blood pressure, heart rate, the type and duration of ventricular arrhythmia and the score of arrhythmia were determined. The differences among all parameters obtained from groups were compared using a one-way ANOVA, LSD post-hoc test in SPSS version 22.

RESULTS: Urethane-anesthetized rats showed significantly higher heart rate ($p<0.05$) and lower blood pressure compared to xylazine-ketamine group. Epinephrine given during reperfusion was found to be more effective in increasing heart rate and blood pressure compared to isoproterenol. While epinephrine increases the arrhythmia score during reperfusion in relation to its control with xylazine-ketamine anesthesia, but it decreased the arrhythmia score under urethan anesthesia.

CONCLUSIONS: Urethane anesthesia produces more pronounced hypotensive effects and it induces more arrhythmia in reperfusion period. This effect may depend on the less myocardial ischemia produced by urethane. But more study is required to understand the mechanism of this effect.

This 2209/A Project (# 19198012327078) was supported by Scientific and Technical Research Council of Türkiye
Keywords: Anesthesia, Arrhythmia, Epinephrine, Isoproterenol, Myocardial Ischemia-Reperfusion

PC-31

Antihypertensive Effect of Hesperidin and Aerobic Exercise

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AIM: Hypertension is a common public health issue both in our country and worldwide, characterized by high blood pressure, reduced quality of life, and increased mortality risk. However, it can be managed with medication and certain lifestyle changes. The aim of this study was to investigate and compare the antihypertensive effects of aerobic exercise and hesperidin, which have individually been shown in the literature to lower blood pressure, but have not yet been studied in combination.

METHODS: In this study, male Sprague dawley rats were administered intraperitoneal injections of 75 mg/kg L-NAME for 10 days to induce hypertension. Following this, for three weeks, the relevant groups were subjected to 0.5 mmoL/kg/day hesperidin treatment, and/or moderate-intensity treadmill running sessions (60 minutes/day, 5 days/week, 20 m/min), either separately or in combination. Systolic and diastolic blood pressures of the rats were measured using the tail-cuff method at the end of the first, second, and third weeks. Additionally, blood lipid profile, blood glucose levels, antioxidant enzyme activities in plasma—superoxide dismutase (SOD) and catalase (CAT)—as well as total antioxidant status (TAS), total oxidant status (TOS), lipid peroxidation (MDA/TBARS test), and inflammatory markers (TNF-α, IL-6, and C-reactive protein [CRP]) were evaluated.

RESULTS: The results demonstrated that aerobic exercise alone was more effective than hesperidin, with more pronounced effects on lowering blood glucose levels and improving the lipid profile.

CONCLUSIONS: The combination of hesperidin and aerobic exercise was more effective in reducing blood pressure, while hesperidin alone was found to be more effective in protecting liver functions and reducing inflammation and oxidative stress.
Supported by: Hacettepe University Scientific Research Projects Unit (Project No: TYL 2024-21457)
Keywords: Aerobic exercise, Hesperidin, Hypertension, L-NAME, Oxidative status

PC-32

Investigation of the Effect of Serum Phosphate Levels on Cognitive Functions in Individuals over 65 Years of Age

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AIM: Although associated with neurological disorders, the impact of serum phosphate levels on cognitive functions in older adults remains unclear. This study examined their relationship in individuals aged 65 and above.

METHODS: After ethical approval, the study included 258 patients followed in the Geriatrics Department of Ankara Bilkent City Hospital. With informed consent obtained, serum phosphate levels and Mini-Mental State Examination (MMSE) and Montreal Cognitive Assessment (MoCA) test scores were collected from hospital records.Participants also completed computer-based cognitive tests. These included the PVT (Finger Tapping Test) and B-GRT (Basic Visual Reaction Time), which assessed motor performance, reaction time, and intrinsic alertness; K-GRT (Complex Reaction Time) for sustained attention; and BT-GRT (Basic Recognition Reaction Time) and KT-GRT (Complex Recognition Reaction Time) to evaluate memory, decision-making, cognitive control, and sustained attention. In the first stage, correlations between phosphate levels and cognitive test results were analyzed. In the second stage, phosphate levels were categorized into four groups: <2.50 mg/dL, 2.50–3.49 mg/dL, 3.50–3.99 mg/dL, and ≥4.00 mg/dL. Group comparisons were conducted using One-Way ANOVA and Kruskal-Wallis H tests, while Pearson and Spearman correlation tests were used for association analyses. $P<0.05$ was considered statistically significant.

RESULTS: A weak positive correlation was observed between phosphate levels and MMSE scores ($p<0.05$). Group 1 showed significantly lower MMSE scores, while MoCA scores were significantly reduced in both groups 1 and 4. No significant group differences were noted in PVT, B-GRT, and K-GRT. However, BT-GRT and KT-GRT showed significant differences, with group 1 exhibiting the longest reaction times ($p<0.05$).

CONCLUSIONS: The findings indicate that even slight changes in serum phosphate levels may impair cognitive functions. Computer-based cognitive tests, offering faster and more objective assessments than traditional methods, could aid in evaluation and monitoring of cognitive impairments.
Keywords: Cognitive Function, Computer-Based Cognitive Tests, MMSE, MoCA, Older Adults

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PC-33

Investigation of the Protective Effects of Nateglinide Against Renal Ischemia/Reperfusion Injury: An Experimental Study

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AIM: Renal ischemia/reperfusion (I/R) injury plays a major role in the development of acute kidney injury (AKI) through inflammation and oxidative stress. This study aimed to evaluate the potential renoprotective effects of Nateglinide (Nat), which is known for its antioxidant and anti-inflammatory properties, on kidney tissue in rats subjected to experimental I/R injury using biochemical and histological methods.

METHODS: Forty male Sprague-Dawley rats (ethics approval: 2024/15-2) were randomly divided into four groups (n=10): control, I/R, I/R+Nat 50 mg/kg, and I/R+Nat 100 mg/kg. While no surgical procedure was applied to the control group, the other groups underwent 45 minutes of ischemia followed by 24 hours of reperfusion. Rats in the Nat groups received oral gavage of Nat (50 or 100 mg/kg) 60 minutes before ischemia. At the end of the experiment, serum samples were analyzed for blood urea nitrogen (BUN), creatinine (Cr), tumor necrosis factor-α (TNF-α), and interleukin-1 beta (IL-1β). In kidney tissue, superoxide dismutase (SOD) and catalase (CAT) activities, as well as malondialdehyde (MDA) and glutathione (GSH) levels, were measured. Histopathological evaluation was performed, and caspase-3 expression was assessed immunohistochemically. Group comparisons were analyzed using SPSS software with the Bonferroni-corrected Mann-Whitney U test ($p<0.05$).

RESULTS: Compared to the I/R group, Nat treatment significantly increased SOD, CAT, and GSH levels, while significantly decreasing MDA, TNF-α, IL-1β, BUN, Cr, and caspase-3 levels ($p<0.05$). Histological analyses demonstrated that Nat administration markedly reduced structural kidney damage induced by I/R.

CONCLUSIONS: Nat protects renal tissue in the I/R model by suppressing oxidative stress, inflammation, and apoptosis, thereby exhibiting a significant renoprotective effect. These findings suggest that Nat may represent a potential therapeutic strategy for preventing AKI caused by renal I/R injury.

This study was supported by the Scientific Research Projects Unit of İnönü University(Project No: TYL-2024-3761).

Keywords: Apoptosis, Inflammation, Ischemia/ Reperfusion, Nateglinide, Oxidative Stress

PC-34

Türkiye's Scientific Productivity in the Field of Physiology: A Global Comparison

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AIM: This study was aimed to examine the scientific articles addressed to physiology since 1980 by bibliometric analysis and to compare the situation in Türkiye and the world in general.

METHODS: Using the Web of Science (WoS), articles published in the “Physiology” category between 1980-2025 were searched. WC=(Physiology) query was used for worldwide data, “Türkiye” and “Türkiye” options were applied from the “Countries/Region” filter for Türkiye. Only Articles and Review Articles were included in the analysis. Results were quantitatively evaluated on the basis of annual number of publications, research areas, publication indexes, countries and universities.

RESULTS: Between 1980-September2025, Türkiye contributed 1.709 publications, whereas the wordwide total reached 419.684. Türkiye's annual publication average (39,7±36,38) is well below the world average (9123,5±1892,5). The increase in the number of publications worldwide started in 1980 and reached the highest levels in 2019-2020. However, an upward trend has been observed in the number of publications in Türkiye since 2004 and reached its highest levels in 2019-2020, similar to the world. Biochemistry-molecular biology has the highest number of publications in Türkiye, followed by biophysics and neuroscience, whereas worldwide analysis showed neuroscience followed by sports sciences and cell biology. There are 1.703 publications in the Science Citation Index Expanded (SCIE) and 113 in the Social Sciences Citation Index (SSCI) in Türkiye; worldwide figures were 412.673, 21.821, respectively. The most productive

countries were found to be the USA (3580,04), Canada (122,34), China (91,79) respectively. While Istanbul University is the institution with the highest number of publications in Türkiye, University of California System was found the be the most prolific institution, worldwide.

CONCLUSIONS: Although Türkiye's annual average number of physiology publications is below the global average, there has been a significant upward trend in the last 20 years. Türkiye ranks 35th worldwide, its research focuses differ from global trends.

Keywords: Physiology, Publication, Türkiye, World

PC-35

Effects of High-Fructose and High-Salt Diets on Systolic Blood Pressure and Left Ventricular Smad2-3 Protein Levels in Rats

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AIM: Among the factors associated with impaired systolic blood pressure due to high-fructose and high-salt diet, cardiac fibrosis is a key component, and Smad2-3 proteins are among its molecular targets. The aim of this study was to investigate the effects of salt intake in combination with fructose on blood pressure and left ventricular Smad2-3 levels.

METHODS: Twenty-four 8-week-old male rats were fed with standard chow (C), 60% high-fructose diet (F), 4% high-salt diet (S), or a high-fructose plus high-salt diet (FS) for 6 weeks. On the last day of the feeding period, blood pressure was measured using the tail-cuff method. Under ketamine-xylazine anesthesia, blood and tissue samples were collected. Fasting blood glucose, cholesterol, HDL, LDL, and triglyceride levels were measured in serum. Smad2-3 protein levels in the left ventricle were analyzed by Western blot, and fibrosis formation was evaluated by Masson's trichrome staining. One-way ANOVA and Tukey tests were used for statistical analysis.

RESULTS: Systolic blood pressure in the FS group (139.0±14.5 mmHg) was not significantly higher compared to the C group (124.5±3.15 mmHg) (p>0,05), but was higher than the F group (120.3±12.3 mmHg) (p<0.05). Serum glucose in the F group (256.0±50.2 mg/dL) was similar to the C group (203.3±33.3 mg/dL) (p>0,05), but higher than the FS group (196.0±39.6 mg/dL) (p<0.05). Histopathological evaluation revealed greater fibrosis in the FS group compared to all other groups (p<0.05). Smad2/3 protein levels in left ventricular tissue were similar across all groups.

CONCLUSIONS: The combined high intake of fructose and salt increases systolic blood pressure and induces fibrosis in left ventricular tissue in rats; however, this effect is not associated with the non-phosphorylated form of Smad2/3 protein.

This study was supported by the Scientific Research Projects Unit of Trakya University (TÜBAP 2022/120).

Keywords: Cardiac Hypertrophy, Fibrosis, Fructose, Natriuretic Peptides, Salt

PC-36

The Effect of Breathing Exercise on Acute Stress Management

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AIM: This study aimed to investigate the effects of acute mental stress on the cardiovascular autonomic nervous system and to determine how breathing exercises may modulate these physiological responses.

METHODS: Ethical approval was obtained from Kırklareli University Ethics Committee (protocol P20250035, decision 04). Stroop Color and Word Test (SCWT) is a neurophysiological test that assesses cognitive conflict and is commonly used to induce acute mental stress. Heart rate variability (HRV), reflecting the variation in time intervals between consecutive heartbeats, provides insight into autonomic nervous system function. Sample size was calculated as 12 using G*Power 3.1 (effect size 0.8, alpha 0.05, power 0.8). Heart rate and HRV values were measured in 12 healthy participants of both sexes (6 males, 6 females) aged between 25 and 35, during 5-minute resting periods before and after the SCWT test. The same protocol was repeated following a 5-minute guided breathing exercise focused on prolonging exhalation relative to inhalation. Changes in heart rate and HRV components were compared between the breathing and non-breathing conditions using one-tailed paired-sample t-tests (p<0.05).

RESULTS: Heart rate significantly increased after the SCWT in both conditions (p=0.0002; p=0.0027), but the percentage change between conditions was not statistically significant, suggesting a similar level of induced stress. The low-frequency component (LF) of HRV, reflecting sympathetic activity, increased significantly only in the non-breathing condition (p=0.005), and the difference between

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conditions was significant (p=0.01). The high-frequency component (HF), indicating parasympathetic activity, decreased significantly in the non-breathing condition (p=0.0009) and increased in the breathing condition (p=0.03); this difference was also statistically significant (p=0.04).

CONCLUSIONS: Controlled breathing exercises supported autonomic balance following acute stress and enhanced parasympathetic activation, thereby improving individuals' ability to cope with stress. This experimental design provides valuable insights into the physiological mechanisms underlying stress management techniques.

Keywords: Acute Mental Stress, Autonomic Nervous System, Breathing Exercise, Heart Rate Variability

PC-37

The Dose-Dependent Effect of DMSO (Dimethyl Sulfoxide) on the Blood Pressure, Heart Rate and Cardiac Rhythm under Two Different Anesthesia: Urethan, Xylazine and Kethamine in Rats

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AIM: While studies investigating the effects of different anesthetic agents on hemodynamic parameters and arrhythmias are limited, almost no studies that specifically examined the dose-dependent effects of dimethyl sulfoxide (DMSO) under different anesthesia conditions was found. This study aimed to investigate the effects of xylazine-ketamine and urethane anesthesia on blood pressure and heart rate, as well as the impact of different doses of DMSO used as a solvent on these hemodynamic parameters and cardiac rhythm.

METHODS: Fifty-three male Sprague-Dawley rats were used in this study. In each type of anesthesia, animals was divided into three subgroups as control (saline), 25% DMSO (1 ml/kg), and 50% DMSO (1 ml/kg) and were applied intravenously (IV) via the tail vein. The EKG and blood pressure during 15 minutes following DMSO administration were recorded by using a BIOPAC MP35 system and BSL Pro 3.7 software. Parameters including the blood pressure, heart rate, ventricular arrhythmia, the type and duration of arrhythmias and the score of arrhythmia were determined. All parameters obtained, were compared by using a one-way ANOVA, LSD Post hoc test (SPSS, 22.0).

RESULTS: Under xylazine-ketamine anesthesia,50% DMSO significantly reduced heart rate compared to the control group ($p<0.05$). But this effect was not observed in urethane anesthesia. However, high-dose DMSO (50%) significantly increased the arrhythmia score in urethane-anesthetized rats ($p < 0.05$), while no such effect was seen with xylazine-ketamine anesthesia.

CONCLUSIONS: The reduced incidence of arrhythmias with high-dose DMSO under xylazine-ketamine anesthesia may be attributed to the lower heart rate observed in this group. In contrast, urethane anesthesia was associated with higher heart rates and significant hypotension compared to xylazine-ketamine, representing a notable disadvantage. Therefore, xylazine-ketamine anesthesia appears to be a more reliable option for cardiovascular stability.

This Project (2209/A, 19198012327426), is supported by Scientific and Technical Research Council of Türkiye

Keywords: Anesthesia, Arrhythmia, Blood Pressure, Dimethyle Sulfoxide, Heart Rate

PC-38

Selenium Mitigates Sleep Deprivation-Induced Inflammation and MMP-2/9 Activity in Cardiac Tissue

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AIM: Sleep deprivation can cause structural and functional deterioration in heart tissue by increasing oxidative stress and inflammatory responses. Mediators such as matrix metalloproteinases (MMP-2/MMP-9), IL-1β, and lipopolysaccharide (LPS) are important cardiac tissue damage and remodeling processes biomarkers. This study aimed to evaluate the effects of sleep deprivation on the inflammatory response in rat heart tissue and to investigate the possible regulatory role of selenium supplementation on these effects.

METHODS: Twenty-one Wistar albino male rats were randomly divided into three groups: Control (C), Sleep Deprivation (SD), and Sleep Deprivation+Selenium (SD+Se) (n=7, each group). Selenium (0.6 mg/kg) was given intraperitoneally. The sleep deprivation model was created using a modified multi-platform method, and the rats were subjected to 18 hours (4pm/10am) of sleep deprivation daily for 15 days. Body weight was measured weekly throughout the experiment. At the end of the experiment, MMP-2, MMP-9, IL-1β levels in heart tissues and serum LPS levels were evaluated by ELISA method. The results were

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analyzed using GraphPad Prism-10. One-way ANOVA and post-hoc Tukey tests were used for comparisons between groups.

RESULTS: MMP-2 levels were significantly increased in the SD group compared to the control group (p=0.0001), while they were significantly decreased in the SD+Se group compared to the SD group (p=0.001). MMP-9 levels were also significantly higher in the SD group compared to the control group (p=0.030). A significant difference was observed between the control and SD groups in IL-1β levels (p=0.004). Serum LPS levels did not differ significantly between the groups (p=0.360). Body weight significantly decreased in the SD group relative to the C group (p=0.027).

CONCLUSIONS: The study results suggest that selenium may be a potential therapeutic agent in reducing sleep deprivation-induced cardiac damage by suppressing the inflammatory response and regulating the levels of matrix metalloproteinases, which play a role in cardiac remodeling.
This study was supported by TUBITAK under the 2224-B 2025/4 Domestic Scientific Activities Participation Support Program (Application No: 1919B022509300).
Keywords: Cardiac tissue, MMP-2, MMP-9, Selenium, Sleep deprivation

PC-39

The Effects of Verbascoside on DNA Damage and Oxidative Stress in 3T3-L1 Adipocytes

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AIM: Obesity is a chronic disease marked by excessive fat accumulation in adipose tissue, leading to oxidative stress, inflammation and DNA damage. Understanding these mechanisms in adipocytes is crucial for preventing obesity-related metabolic disorders. Polyphenols are natural antioxidants with diverse biological effects, and their impact may vary by cell type, dose, and exposure time. The aim of this study is to assess the effects of different verbascoside doses on DNA damage in adipocytes and their association with oxidative stress.

METHODS: 3T3-L1 preadipocytes were differentiated for two days using a medium containing isobutylmethylxanthine, dexamethasone, and insulin, followed by eight days in high-glucose, insulin-rich medium to obtain mature adipocytes. Cells were then treated with 50 µM (V50) and 100 µM (V100) verbascoside. DNA damage was evaluated via comet assay and oxidative stress by ELISA. Statistical analysis used Shapiro-Wilk and Kruskal-Wallis tests (post hoc: Bonferroni-adjusted Mann-Whitney U); $p<0.05$ was considered statistically significant.

RESULTS: V50 significantly increased DNA damage compared to the control ($p<0.0001$), while TAS, TOS, and OSI levels remained unchanged. In contrast, V100 reduced oxidative stress ($p<0.0001$) and significantly decreased DNA damage compared to V50 ($p<0.05$).

CONCLUSIONS: The V50, increased DNA damage without affecting oxidative stress. This suggests that the damage may be caused by mechanisms independent of oxidative stress. Verbascoside or its metabolites have been shown to cause genotoxicity in some cell models. In contrast, the V100, improved oxidative stress and reduced DNA damage compared to the V50 dose. These results not only suggest that verbascoside could be a potential agent for obesity treatment but also support the existence of dose-dependent biological responses of polyphenols.

This study was supported by TUBITAK under the 2209/A – Research Project Support Programme.
Keywords: Adipocyte, DNA Damage, Obesity, Oxidative Stress, Verbascoside, 3T3-L1

PC-40

Assessment of Serum and Saliva CRP, IL-17, and IL-19 Levels in Patients with Different Severity of Acne Vulgaris

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AIM: Acne vulgaris (AV) is an inflammatory skin disorder in which cytokines such as interleukin-17 (IL-17), interleukin-19 (IL-19), and C-reactive protein (CRP) are thought to play key roles in pathogenesis. This study aimed to evaluate serum and salivary CRP, IL-17, and IL-19 levels in individuals with AV and investigate their association with disease severity.

METHODS: This study included 99 participants aged 15–30. Sample size was determined through power analysis to ensure reliability and validity. Participants were categorized using the Global Evaluation Acne (GEA) Scale into three groups: Control (n=28), Moderate Acne (n=43), and Severe Acne (n=28). Serum and saliva samples were analyzed for CRP, IL-17, and IL-19 using ELISA and immunoturbidimetric

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methods. Statistical analyses were performed with SPSS. Data normality was assessed with the Shapiro–Wilk test, descriptive statistics were calculated, and group comparisons were conducted using one-way ANOVA followed by Tukey's or Duncan's test, as appropriate

RESULTS: Serum IL-17 levels were significantly higher in controls compared to both moderate and severe acne groups ($p<0.05$), independent of gender. No significant differences were observed in salivary CRP, IL-17, or IL-19 levels among groups. A moderate and significant correlation was found between salivary IL-17 and IL-19 ($r=0.672$, $p<0.005$), as well as between serum IL-17 and IL-19 ($r=0.538$, $p<0.005$), suggesting potential cytokine interaction in immune regulation.

CONCLUSIONS: Unlike previous reports, our study found lower serum IL-17 in AV patients than in healthy controls, challenging assumptions about its pro-inflammatory role and suggesting a compensatory immune mechanism maintaining homeostasis. These results may indicate distinct physiological pathways between systemic interleukin levels and localized skin inflammation. Although salivary cytokines did not differ significantly among groups, the strong intra-sample correlations highlight their potential role in immune regulation.

Keywords: Acne Vulgaris, C-Reactive Protein, Interleukin-17, Interleukin-19, Saliva, Serum

PC-41

Comparative Analysis of Coagulation and Liver Parameters in Individuals with Alcohol and Substance Use Disorders and Healthy Controls

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AIM: The coagulation system,which prevents acute bleeding in area of vascular injury and liver,where coagulation proteins are synthesized,may be affected by alcohol and substance use disorders.The aim of this study is to evaluate the relationship between coagulation parameters and liver function in patients with Alcohol and Substance Use Disorder(ASUD) and the type of substance used,compared to healthy control group.

METHODS: Patients treated at AMATEM clinic of Sakarya University Hospital between January 1,2022 and January 31,2025 were divided into five groups according to substance type: Alcohol (n=110), Cannabinoid (n=71), Methamphetamine (n=110), Multiple Substances (n=110) and opioids (n=50). Since average age of alcohol group was found to be higher than other substance groups, two separate healthy control groups with average ages of 45 years(n=50) and 30 years(n=100) were selected to match groups. All participants' Ca, INR, PT, APTT, PLT, AST and ALT values, as well as their sociodemographic characteristics were evaluated.

RESULTS: Statistically significant differences were found between groups in terms of ALT, AST, PT, APTT and PLT values ($p<0.001$). Compared to the 30-year-old healthy control group, PT values were lower in the Multi-Substance and Methamphetamine groups ($p<0.001$); compared to 30-year-old control group, APTT values were higher in Cannabinoid group ($p=0.004$); Compared to 45-year-old healthy control group, AST value was higher in Alcohol group ($p<0.001$); compared to 30-year-old healthy control group, AST was higher in Methamphetamine and Opiate groups ($p=0.005$), while ALT was lower ($p<0.001$). In addition, post-hoc analyses revealed statistically significant differences in AST, ALT, PT, APTT and PLT parameters according to type of substance preferred by individuals ($p<0.001$).

CONCLUSIONS: The liver is main organ responsible for synthesizing coagulation factors in our body, making its function extremely important. In ASUD patients, liver and coagulation parameters vary depending on the type of substance used. Due to lower PT values in patients using methamphetamine and multiple substances, these patients should be closely monitored for thrombosis risk; patients using cannabinoids, on the other hand, should be closely monitored for bleeding risk due to higher APTT values. AST and ALT levels are impaired by alcohol, methamphetamine and opiate use, so it is important to monitor these patients for liver function.

Keywords: Addiction, Alcohol, Coagulation, Liver, Substance

PC-42

Effects of Extracellular Vesicles Isolated from Erythrocyte Suspensions on Hemostasis

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AIM: Extracellular vesicles (EVs) are derived from erythrocytes, platelets, and other tissues under physiological or pathological conditions as a response to activation, stress, or apoptosis. Enhanced procoagulant activity and shortened coagulation time of microparticles in red blood cell (RBC) suspension was shown. This study aimed to investigate and evaluate the effects of microparticles and exosomes, from RBC suspensions by leukoreduction, on platelet aggregation and overall hemostasis.

METHODS: To collect blood, having ARh(+) five healthy volunteers taking no medications were selected. Microparticles and exosomes from prepared leukoreduced RBC suspensions were isolated by ultracentrifugation. EVs were characterized by BCA assay, Western blot, TRPS, and flow cytometry. The obtained microparticles and exosomes were incubated with platelet-rich plasma for 5 minutes in optical aggregometer (OA), and for 15, 30, and 60 minutes in thromboelastography (TEG) with increasing concentration (1x,3x,9x) of physiological blood (1x), respectively. Their effects on hemostasis were evaluated in allogeneic blood samples.

RESULTS: Due to OA, effect of microparticles and exosomes on platelet aggregation was not significant for increasing concentrations (1x,3x,9x). Due to TEG, those EVs were nonsignificantly prone to shorten clotting (R) and clot formation (K) times and exerted a procoagulant effect on other hemostatic parameters. This hypercoagulable effect was more clear in microparticles than in exosomes. Increasing incubation time had nonsignificant effect.

CONCLUSIONS: Significant effect of EVs from RBC suspensions on platelet aggregation was not observed. Microparticles may have a procoagulant activity on hemostasis, but exosomes contribute more limitedly according to TEG results. The lack of molecules acting on platelets may result in no effect on aggregation. However, effected enzymatic process of hemostasis might be considered.

This study was supported by the Scientific Research Projects Coordination Unit of Bursa Uludağ University. (Project Title: Effects of Extracellular Vesicles Isolated from Red Blood Cell Suspensions on Hemostasis, Project No: TYL-2025-2135)

Keywords: Erythrocyte, Exosome, Extracellular Vesicle, Hemostasis, Microparticle, Platelet Aggregation

PC-43

Investigation of the Acute and Chronic Effects of Local Lower Extremity Muscle Exercise on Respiratory Functions Using Spirometric Methods

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AIM: A sedentary lifestyle is known to impair respiratory functions. This study aimed to evaluate the acute and chronic effects of the Soleus Push-Up (SPU), aerobic exercise (AE), and their combination on respiratory functions using spirometric assessment.

METHODS: Approved by the Ethics Committee of Bursa Uludağ University (2025/634-8/30), the study included 37 healthy sedentary adults aged 18–45 years (20 males, 17 females). Participants were randomly assigned to SPU, AE, AE+SPU, or control groups. Exercise protocols were performed three times per week for four weeks. Effects were assessed using spirometric parameters: Forced Vital Capacity (FVC), Forced Expiratory Volume in 1 second (FEV_1), FEV_1/FVC ratio, Maximal Voluntary Ventilation (MVV), Inspiratory Capacity (IC), Peak Expiratory Flow (PEF), and Forced Expiratory Flow 25–75% (FEF_{25-75}). Measurements were taken at baseline, weeks 2 and 4, and post-exercise to assess acute effects. Data were analyzed using repeated measures ANOVA with appropriate post-hoc tests.

RESULTS: No significant differences were found between groups in FVC, MVV, IC, PEF, and FEF_{25-75} at baseline or after training. Over time, PEF increased significantly in SPU ($p=0.012$) and AE ($p=0.004$) groups. FEF_{25-75} showed no significant change. A significant increase in FEV_1 ($p=0.029$) and FEV_1/FVC ratio ($p=0.049$) occurred only in the AE group. IC and MVV remained unchanged, and no acute intergroup differences were detected.

CONCLUSIONS: In conclusion, four weeks of exercise—especially SPU and AE—led to short-term improvements in flow parameters such as PEF. However, the expected synergistic effect in the AE+SPU group was not confirmed. Limited changes in volume and capacity suggest longer or more intensive exercise may be required. SPU may represent a potential option for respiratory rehabilitation in sedentary individuals.

This project was supported by BUU BAP (Project No: TYL-2025-2136).
Keywords: Aerobic Exercise, FEV1/FVC Ratio, Local Muscle Exercise, Soleus Push-Up, Spirometer

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PC-44

Investigation of the Effect of Clomipramine on the Contraction-Relaxation Mechanism of the Female Rat Bronchus

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AIM: Clomipramine is a tricyclic antidepressant agent frequently used in the treatment of psychosomatic complaints. Among these complaints, symptoms related to the respiratory system (dyspnea and tachypnea) may also be present. However, there is a lack of sufficient studies in the literature regarding possible respiratory system problems that may accompany such symptoms. This study aimed to evaluate the potential effects of clomipramine on the contraction-relaxation mechanisms of bronchial smooth muscle in female rats using an isolated organ bath system.

METHODS: In this study, ten 10–12-week-old intact female Sprague-Dawley rats obtained from the Experimental Research Center of Firat University were used. Isolated bronchial tissues were placed in organ bath systems containing Krebs solution. An initial tension of 1.5 grams was applied to each tissue, followed by a 90-minute equilibration period. After stabilization, acetylcholine at a concentration of 10^{-5} M was administered to induce maximum contraction (Emax). Subsequently, the effective dose of clomipramine (10^{-5} M), determined through preliminary study, was applied, and a new Emax value was recorded. The obtained data were normalized. Statistical analysis was performed using the paired t-test, and $p<0.05$ was considered statistically significant. Ethical approval was obtained for the study.

RESULTS: Administration of clomipramine caused a statistically significant decrease in the Emax value of bronchial contractions induced by acetylcholine ($p = 0.0089$).

CONCLUSIONS: The obtained data indicate that clomipramine exerts an inhibitory effect on bronchial smooth muscle contraction. This finding contributes to a better understanding of the potential side effects of clomipramine on the respiratory system.

Keywords: Bronchus, Clomipramine, Contraction-Relaxation, Isolated tissue bath, Rat, Smooth muscle

PC-45

Effects of Intermittent Fasting on Cognitive Functions and Anxiety in a Lipopolysaccharide-Induced Neuroinflammation Model in Rats

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AIM: Neuroinflammation is a pathological process implicated in the development of neurodegenerative diseases and is increasingly recognized as a major contributor to global morbidity and mortality. This study aimed to evaluate the effects of intermittent fasting (IF) on cognitive functions and anxiety-related behaviors in a rat model of lipopolysaccharide (LPS)-induced neuroinflammation.

METHODS: Forty adult male Sprague-Dawley rats were randomly divided into equal four groups: Control, LPS-treated (LPS), IF and IF+LPS. Rats in the IF groups were subjected to alternate-day fasting for 4 weeks (24 hours fasting followed by 24 hours of ad libitum feeding). LPS (250 µg/kg) was administered intraperitoneally for 7 consecutive days during the fourth week. Behavioral assessments [Open Field Test, Novel Object Recognition (NOR), Novel Location Recognition, Elevated Plus Maze (EPM)] were conducted 48 hours after the final LPS injection. Data were analyzed using one-way ANOVA and post-hoc Duncan tests.

RESULTS: In the Open Field test, the total distance parameter did not differ significantly among groups. IF and IF+LPS groups compared to the LPS group showed a significant improvement in the discrimination index ($p<0.05$) and time spent exploring the novel object ($p<0.05$) in the NOR test. In the EPM, latency to first closed arm entry in IF group was increased ($p<0.05$) compared to the control group. LPS group compared to control, IF and IF+LPS groups exhibited a significant reduction in open arm preference ($p<0.05$) and an increase in OAAI ($p<0.05$).

CONCLUSIONS: LPS administration impaired cognitive performance and increased anxiety-like behaviors in rats. Intermittent fasting attenuated these effects, suggesting that IF may be a promising non-pharmacological intervention for improving cognitive function and reducing anxiety in conditions associated with neuroinflammation.

This research was supported by Ege University Scientific Research Projects Coordination Unit (Project No. 32613).

Ethics: Ethical approval was obtained from EGE HADYEK Committee (Approval No. 2024-059).

Keywords: Anxiety, Cognitive Functions, Intermittent Fasting, Lipopolysaccharide, Neuroinflammation

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PC-46

Assessment of Cognitive Functions and Quality of Life in Parkinson's Patients with Lateralization

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AIM: Parkinson's disease (PD) is a progressive neurodegenerative disorder with motor and non-motor symptoms, including fatigue, cognitive dysfunction, and depression. This study aimed to evaluate cognitive functions, emotional status and quality of life in PD patients according to disease progression and cerebral lateralization.

METHODS: Thirty-seven PD patients (16 women, 21 men) and 34 healthy controls (19 women, 15 men), aged 18–70, were included. Cognitive tests (SPMIQ, COG, DT-DTsüre, TAVTMB), hand preference (Edinburgh Handedness Inventory), and emotional status (Beck Depression Inventory) were assessed. PD patients' quality of life (PDQ-39), disease stage (Hoehn–Yahr), and motor/non-motor impairments (UPDRS) were evaluated; levodopa equivalent daily dose (LEDD) was calculated. Data were analyzed using IBM SPSS 22.0. Mann–Whitney U test was used for non-parametric, independent samples t-test for parametric data, and Chi-square test for categorical variables. Cognitive tests between the PH and control groups were analyzed using MANCOVA to adjust for age and education differences. Kruskal–Wallis H test and Pearson/Spearman correlations were applied. Significance was set at $p<0.05$.

RESULTS: PD patients (n=37) had lower SPMIQ and correct DT responses than controls. Attention was higher in stage 1 patients (n=25). Patients with freezing (n=18) had higher PDQ, BDI, UPDRS-I, II, and total scores, and lower COG. "On" period patients (n=23) showed higher COG, shorter DT duration, and lower UPDRS-II, III, and total scores. Left-affected patients (n=15) had higher PDQ and BDI; low LEDD patients (n=17) had higher BDI.

CONCLUSIONS: Cognitive functions, emotional status, and quality of life are adversely affected in PD. Clinical status and dopaminergic treatment (LEDD) may influence emotional mood and cognitive performance, emphasizing the importance of individualized treatment strategies.
Ethical Approval: Approved by Manisa Celal Bayar University Clinical Research Ethics Committee.

Keywords: Cerebral Dominance, Cognitive Functions, Levodopa, Neurocognitive Functions, Parkinson Disease, Quality of Life

PC-47

Effects of Melatonin and Tramadol Combination on Acute Thermal Pain in Wistar Rats:Evaluation by Behavioral Tests.

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AIM: Pain is a complex sensory and emotional response to noxious stimuli. Conventional analgesics have limited efficacy and adverse effects, creating a need for safer, more effective options. This study evaluated the antinociceptive effects of Tramadol + Melatonin in an acute thermal pain model using Tail-flick (TF) and Hot-plate (HP) tests, and assessed motor coordination via the Rotarod test.

METHODS: Thirty male Wistar rats (8 weeks, 250–300 g) were divided into four groups: Control (n = 6), Tramadol (20 mg/kg), Melatonin (120 mg/kg), and Tramadol + Melatonin (20 + 120 mg/kg; n = 8 each). Animals received three-day Rotarod training before testing. Thermal nociception was measured with two TF and one HP tests at baseline and 15, 30, 60, 90, and 120 minutes post-injection. TF and HP cut-offs were 15 s and 30 s, respectively. Data were analyzed using SPSS v25 and expressed as mean ± SD. Group- and time-dependent differences were analyzed by the General Linear Model (GLM) for Repeated Measures, followed by Bonferroni-corrected pairwise comparisons ($p<0.05$).

RESULTS: The Tramadol + Melatonin group showed longer latencies in both TF and HP tests versus Control and single-drug groups ($p<0.05$). Melatonin and combination groups also had longer Rotarod coordination times at certain intervals.

CONCLUSIONS: The Melatonin–Tramadol combination produced a synergistic antinociceptive effect, increasing pain threshold without major motor impairment. Further molecular and clinical studies are needed to clarify the mechanisms and therapeutic value of this combination.

Ethics Approval: Ege University Local Ethics Committee for Animal Experiments (No: 2020-122) Funding: Supported by İzmir Katip Çelebi University Scientific Research Projects Unit (Project No: 2021-TDU-TIPF-0005).

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Note: This abstract is derived from the author's article in Behavioural Brain Research (2025; 490: 115641).
Keywords: Wistar Rats, Tramadol, Melatonin, Pain, Reaction time

PC-48

The Role of Proprioceptive Sense in Bimanual Motor Skill Asymmetry in Young Adults

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AIM: Proprioceptive sense enables individuals to interact with the environment, perform fine motor tasks, and maintain balance without visual input. Despite its importance in motor skill acquisition and execution, proprioception is not clearly defined in the literature. Its integration with the motor system presents measurement challenges. Existing methods mostly assess large joints, while research on the hand and fingers, key for fine motor skills, is limited. This study has two OBJECTIVES: (1) to develop a new technique for evaluating kinesthetic submodalities of proprioception in the hands and fingers, and (2) to examine motor and proprioceptive differences between dominant and non-dominant hands in right-handers and the relationship between motor skills and proprioceptive submodalities.

METHODS: Sixty healthy, right-handed participants (aged 18–30) completed motor and proprioceptive assessments. Motor skills were evaluated using the Finger Tapping Test (FTT) and Purdue Pegboard Test (PPT). Movement/position sense was measured with AMEDA and the new Kinesthetic Target Position Estimation Test (KTPET), while force/effort sense was assessed with the Pinch Target Force Grading Assessment (PTFGA). Test-retest method has been conducted to test validity and reliability of KTPET.

RESULTS: Movement/Position Sense: KTPET showed better performance in the dominant hand ($p<0.001$); AMEDA showed no significant difference.
Force/Effort Sense: PTFGA showed no hand differences, with or without visual feedback. Motor Skills: Dominant hand outperformed the non-dominant hand in both FTT and PPT ($p<0.001$). Motor–Proprioceptive Correlation: No significant correlations found. Submodality Relationships: Weak correlations observed among proprioceptive tests.

CONCLUSIONS: KTPET was reliable but not yet validated. Proprioceptive submodalities show different asymmetry patterns than motor skills. The lack of correlation indicates a complex, non-linear relationship. Classifying proprioceptive assessments by active/passive and static/dynamic features may enhance sensorimotor understanding and rehabilitation personalization.
Keywords: Kinesthetic Senses, Position Sense, Proprioception, Sensory Feedback, Sensory Motor Performance

PC-49

Neuroprotective and Behavioral Effects of Xenin-25 in a Streptozotocin-Induced Type 1 Diabetic Rat Model

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AIM: Xenin-25 is a polypeptide that enhances the effect of glucose-dependent insulinotropic polypeptide, thereby promoting insulin secretion and supporting beta cell survival. We aimed to investigate the effects of Xenin-25 on anxiety-like behavior, memory function, oxidative stress, and inflammation in rat model of type 1 diabetes (T1D).

METHODS: After the ethics committee provided approval (approval no: 22), male wistar albino rats were divided into control and diabetic groups (n=40). T1D was induced by streptozotocin (STZ; 45 mg/kg, intraperitoneally). Diabetic rats received xenin-25 at doses of 0.2, 2, and 20 µg/kg or vehicle (saline) intraperitoneally twice daily for three consecutive days. Following the final administration, anxiety levels were assessed using the hole-board test, and memory function was evaluated using the novel object recognition test. After fasting blood glucose (FBG) measurements, rats were decapitated under anesthesia (ketamine and xylazine; 10 and 100 mg/kg, i.p.), and brain tissues were collected for the determination of malondialdehyde (MDA), glutathione (GSH), IL-6, and TNF-α levels. Statistical analysis was performed using multiple comparisons with One-way ANOVA, with significance set at $p<0.05$.

RESULTS: Compared to the control, diabetes induction significantly increased FBG, neuronal oxidative damage, and inflammation, and triggered the development of memory dysfunction and anxiety-like behavior ($p<0.01$–0.001). Compared to the saline-applied diabetic group, all doses of xenin-25 significantly suppressed FBG and neuroinflammation ($p<0.001$–0.01). Elevated MDA were reduced by 0.2 and 20 doses of xenin-25 ($p<0.05$–0.01), while GSH increased at the 0.2 dose ($p<0.01$). Object

recognition difference scores were improved with 0.2 and 2 doses of xenin-25 ($p<0.01$). However, while xenin-25 increased freezing time in diabetic rats ($p<0.001$), it also decreased rearing and head-dipping numbers ($p<0.05$).

CONCLUSIONS: Xenin-25 exhibited neuroprotective effects in type 1 diabetic rats by attenuating diabetes-induced neuronal oxidative damage and inflammation. Despite its positive impact on memory performance, xenin-25 unexpectedly increased anxiety-like behaviors.

Keywords: Anxiety, Memory, Neuroinflammation, Type 1 Diabetes, Xenin-25

PC-50

Effects of Long-Term High-Fat Diet on Hypothalamic Arcuate Nucleus Tyrosine Hydroxylase Neuronal Activity and Paraventricular Nucleus Projections

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AIM: The hypothalamic arcuate nucleus (ARC) contains tyrosine hydroxylase (TH)-expressing neurons that play key roles in energy homeostasis and autonomic functions. Projections from these neurons to the paraventricular nucleus (PVN) are regulated by nutritional and hormonal signals. This study aimed to investigate the effects of long-term high-fat diet (HFD) on ARC-TH neuronal activity and PVN projections using fiber photometry.

METHODS: Male TH-Cre mice received viral vectors expressing a Cre-dependent calcium sensor (GCaMP) into the ARC. Optical fibers were implanted in the ARC or PVN projection regions. The mice were divided into two groups (n = 6/group) and were fed with HFD or standard diet (SD) for 12 weeks. Calcium signals were recorded during fasting, refeeding, and after intraperitoneal leptin injection (5 mg/kg). Fluorescence changes (ΔF/F) were normalized by z-score transformation. Group comparisons were performed using two-way ANOVA, and $p<0.05$ was considered statistically significant.

RESULTS: During fasting, ARC-TH neuronal activity significantly increased in both HFD and SD groups ($p<0.05$). However, refeeding-induced suppression was markedly reduced in HFD mice. Leptin injection induced no significant effect in SD mice but produced a blunted and non-significant response in HFD mice. PVN projection recordings also revealed diminished leptin sensitivity in HFD animals.

CONCLUSIONS: Long-term HFD attenuates the responsiveness of ARC-TH neurons and their PVN projections to metabolic and hormonal signals. These findings suggest that diet-induced hypothalamic leptin resistance emerges not only at the local neuronal level but also in downstream target regions.

This study was supported by TÜBİTAK (#122S382)
Keywords: Arcuate nucleus, Fiber photometry, Leptin resistance, TH neurons

PC-51

Assessment of Hand Proprioceptive Sense and Motor Ability in Young Individuals with and without Piano Training

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AIM: Fine tasks performed by hand are made possible by complex fine motor skills involving the precise movements of the fingers, hands, and arms. Proprioception plays a crucial role in the acquisition and execution of motor skills. It has been thought that motor skill improvement also improves proprioceptive sense accuracy. A review of the literature reveals that while there are various studies examining proprioceptive sense in healthy adults, research focusing on individuals under the age of 18 is limited. Accordingly, the present study aims to investigate the relationship between fine motor skills of the hand and hand proprioceptive senses and the effect of long term usage of musical instrument that heavily performed by hands in adolescents aged 15–18. To achieve this, data on hand motor skills and hand proprioceptive sense was compared between 14 right-handed adolescents who have received piano training and 14 right-handed adolescents who have not received training.

METHODS: The Finger Tapping Test (FTT) and Purdue Pegboard Test (PPT) were used for motor skills assessment. Active Movement Extent Discrimination Assessment (AMEDA) was used for assessing movement/position sense, and the Targeted Pinch Force Grading Assessment (TPFGA) was used for assessing force/effort sense.

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RESULTS: Preliminary results that includes 5 participants for each group showed that for motor tests there are no significant differences for PPT between groups, dominant hand superiority was observed for control group. FTT resulted in dominant hand superiority in both groups and faster tapping speed in piano group. For proprioceptive tests, AMEDA showed no significant difference between both groups and hands. TPFGA showed no significant differences between hands in both groups, however piano group made lesser error than control.

CONCLUSION: Piano training during adolescence may improve some aspects of motor ability and proprioceptive senses. Further testing will enlighten our understanding for sensorimotor development.

Keywords: Kinesthetic senses, Position sense, Sensory feedback, Sensory motor performance proprioception,

PC-52

Digital Biomarkers of Parkinson's Disease: A Preliminary Analysis of Facial Asymmetry and Gait

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AIM: Parkinson's disease (PD) is a progressive neurodegenerative disorder characterized by motor deficits such as gait disturbance and facial masking (hypomimia). This study aimed to use objective, quantitative methods to analyze motor deficits. We hypothesized that objective analysis of PD patients versus healthy controls would reveal lower movement intensity and greater asymmetry, providing quantitative evidence for key clinical features.

METHODS: In this preliminary study of 11 PD patients (disease duration [years]: 7,36 ± 4,39) and 25 controls, we performed facial analysis using an Artec Eva 3D scanner. Facial intensity was quantified by comparing the expression to neutral scans, while facial asymmetry was compared between the original and mirrored images. Gait was analyzed using dual Microsoft Kinect Azure sensors with iPi Soft software. The intensity of gait parameters was compared between groups, and asymmetry was calculated as the absolute difference between right and left sides. RESULTS: Preliminary gait analysis revealed that the PD group had significantly reduced movement intensity, evidenced by more turning steps, longer turning duration, smaller step width, and reduced thigh swing ($p<0.05$). In facial analysis, the PD group showed significantly lower intensity for showing teeth, whistling, and expressing happiness and disgust ($p<0.05$). Crucially, the PD group exhibited significantly greater asymmetry than controls in several primary facial movements: neutral expression, raising eyebrows, showing teeth, and whistling ($p<0.05$). No significant differences between groups were found for gait asymmetry or the asymmetry of emotional expressions.

CONCLUSIONS: These preliminary results provide objective data for reduced intensity in gait and facial movements in PD. Crucially, increased asymmetry in primary facial movements, captured via high-precision 3D scanning, offers compelling, objective proof of the hemi-hypomimia phenomenon, indicating asymmetrically degraded motor control. These non-invasive techniques are promising digital biomarkers for tracking disease laterality and progression.

This research was financially supported by TUBITAK under grant number 224S777.

Keywords: Digital biomarker, Facial asymmetry, Gait analysis, Hypomimia, Parkinson's disease

PC-53

Effect of *Malva Sylvestris* (Mallow) and Thymol on Cadmium-Induced Damage to Smooth Muscle Contractility and Structural Changes in Ileum of Aged Rats

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AIM: Cadmium (Cd) is a heavy metal commonly found in air, soil, and water, and it accumulates in the food chain, primarily affecting the gastrointestinal system through toxicity. Thymol, known for its antioxidant properties and widely used in traditional medicine for gastrointestinal

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disorders, exhibits antispasmodic effects on muscle contraction responses to acetylcholine (ACh). *Malva sylvestris* possesses anti-inflammatory, antimicrobial, antiproliferative, and antioxidant activities. This study aimed to evaluate the potential protective effects of *M. sylvestris* and thymol on ileal contractility and structural changes in aged male rats exposed to cadmium-induced damage.

METHODS: A total of 49 male Wistar rats, aged 20-24 months and weighing 450-650 g, were divided into 7 groups: control, DMSO, cadmium, cadmium+thymol, cadmium + *M. sylvestris*, thymol, and *M. sylvestris*. They received oral gavage of cadmium (25 mg/kg), thymol (40 mg/kg), and *M.sylvestris* (400 mg/kg) daily for 7 days. At the end, ileum segments were placed in organ baths with 20 ml Krebs-Henseleit solution to record contractile responses to Ach. Histological evaluation involved Hematoxylin&Eosin staining and villus length measurement in six areas per group. Data were analyzed using the Kruskal-Wallis test with $p \leq 0.05$ indicating significance.

RESULTS: It was observed that contraction was significantly reduced in the Cd($p=0.0487$) and thymol($p=0.0150$) groups compared to the control group. The reduction in cadmium-induced contraction was greater in the cadmium groups treated with thymol and *M. sylvestris*. However, no statistically significant difference was detected. Irregularities and shedding were observed in the villus structures of the Cd group. Structural changes in the ileum were alleviated in the treatment groups. Villus length was significantly shorter in the cadmium group($p=0.0003$), with a partial, non-significant increase in the treatment groups.

CONCLUSION: It was determined that thymol and *M.sylvestris*, at the given doses and durations, relatively reduced the adverse effects of cadmium on ileum contractility and structure.

Keywords: Cadmium, Contractility, Ileum, Malva sylvestris, Thymol

PC-54

Investigation of the Hippocampal Effects of Chronic URB597 Injection in a Prenatal Valproic Acid Induced Rat Model of Autism Spectrum Disorder

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AIM: Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by impaired social interaction, repetitive behaviors and restricted interests. Endocannabinoid system (ECS) dysregulations occur in individuals with ASD and experimental models. URB597, alleviates ASD-related behaviors by inhibiting anandamide breakdown; however, its mechanisms remain unclear. ECS is known to regulate oxidative stress and GABA/glutamate balance. We aimed to investigate URB597's effects on elevated oxidative stress and disrupted GABA/glutamate balance in valproic acid (VPA)-induced rat model of ASD.

METHODS: The study was approved by Bursa Uludağ University's ethics committee (No:2023-09/13). Pregnant Sprague-Dawley rats received intraperitoneal VPA (500mg/kg/ml, n=12) or saline (SF, 1 ml/kg, n=8) injections on gestational-day 12.5. Rats received daily injections (postnatal-day 16;29) depending on their sub-groups. SF pups were divided to control (SF/day), vehicle-control (vehicle/day) whereas VPA pups were diveded to model (SF/day), vehicle-model (vehicle/day), treatment (0.3mg/kg/ml/day URB597) groups. Rats underwent elevated plus maze (EPM) test after 29th day's injection. They were then sacrificed and hippocampal anandamide (AEA), superoxide-dismutase (SOD), catalase (CAT), GABA, and glutamate levels were measured by ELISA. Statistical analyses were performed using one-way ANOVA (post-hoc Bonferroni). $p<0.05$ was considered significant.

RESULTS: Model group showed reduced EPM open arm time ($p<0.05$) and hippocampal AEA, GABA, SOD, and CAT levels ($p<0.01$), with increased glutamate ($p<0.01$) compared to controls. Vehicle groups revealed decreased EPM open arm time ($p<0.05$), AEA, GABA, and CAT in vehicle-model compared to both vehicle-control and treatment ($p<0.01$), glutamate was increased in vehicle-model ($p=0.01$) compared to vehicle-control but remained unchanged compared to treatment, and SOD showed no significant difference.

CONCLUSION: Our study demonstrated that URB597 may mitigate oxidative stress and neurotransmitter imbalance in VPA-induced ASD by enhancing hippocampal AEA levels. These findings suggest a compensatory role of sustained postnatal AEA elevation during brain development. This study was supported by B.U.U. Scientific Research Projects Unit (No:TGA-2023-16549).

Keywords: Anandamide, Autism, Cannabinoid, Oxidative stress, URB597, Valproic acid

PC-55

Investigation of the Protective Effects of Carnosic Acid Against Cisplatin-Induced Neurotoxicity in Human Neuroblastoma Cell Line and Rat Primary Dorsal Root Ganglion Neurons

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AIM: Cisplatin (cis) is an effective chemotherapeutic agent for various solid tumors but may cause significant neurotoxicity in the peripheral nervous system. Carnosic acid (CA), a phenolic compound derived from *Rosmarinus officinalis*, has antioxidant and neuroprotective properties. This study investigated the potential protective effects of CA against cis-induced toxicity using human neuroblastoma cells (SH-SY5Y) and primary rat dorsal root ganglion (DRG) neurons.

METHODS: SH-SY5Y cells were divided into control, solvent, cis (10μM), CA (10,30,100 μM), and cis+CA groups. Cell viability was measured by MTT assay at 570 nm after 24 and 48 h. DRG neurons were isolated from Wistar rats and treated similarly; viability was calculated by trypan blue staining at 24 and 48 h. Intergroup comparisons were analyzed by Kruskal–Wallis and Mann–Whitney *U* tests, $p<0.05$ was accepted as significant.

RESULTS: In SH-SY5Y cells; at 24 h, cis+CA10μM group indicated significantly higher viability than cis ($p=0.0019$). No significant changes were observed in cis+CA30μM and cis+CA100μM groups ($p>0.05$). At 48 h, CA30μM reduced viability compared to cis ($p=0.003$), while cis+CA10μM and CA100μM did not differ significantly. In DRG neurons; cis resulted in 56.9±9.6% viability at 24 h, compared to cis+CA10μM (65.2±2.7%) and CA100μM (64.0±4.3%). At 48 h, cis was 62.0±6.9% and cis+CA10μM reached 67.0±3.2%. Although these groups indicated partial improvement, none reached statistical significance (all $p>0.05$).

CONCLUSION: 10 μM CA provided short-term protection against cis-induced toxicity in SH-SY5Y cells, but this effect was not sustained. DRG neurons indicated only non-significant trends toward improved viability. These results suggest that CA may exert limited neuroprotective effects depending on model, dose, and exposure time, warranting further mechanistic validation.

(This study was supported by TÜBİTAK 2209-A, application no: 1919B012309833. All experimental procedures involving animals were approved by the Karadeniz Technical University Local Ethics Committee for Animal Experiments -Decision No: 2023/40.)

Keywords: Carnosic acid, Cell viability, Cisplatin, Dorsal root ganglia, SH-SY5Y cell line

PC-56

The Effect of Lasidipine on Hippocampal Oxidative Stress in an Acute Pentylenetetrazol and Penicillin Experimental Epilepsy Model

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AIM:Epilepsy is a neurological disorder characterized by recurrent seizures, plays role in development of oxidative stress. Excessive calcium influx into neurons constitutes first step in epileptiform activity. This study aimed to investigate antioxidant activity of hippocampal oxidative stress enzymes in experimental epilepsy model induced by acute Pentylenetetrazol(PTZ) and Penicillin(PEN) using L-type calcium channel blocker lasidipine(LAS).

METHODS: In this study, 63 male Wistar albino rats aged 2–4 months and weighing 200–250 grams divided nine groups: control(saline), control(PTZ), PTZ+Diazepam(DIA), PTZ+LAS, PTZ+LAS+DIA, control(PEN), PEN+DIA, PEN+LAS, and PEN+LAS+DIA(n:7) groups. Positive control groups administered 5 mg/kg/ip DIA, and experimental group administered 4 mg/kg/ip LAS. For epileptiform activity, PTZ 50 mg/kg/ip.,PEN 500 IU/2.5 µl/icv administered, and at 180 minutes post-administration, animals decapitated, and hippocampal tissues stored at -80°C for biochemical analysis. Superoxide dismutase(SOD), catalase(CAT), thioredoxin-2(TRX-2) levels in hippocampal tissue measured using ELISA method. Statistical analysis performed using one-way ANOVA and Tukey's test. Results compared with control groups and analyzed using GraphPad software.

RESULTS: In this study, SOD levels significantly reduced in PEN+LAS and PTZ+LAS groups compared to PEN and PTZ control groups ($p<0.05$). CAT levels significantly reduced in PEN+LAS, PEN+DIA, and PEN+LAS+DIA groups compared to PEN control group ($p<0.05$), but no significant changes observed in PTZ groups. TRX-2 enzymes significantly increased in PEN and PTZ control groups compared to saline control group ($p<0.05$), but did not show significant effect on treatment groups.

CONCLUSIONS: Study demonstrates that LAS has an effect on epilepsy and that CAT and SOD emerge as important adaptive enzymes in acute response to oxidative stress.

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Although TRX system has a similar mechanism of action, it may produce different results in terms of enzyme system it affects.Results indicate that role of TRX-2 in epileptogenesis is limited to current model should be reevaluated in longer or more severe epilepsy models.

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Keywords: Experimental epilepsy, Lasidipine, Oxidative stress, Penicillin, PTZ

PC-57

The Role of β-arrestin-2 in Tolerance to the Analgesic Effect of Fentanyl

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AIM: Fentanyl (FEN), an opioid, is a very potent analgesic high affinity for μ-opioid receptors (MORs). Although it is highly effective, tolerance to its analgesic effect develops when used repeatedly or continuously. This is a major problem that significantly limits clinical effectiveness. MORs can be regulated by multiple mechanisms, including receptor desensitization, internalization, resensitization, and downregulation. β-arrestin-2 has great physiological importance in the mechanism of opioid-induced analgesic tolerance. The aim of this study was to investigate the role of β-arrestin-2, which can cause desensitization in MORs.

METHODS: Sixteen adult Wistar-Albino male rats were used, 8 rats in each group. The control group was received physiological saline, and the FEN group received 40 μg/kg FEN at each application. All injections were administered intraperitoneally. Analgesic tests were performed at different time points. Tolerance development to the analgesic effect of FEN was evaluated by analgesia tests (hot-plate and tail-flick). After tolerance developed to the analgesic effect of FEN, the spinal cords of the rats were removed. Immunohistochemical analyses were performed to assess β-arrestin-2 immunoreactivity. Chi-square and Fisher's Exact Tests were used for statistical analysis between groups to evaluate immunoreactivity scores.

RESULTS: Analgesia test latencies were observed to be significantly reduced (tolerance) ($p<0.05$). The morphological appearance of the spinal cords was normal. According to immunohistochemical analysis, 25% of the control group had moderate and 75% strong positive staining, while 25% of the FEN group had weak, 37.5% moderate, and 37.5% strong staining. In the FEN group, β-arrestin-2 immunoreactivity decreased, although not statistically significant.

CONCLUSIONS: Our study results revealed that cytoplasmic β-arrestin-2 levels tended to decrease. By binding β-arrestin-2 to MORs, the intracellular signaling cascade may have been interrupted, signaling may not have continued, and desensitization and tolerance may have developed. Further research is needed to elucidate the mechanisms underlying opioid tolerance.

Keywords: β-arrestin-2, Fentanyl, Tolerance, immunohistochemistry

PC-58

Effect of Constant Light and Dark Exposure on Behavioral and Molecular Outcomes Following Spinal Cord Injury

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AIM: Spinal cord injury causes permanent loss of motor, sensory, and autonomic functions with a high risk of mortality. Current treatments are limited, highlighting the need to identify physiological factors influencing recovery. Constant light-dark disrupts biological processes; light-dark cycle regulates sleep, hormones, and body temperature. Its disruption may cause structural-functional changes in organs, especially the central nervous system. Recent findings show that environmental light conditions affect both brain and spinal cord cellular activity and recovery. This study examined the effects of constant light or dark exposure after spinal cord injury on recovery.

METHODS: The study was conducted using 8–12-week-old male Balb-C mice over a 10-day experimental protocol. Baseline behavioral data were collected from all animals before inducing spinal cord injury, followed by T10 spinal hemisection model. After surgery, animals were divided into three groups according to light conditions: control (12

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hours light / 12 hours dark; n=11), light (24 hours light; n=11), and dark (24 hours dark; n=11). All groups were evaluated on days 3, 5, 7, and 10 using the open field test, Basso Mouse Scale (BMS), and ladder rung walking test. Statistical analyses were performed using the independent samples t-test, $p<0.05$ was considered statistically significant.

RESULTS: In spinal cord-injured mice, both the light and dark groups showed a significant increase in BMS scores compared to the control group over time ($p\leq0.05$). In the open field test, total distance traveled and total activity duration significantly increased in both groups by day-10, indicating improved locomotor activity ($p\leq0.05$). Additionally, freezing duration significantly decreased in both groups, further supporting enhanced movement ($p\leq0.05$). Fine motor control showed an increasing trend in the light group.

CONCLUSIONS: Continuous exposure to light or darkness after spinal cord-injury enhanced locomotor activity and overall movement, while continuous light conditions showed a tendency to improve fine motor control.
Keywords: Behavior, Circadian rhythm, Motor activity, Spinal cord injury

PC-59

Effects of Low- and High-Glycemic Index Diets on Social and Novel Object Recognition in Adult WAG/Rij Rats

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AIM: The Wistar Albino Glaxo from Rijswijk (WAG/Rij) rats are a well-established model of absence epilepsy. In these animals, cognitive impairments have been demonstrated at the age of six months when compared to age-matched Wistar rats. Previous studies suggest the impact of the carbohydrate's glycemic index (GI) on cognitive functions. In this study, we aimed to investigate the effects of low and high GI diets on cognitive performance in adult WAG/Rij rats.

METHODS: During a 3-week period, the rats were exposed to a high- carbohydrate diet (n = 10) or low- carbohydrate diet (n = 10). These two diets are derived from a standard rodent diet differing only in their carbohydrate type. Standard rodent diet was used as a control (n = 10). Afterwards, cognitive behaviors in 6-month-old rats were assessed with the novel object recognition task and the three-chamber social test. Object and social recognition memory were measured using a preference index. The one-way ANOVA was used in statistical analysis. All procedures were approved by the Kocaeli University Local Ethics Committee (KOÜHADYEK6/8-2025).

RESULTS: Results indicated that rats fed the low-GI diet explored the new object for longer periods (56.23%) when compared to those fed a standard diet control animals (36.54 %) and the high-GI diet animals (13.66%) ($p<0.05$). In the three-chamber social interaction test, the high-GI diet (32.67%) reduced the sociability preference percentage compared to both the low-GI diet (80.81%) and control (85.02%) groups ($p<0.05$).

CONCLUSIONS: These findings demonstrate that the dietary glycemic index influences cognitive performance in WAG/Rij rats. A low-GI diet was found to enhance object recognition memory, while a high-GI diet impaired both object and social recognition abilities. These results suggest that dietary modulation of glycemic index may serve as a potential strategy to mitigate cognitive deficits associated with absence epilepsy.
Keywords: Cognitive performance, Glycemic index, Novel object recognition, Social behavior, WAG/Rij rat

PC-60

Effects of P2Y12 Receptor Blockade on Seizures, Anxiety and Cognitive Functions in An Experimental Epileptic Seizure Model and the Opioid Receptor Relationship in These Effects

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AIM: Epilepsy is a neurological disorder characterized by increased neuronal excitability. Current pharmacological treatments are not effective in all patients with epilepsy, necessitating exploration of alternative treatment approaches.The P2Y12 receptor is expressed in microglial cells and related in regulating neuronal activity and neuroinflammation.We investigated effects of P2Y12 receptor antagonist clopidogrel(CLP) on seizure behavior, anxiety levels, and cognitive functions in pentylenetetrazol(PTZ)-induced epileptic seizure model and

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possible relationship of these effects with the opioidergic system.

METHODS: Adult male Wistar rats were randomly divided into six groups (n=8/group). Vehicle was intraperitoneally (i.p.) administered to control and PTZ groups;1 mg/kg CLP to "CLP-1+PTZ"group; 10 mg/kg CLP to "CLP-10+PTZ"group; 300 mg/kg valproic acid(VPA) to “VPA+PTZ”group(positive control); opioid receptor antagonist 1 mg/kg nalmefene (NAL) and 10 mg/kg CLP together to the “[CLP+NAL]+PTZ” group. After 30 minutes, 50 mg/kg PTZ was administered to the other groups, except control. Anxiety-like behavior was assessed by the duration in the central area of the open field test and the duration in the open arms of the elevated plus maze. Cognitive function was assessed by latency to enter the dark compartment in passive avoidance test. Data were analysed using one-way ANOVA or Kruskal-Wallis test.

RESULTS: Compared to model group, CLP (10 mg/kg) prolonged time to first myoclonic jerk ($p<0.05$) and time to first seizure ($p<0.01$), reduced seizure severity($p<0.05$), and also increased the time to dark field ($p<0.01$), open arm($p<0.05$) and central field ($p<0.01$). NAL reversed effects of CLP on myoclonic jerk and seizure severity ($p<0.05$), but did not change other parameters. VPA prevented all PTZ-induced changes ($p<0.05$).

CONCLUSIONS: Blocking the P2Y12 receptor has an anticonvulsant effect by alleviating epileptic seizures, reducing anxiety levels, and improving cognitive function, suggesting a role for the P2Y12 receptor in the pathophysiology of epilepsy.Furthermore, our findings suggest that an interaction between P2Y12 and opioid receptors may be involved in the modulation of seizures, however further studies are needed to address this.

Keywords: Anxiety, Clopidogrel, Cognition, Epilepsy, Opioid receptors, P2Y12 receptor

PC-61

Lower Extremity Proprioception in Women with Polycystic Ovary Syndrome

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AIM: Proprioception is a fundamental sensory modality that provides position, movement and force perception of the body; when impaired, it increases the risk of loss of balance and injury. Polycystic Ovary Syndrome (PCOS) is a metabolic and endocrine disorder that can lead to multifaceted disturbances in many body systems. These impairments are thought to potentially affect the proprioceptive system. This study aimed to evaluate lower extremity proprioceptive function in women with PCOS.

METHODS: Following ethical approval, 15 women who reported a PCOS diagnosis within the past five years and 15 healthy women with no history of any diagnosis were included in the study. Individuals who regularly used medication were excluded from the study. Lower extremity proprioception was assessed using the Active Angle Reproduction (AR) and Joint Position Matching (JPM) tests. Data were analyzed using descriptive statistics (mean ± standard deviation), and group comparisons were conducted via the non-parametric Mann–Whitney U test due to the non-normal distribution of the variables.

RESULTS: The mean ages of the control (22.9 ± 2.8 years) and PCOS (22.5 ± 3.3 years) groups did not differ significantly. In the PCOS group, knee joint AR deviation values were significantly higher compared to the control group (8.6±4.1 vs 2.7±1.3, respectively; $p<0.001$). Similarly, the ankle joint AR deviation values were significantly higher in the PCOS group compared to the healthy group (4.7 ± 3.4 vs 1.0 ± 0.9, respectively; $p <0.001$). In addition, a significant increase in knee joint JPM deviation values was also observed compared to the control group (14.1 ± 4.4 vs. 3.3 ± 1.8, respectively; $p <0.001$).

CONCLUSIONS: Significant proprioceptive impairments in the knee and ankle joints were found in individuals with PCOS. This suggests that PCOS has not only metabolic but also neurosensory effects. Proprioceptive impairment may lead to loss of balance and increased risk of falls.

Keywords: Angle reconstruction, Goniometer, Joint position matching, PCOS

PC-62

Does Ambroxol Hydrochloride Affect Semaphorin 4D Protein Level in an Experimental Kindling Model of Epilepsy?

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AIM: Epilepsy treatment primarily aims to suppress abnormal electrical discharges in the central nervous system using anticonvulsants. Ambroxol hydrochloride is an active N-desmethyl metabolite of bromhexine hydrochloride and has been shown to block glutamate-induced currents. Semaphorin4D regulates inhibitory synapse development via the Plexin-B1 receptor.This study aims to evaluate the effect of ambroxol hydrochloride on Semaphorin4D protein levels in relation to epileptogenesis.

METHODS: 40 male Wistar albino rats were randomly assigned to four groups(n=10). Control(C) group received physiological saline intraperitoneal (i.p.) every other day and peroral(p.o.) daily; epilepsy (PTZ)group received 40 mg/kg i.p. PTZ every other day; valproic acid (VPA+PTZ) and ambroxol hydrochloride (AHCI+PTZ)groups received 300 mg/kg p.o. valproic acid or 800 mg/kg p.o. ambroxol hydrochloride daily, respectively. In VPA+PTZ and AHCI+PTZ groups, 40mg/kg i.p. PTZ was administered every other day, 30 minutes after p.o. administration of VPA or AHCI, respectively. After PTZ injection, animals in PTZ, VPA+PTZ, AHCI+PTZ groups were video-recorded for 30 min and seizure stages were scored using Racine scale. Semaphorin 4D gene expression in hippocampal and cortical tissues was analyzed by qRT-PCR. Data distribution was assessed by Shapiro–Wilk test; One-Way ANOVA or Kruskal–Wallis tests were applied (HMKÜ HADYEK 2025/05-06).

RESULTS: After 15 PTZ (40 mg/kg,i.p.) injections and a 10-day interval,the challenge dose induced stage 4/5 seizures in the PTZ group ($p<0.001$), stage1/2 in VPA+PTZ ($p<0.05$), and stage2/3 in AHCI+PTZ($p<0.05$) based on the Racine scale. Semaphorin 4D gene expression levels in the hippocampus and cortex were found to be significantly decreased in PTZ group compared to both the Control and VPA+PTZ groups (Hippocampus; Control: $p=0.001$; VPA+PTZ: $p=0.008$) (Cortex: Control: $p=0.001$; VPA+PTZ: $p=0.001$). In AHCI+PTZ group, cortical Semaphorin4D gene expression levels showed a significant increase compared to PTZ group ($p=0.045$), while a non-significant increase was observed in the hippocampus ($p=0.242$).

CONCLUSION: The data obtained from this study suggest that ambroxol hydrochloride may suppress progressive epileptic convulsions by increasing Semaphorin 4D levels, which are involved in the development of inhibitory synapses.

Keywords: Epilepsy, Kindling, Semaphorin 4D

PC-63

Visceral Pain Attenuation and Altered Open Field Behavior Following Oral Administration of Hypericum Perforatum in Mice

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AIM: Hypericum perforatum (HP, St. John's wort) has long been used for various conditions, including neurological disorders. Visceral pain differs from somatic pain as it is poorly localized, often referred, and more frequently associated with autonomic and motor reflexes. Most pain studies focus on somatic models. This study investigated the analgesic effects of HP on visceral pain, along with its effects on locomotor activity and anxiety-like behavior.

METHODS: Eighteen adult male Balb/c mice (25–30 g) were divided into three groups (n=6): control, visceral pain, and treatment. Controls received saline (0.1 ml/10 g, i.p.), while the visceral pain group was given 0.06% acetic acid (0.1 ml/10 g, i.p.). The treatment group received HP (250 mg/kg, p.o.) 30 minutes before acetic acid. Writhing behavior was recorded for 10 minutes, starting 5 minutes after injection. After one hour, locomotor activity and anxiety-like behavior were evaluated with the open field test; however, this could not be conducted in the visceral pain group due to persistent writhing, so only control and treatment groups were compared. Writhing data were analyzed with the Kruskal–Wallis test and Dunn’s post hoc test, while open field results were assessed using unpaired t-tests. Statistical significance was set at $p<0.05$.

RESULTS: In the writhing test, HP was shown to have an analgesic effect by reducing writhing compared to the visceral pain group ($p=0.028$). In the open field test, there was no significant effect on average speed ($p=0.53$) and distance traveled ($p=0.47$) in the treatment group compared to the control group, while time spent in the center decreased significantly ($p<0.0001$).

CONCLUSIONS: This study demonstrated that HP exerts a significant analgesic effect in a visceral pain model. Considering that HP may reduce pain while potentially increasing anxiety-like behaviors, its therapeutic potential should be further evaluated in more detailed future studies.

Keywords: Anxiety, Hypericum perforatum, Locomotor activity, Visceral pain

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PC-64

Effects of the Follicular and Luteal Phases of the Menstrual Cycle on Exam Stress

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AIM: The effects of different phases of the menstrual cycle on the stress response are unknown. The aim of the current study was to examine the effects of women's menstrual cycles being in the follicular or luteal phases on exam stress.

METHODS: After obtaining ethics committee approval, the study was conducted on 72 female students in the follicular (n=30) and luteal (n=42) phases of their studies at Hamidiye International Faculty of Medicine, University of Health Sciences. Saliva samples were collected for cortisol measurement from women with regular menstrual cycles, and a five-minute ECG was recorded for Heart Rate Variability (HRV). Additionally, stress perception was measured using various scales (Spielberger State-Trait Anxiety Inventory (STAI); Karolinska Sleep Scale; Visual Analog Scale (VAS); American College of Obstetricians and Gynecologists (ACOG); and Beck Depression Inventory). All tests were administered once between 10:00 a.m. and 2:00 p.m. on any day of the follicular or luteal phase of the menstrual cycle. The Two-Sample t-test was applied to normally distributed data, and the Mann-Whitney test was applied to non-normally distributed data.

RESULTS: Being in the follicular or luteal phase of the menstrual cycle did not affect cortisol levels, HRV parameters [HR (heart rate), TP (total power), SDNN (Standard Deviation of NN intervals), VLF (Very Low Frequency), LF (Low frequency), HF (High frequency), LF/HF (Ratio of LF-to-HF power)], anxiety, depression, sleep problems, or pain during the menstrual cycle phases.

CONCLUSIONS: It was determined that stress responses in the follicular and luteal phases were similar in healthy women with regular menstrual cycles. It was concluded that future studies on this topic could include participants in the trials without requiring phase separation.
This researcher was supported within the scope of the 2224-B Domestic Scientific Event Participation Support Program (2025/4).
Keywords: Cortisol, Exam stress, Follicular phase, Luteal phase, HRV

PC-65

Long-term Behavioral Consequences of Earthquake Exposure in Rats: An 18-month Experimental Cohort Model of Posttraumatic Stress

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AIM: Although the long-term effects of post-earthquake trauma, anxiety and depression are clinically known, there are very few studies that follow this condition preclinically over the long term. The 'Earthquake and Depression (DD)' model we developed earlier has enabled the early detection of post-earthquake psychiatric disorders.

METHODS: In this study, the validity of the model in chronic cohort studies was evaluated by presenting the 18-month results of the same group. Initially, control (n=12) and earthquake (n=12) groups were formed. The earthquake group was exposed to large and aftershocks in a prototype earthquake simulation cage, followed by stressors simulating post-earthquake conditions. Findings up to day 21 were shared in the previous report. In this long-term follow-up, the seven surviving animals in the earthquake group were evaluated at 18 months using the Open Field and Light/Dark Box tests. Additionally, spiral turning behaviour observed from month 13 onwards was recorded using video analysis according to the spontaneous rotation test protocol. Statistical analysis was performed using the SPSS software package. Parametric and/or nonparametric tests were applied depending on the distribution of the data. $P<0.05$ was considered statistically significant.

RESULTS: In the earthquake group, locomotor activity and central zone use decreased ($p<0.0001$), and the time spent in the dark section increased ($p<0.0001$).In the spontaneous rotation test, these animals exhibited unidirectional repetitive spiral rotation around their own axis. A significant increase in the directionality index (DI) and rotator ratio was observed ($p<0.0001$).The DD model shows that anxiety and depression-like behaviours persist at 18 months of follow-up.The spiral rotation finding also suggests that the model is suitable for investigating motor system impairments.

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CONCLUSIONS: The findings suggest that chronic stress after an earthquake may lead to asymmetry in the nigrostriatal dopamine system and vestibulo-cerebellar functions.This model offers a unique research opportunity for chronic preclinical studies of neuropsychiatric disorders after an earthquake.

Keywords: Anxiety, Behavioural tests, Depression, Earthquake, Long-term follow-up, Post-traumatic stress

PC-66

Effects of Rotenone and Verteporfin Treatment on Mitochondrial Dynamics During Neural Stem Cell Differentiation

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AIM: Neural stem cells (NSCs) play a critical role in the central nervous system. During differentiation, mitochondrial biogenesis and dynamics are essential for maintaining cellular energy balance and survival. Mitochondrial dysfunction is associated with neurodevelopmental and neurodegenerative diseases. Our aim was to investigate the effects of rotenone and verteporfin treatment on the profiles of mitochondrial biogenesis and dynamics genes throughout NSC differentiation.

METHODS: Firstly, NSCs were exposed for 24 and 48 hours to the mitochondrial complex I inhibitor rotenone (0, 62.5, 125, 250 nM) and the autophagy inhibitor verteporfin (0, 50, 100, 200 nM), and RNA were collected after each period. Secondly, NSCs were differentiated for 14 days, with rotenone (62.5 nM) or verteporfin (50 nM) added to the culture medium every two days. RNA was isolated on days 0, 4, 8, 12, and 14 days of differentiation. The effects on transcripts associated with mitochondrial biogenesis (*Pgc-1a*, *Tfam*, *Nrf1*, *Nrf2*, and *Erra*) and dynamics (fusion: *Opa1*, *Mfn1*, and *Mfn2*; fission: *Drp1*, *Fis1*, and *Mff*; mitophagy: *Bnip3*, *Ndp52*, *Optn*, *Fundc1*, *Lc3a*, *Lc3b*, *Parkin*, *Pink1*, and *P62*) were analyzed using qPCR. Data were analyzed using two-way ANOVA followed by the Tukey's test.

RESULTS: Rotenone markedly activated mitochondrial quality control mechanisms. Expression of mitophagy- and fission-related genes increased. Rotenone also elevated *PGC-1a* and *Tfam* expression in the early phase, but not in the long term. Autophagy markers were not altered by 50 nM verteporfin. Changes in mitochondrial fusion and fission genes by verteporfin treatment were irregular. Both agents induced similar trends at 24–48 hour, while repeated treatments throughout differentiation resulted in more pronounced effects.

CONCLUSIONs: Our findings suggest that pharmacological modulation of mitochondrial dynamics during differentiation may have significant implications for neural cell health and potential neurodegenerative processes. Acknowledgements: This study was supported by İnönü University BAP Unit (Project No: TDP-2024-3720).
Keywords: Differentiation, Mitochondrial biogenesis, Mitochondrial dynamics, Neural stem cell, Rotenone, Verteporfin

PC-67

A Study of Mu-Opioid Receptor Effects on Neuropeptide Gene Expression Levels Involved in Hypothalamic Regulation of Nutrition

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AIM: Central opioidergic systems are involved in the regulation of feeding behavior. Several neuropeptides expressed in the hypothalamus also contribute to the regulation of food intake. The aim of this study was to investigate the effects of mu opioidergic agonist/antagonist molecules on both orexigenic and anorexigenic peptides gene expression levels in the hypothalamus.

METHODS: In our study, 48 male Wistar Albino rats were divided into 4 groups as control, morphine, naloxone and morphine+naloxone. The control group received subcutaneous SF solution for 5 days; morphine group received morphine at a dose of 10 mg/kg/day for 5 days; naloxone group SF was administered for 5 days and

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naloxone at a dose of 3 mg/kg 1.5 hours after the last injection morphine+naloxone group received naloxone 1.5 hours after 5 days of morphine injection. Hypothalamus tissues were isolated from brains at the end of experimental period. APeptide expression levels were analysed by RT-PCR method. Differences between groups were statistically analyzed using one-way factorial ANOVA and Tukey post-hoc test.

RESULTS: Morphine administration caused a decrease in orexin-2 receptor (OX2R) expression levels ($p<0.05$), but did not alter the expression of orexin A, orexin-1 receptor, agouti-related peptide (AgRP), neuropeptide Y (NPY), or proopiomelanocortin genes. Naloxone administration increased AgRP ($p<0.05$) and NPY expression ($p<0.01$), while decreasing OX2R, leptin receptor, and apelin gene expression levels ($p<0.01$).

CONCLUSIONS: Our findings suggest that morphine may affect the gene expression of molecules related to regulation of nutrition and metabolism in the hypothalamus. Further studies are needed to better understand the possible mechanistic effects of opioid activity on the central control of feeding in morphine addiction.

Keywords: AgRP, Hypothalamus, Morphine, NPY, Rat

PC-68

Evaluation of the Relationship Between Academic Achievement, Executive Functions, Anxiety and Stress Regulation in Students Preparing for the University Entrance Exam

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AIM: The University Entrance Examination (UEE) is Türkiye's national, standardized annual assessment for placing high school graduates into undergraduate/associate degree tracks. This study investigates, via psychometric/ physiological metrics, interrelations among academic performance, executive functions, anxiety, and stress regulation in intensive UEE preparation students

METHODS: Thirty-four healthy, right-handed students (18 males, 16 females), aged 17–20, from a private Ankara institution participated. Academic Achievement Score (AAS) was the average of mock exam scores throughout the year. In a sound- and light-isolated room, the participants completed the Ruminative Response Scale (RRS), Exam Anxiety Inventory (EAI), Trait Anxiety Inventory (TAI), and Magical Ideation Scale (MIS). Executive functions and working memory were assessed via computerized Wisconsin Card Sorting Test (WCST) and Corsi Block-Tapping Test (CBTT). After attaching heart rate (HR) monitor and a 10-minute rest, an accelerated computerized Stroop test induced acute mental stress, followed by a 45-minute recovery. Stress responses were measured via the State Anxiety Inventory (SAI), administered pre-test, immediately post-task, and at the 15th, 30th, and 45th minutes of recovery. HR data were recorded in five-minute intervals starting from the resting phase. Correlation analyses assessed relationships between variables.

RESULTS: AAS showed positive correlations with HR and SAI scores at all phases and a negative correlation with the WCST "failure to maintain set" parameter ($p<0.05$). RRS, EAI, and TAI scores correlated positively with one another ($p<0.01$), and with SAI scores during rest and stress ($p<0.05$). MIS correlated positively with EAI ($p<0.01$). SAI scores showed negative correlations with WCST total and incorrect responses, failure to maintain set, and percentage of perseverative errors scores, while showing positive correlation with accuracy percentage ($p<0.05$). Left-hand accuracy on CBTT positively correlated with HR ($p<0.05$).

CONCLUSIONS: These findings suggest that in UEE candidates, better academic and executive performance may be accompanied by elevated anxiety and stress reactivity.

Keywords: Anxiety, Stress, University entrance examination

PC-69

Insights from a Rat Model of Diet-Induced Overweight Pregnancy: Maternal Metabolism and the Roles of Klotho and Adipokines

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AIM: Pregnancy is a physiological process characterized by marked hormonal and metabolic adaptations that support fetal growth and development. During this period, reduced insulin sensitivity and alterations in lipid metabolism direct maternal energy balance toward the fetus. However, excessive adiposity and preexisting insulin resistance may render these adaptations pathological. Adipose tissue hormones and Klotho protein play key roles in the regulation of maternal metabolism during pregnancy. This

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study aimed to investigate the effects of diet-induced obesity on maternal metabolism in a high-fat diet–triggered overweight pregnancy model.

METHODS: Wistar rats were fed a standard chow (SC, n=7) or a high-fat (HF, n=7) diet with 10% sucrose water for 8 weeks. Body weight, fasting glucose, and food intake were recorded weekly. An oral glucose tolerance test was performed at week 7. After mating, rats showing vaginal plugs were considered pregnant and subdivided (SP, n=5; HFP, n=5), designating gestational day 0. On day 21, dams were euthanized; blood and organs were collected for biochemical and histological analyses. Statistical evaluation included Shapiro–Wilk, Mann–Whitney, and one-way ANOVA tests.

RESULTS: Serum asprosin, leptin, insulin, IL-6, and the adiponectin–leptin ratio were significantly higher in the HF group than in SC (p=0.039,p=0.001,p=0.007, p=0.006, p=0.001,respectively). In the SP group, adiponectin decreased while insulin increased compared with SC (p=0.01, p=0.01). Pregnancy affected lipid profiles in both groups: HDL decreased(p=0.002, p=0.017) and LDL increased in SP (p=0.018). Liver and heart weights were elevated in SP vs SC (p=0.006,p=0.004), and liver weight increased further in HFP vs HF (p=0.025). MPO activity was significantly higher in HFP (p=0.014). Histopathological scoring (steatosis, ballooning, inflammation, fibrosis) showed pregnancy-induced hepatic damage in both groups (p=0.01), more pronounced in HFP (p=0.001).

CONCLUSIONS: No significant changes were detected in adipokine or Klotho levels possibly due to the limited number of pregnant animals; however, pronounced histologic hepatic injury was observed.

Keywords: Adiponectin, Asprosin, Insulin Resistance, Klotho, Leptin, Pregnancy

PC-70

Evaluation of the Effects of Early Life Stress on Reproductive Hormones in Rats

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AIM: Early life stress (ELS) refers to exposure to chronic stress such as trauma, deprivation or neglect during the prenatal and/or postpartum stages of development. ELS has been shown to affect hormones and reproductive functions by disrupting neuroendocrine systems. The effect of ELS on anti-müllerian hormone (AMH), which is one of the markers of reproductive function, is not yet fully understood. In our study, we aimed to investigate the effect of ELS caused by maternal separation (MS) on serum AMH and estrogen levels in female rats.

METHODS: The day of birth (PND) was accepted as 'PND-0'. Wistar albino female rats (n=16) were divided into control and MS groups. The puppies in the MS group were transferred to a new cage in a separate room between PND-2 and PND-14 for 180 minutes. After completing the MS protocol, the pups were housed with their mother until PND-21, and subsequently housed in groups of three in separate cages from PND-21 to PND-60. In contrast, the control group was subjected to the standard protocol. Serum levels of corticosterone, estrogen and anti-müllerian hormone (AMH) were measured by Enzyme-Linked ImmunoSorbent Assay method. All calculations were made using GraphPad Prism 8.3.0 statistical software. A p value of <0.05 was considered statistically significant for all analyses.

RESULTS: Corticosterone level was found to be low in the MS group compared to the control group ($p < 0.05$). Compared to the control, estrogen and AMH levels decreased significantly in the MS group ($p < 0.001$).

CONCLUSIONS: This study suggests that early life stress leads to a significant decrease in serum AMH and estrogen levels in female rats, indicating a possible impairment of ovarian reserve and reproductive functions.

Keywords: AMH, Corticosterone, Early life stress, Estrogen

PC-71

Investigation of the Effects of Phoenixin-14 on Liver Injury, Oxidative Stress and Apoptosis in a Lipopolysaccharide-Induced Sepsis Model

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AIM: Sepsis is a clinical syndrome characterized by systemic inflammation, oxidative stress, and multiple organ dysfunction, associated with high mortality. This study aimed to investigate the effects of the peptide Phoenixin-14 (PNX-14) on liver injury, oxidative stress, and apoptosis in a lipopolysaccharide (LPS)-induced rat model of sepsis.

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METHODS: A total of 24 male Sprague-Dawley rats were randomly divided into three groups: Control (n=8), LPS (n=8), and LPS+PNX-14 (n=8). The LPS group received 5 mg/kg LPS intraperitoneally at hour 1, while the LPS+PNX-14 group received 50 µg/kg Phoenixin-14 at hours 0 and 2 and 5 mg/kg LPS at hour 1 intraperitoneally. Serum levels of liver enzymes (AST, ALT, LDH) were measured, along with hepatic malondialdehyde (MDA), superoxide dismutase (SOD), and myeloperoxidase (MPO) levels. Apoptosis was assessed using the TUNEL method. Statistical analysis was performed using one-way ANOVA and Tukey post hoc test.

RESULTS: AST, ALT, and LDH levels were significantly higher in the LPS group compared to the control group ($p<0.05$). In the LPS+PNX-14 group, these enzyme levels were significantly lower than in the LPS group ($p<0.05$). MDA and MPO levels were elevated, while SOD levels were decreased in the LPS group ($p<0.05$). Administration of PNX-14 reduced MDA and MPO levels and increased SOD levels ($p<0.05$). The number of TUNEL-positive cells was markedly increased in the LPS group, whereas PNX-14 treatment significantly reduced this increase ($p<0.05$).

CONCLUSIONS: PNX-14 demonstrated protective effects against liver injury, mitigated oxidative stress, and reduced apoptosis in the LPS-induced sepsis model. These findings suggest the potential therapeutic role of PNX-14 in sepsis-related liver damage.

This study was approved by the Ethics Committee (Ethics No: AKUHADYEK-60/23) and supported by Afyonkarahisar Health Sciences University Scientific Research Projects Coordination Unit (Project No: 23.LIS.004).
Keywords: Apoptosis, Liver Injury, Oxidative Stress, Phoenixin-14, Sepsis

PC-72

Assessment of Gut Microbial Diversity in BALB/c Mice with PTSD Under GLP-1 Agonist Liraglutide and Lactobacillus plantarum Treatment

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Aim: Post-traumatic stress disorder (PTSD) is a serious psychiatric disorder that develops following exposure to traumatic events. The gut microbiota, through its interactions with epithelial and immune cells, plays a role in the development of neuropsychiatric and metabolic diseases. This study aimed to investigate the effects of the GLP-1 agonist liraglutide and Lactobacillus plantarum on gut bacterial profiles in a PTSD mouse model using metagenomic analysis.

METHODS: Male Balb/c mice aged 8–10 weeks were used. The animals were divided into six groups: SF(K1), Liraglutide (K2), Lactobacillus (K3), Stress (D1), Stress+Liraglutide (D2), and Stress+Lactobacillus (D3). PTSD was induced using a single prolonged stress model. Treatments were administered as follows: SF (intraperitoneal, IP), liraglutide (300 mcg/ml, IP), and Lactobacillus plantarum by oral gavage. After 3 weeks, the PTSD model was confirmed by serum cortisol measurements. At the end of the experiment, intestines sent for metagenomic analysis. All sequence reads and Operational Taxonomic Unit (OTU) evaluations were processed using the QIIME2 platform. Alpha and beta diversity analyses between groups were assessed with the Kruskal–Wallis test and PERMANOVA (Permutational Multivariate Analysis of Variance), respectively.

RESULTS: Metagenomic analysis showed that species richness (Chao1-index) did not change significantly compared to baseline ($p=0.682$), while community diversity indices(Shannon and Simpson) were significant ($p<0.058$, $p<0.027$, respectively). The K3 and D3 groups showed the highest bacterial abundance and richness, whereas this was not observed in D1 and D2 groups. OTU evaluation revealed that Firmicutes and Bacteroidota phyla dominated in all control groups and D3, while in D1 and D2, pathogenic Proteobacteria and Campylobacterota replaced Bacteroidota.

CONCLUSIONS: The analyses demonstrated that L. plantarum administration, both before and after stress, enhanced microbial diversity and species richness. Liraglutide was insufficient to correct the adverse effects of stress on the gut microbiota. Future studies with larger sample sizes and extended treatment periods are warranted to strengthen statistical power and validate these findings.

Keywords: **I**ntestine, Liraglutide, Metagenomics, Microbiota, PTSD

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PC-73

Protective Effects of Thymol and Malva sylvestris Against Cadmium-Induced Acute Toxicity in Aged Rats

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AIM: Aging is a natural process characterized by a gradual decline in cellular functions. Minor alterations in cellular metabolism may influence the rate of aging. Cadmium (Cd), a heavy metal found in air, water, and soil, primarily targets the liver and kidneys. This study aimed to evaluate the potential protective effects of Thymol and Malva sylvestris (common mallow) against acute cadmium-induced changes in liver and kidney tissues of aged rats.

METHODS: Forty-nine aged male Wistar rats (20–24 months, 450–650 g) were divided into seven groups (n=7): control, DMSO, Cd (25 mg/kg), Thymol (40 mg/kg), Cd+Thymol, M. sylvestris (400 mg/kg), and Cd+M. sylvestris. Compounds were administered via oral gavage for seven days at literature-based doses. Blood, liver, and kidney samples were collected. Tissues were stained with hematoxylin-eosin and Masson's trichrome; mTOR expression was assessed immunohistochemically. Serum liver and kidney enzyme levels were measured. Statistical significance was set at $p<0.05$.

RESULTS: Compared to controls, the Cd group showed mild hepatocyte vacuolization, bile duct proliferation, mononuclear cell infiltration, and sinusoidal congestion, without fibrosis. These findings were markedly reduced in treatment groups, although sinusoidal congestion persisted in parts of the M. sylvestris group. mTOR (+) hepatocytes were significantly increased in the Cd group ($p=0.03$) but reduced by Thymol ($p=0.005$); M. sylvestris showed no significant effect. In the kidney, Cd caused glomerular congestion and tubular dilatation, which were less pronounced in treatment groups. Hepatic triglyceride levels were significantly elevated in the Cd group ($p=0.0033$). In Cd+M. sylvestris ($p=0.483$) and Cd+Thymol ($p=0.491$) groups, triglycerides decreased relative to Cd but did not reach control values or statistical significance.

CONCLUSIONS: Acute cadmium exposure at moderate dose induced limited hepatic and renal alterations. Thymol and M. sylvestris partially prevented these changes.
Keywords: Cd, Kidney, Liver, M.sylvestris, Thymol

PC-74

The Effects of Prolyl Oligopeptidase Inhibitor on Kidney in Lipopolysaccharide-Induced Sepsis

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AIM: Renin-angiotensin system (RAS) plays an important role in both physiological and pathophysiological processes. The role of prolyl oligopeptidase (POP), a member of the RAS, in sepsis remains unclear. This study aimed to investigate the effects of KYP-2047, a selective POP inhibitor, on acute kidney injury in a lipopolysaccharide (LPS)-induced sepsis model.

METHODS: The study was approved by the ethics committee (No. 2023/40). Animals were divided into four groups: Control, LPS (4 mg/kg, iv), LPS+KYP-2047 (5 mg/kg, ip, three hours after LPS injection), and KYP-2047 (5 mg/kg, ip). Blood and kidney samples were collected for analysis at the end of the experiment. Data were analyzed using one-way ANOVA.

RESULTS: In the LPS group, levels of pH ($p<0.0001$), bicarbonate ($p<0.001$), glucose (cGlu) ($p<0.05$), lymphocytes ($p<0.01$), platelets ($p<0.0001$), and albumin ($p<0.01$) decreased compared to the control group. In contrast, levels of FMetHb ($p<0.0001$), hydrogen ions ($p<0.0001$), lactate (cLac) ($p<0.01$), granulocytes ($p<0.05$), C-reactive protein [serum ($p<0.05$), tissue ($p<0.001$)], TNF-α [tissue ($p<0.05$)], kidney injury molecule-1 (KIM-1) ($p<0.0001$), Angiotensin (Ang) I [serum ($p<0.01$), tissue ($p<0.05$)], Ang II [serum ($p<0.05$)] and tissue damage ($p<0.0001$) were significantly increased. In the LPS+KYP-2047 group, pH levels were increased ($p<0.001$) compared

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to the LPS group, while hydrogen ions ($p<0.01$), FMetHb ($p<0.05$), the protein levels of KIM-1 ($p<0.0001$), renin ($p<0.0001$), Ang II ($p<0.0001$), ACE ($p<0.0001$), and tissue damage ($p<0.05$) were reduced. In the KYP-2047 group, serum albumin levels were decreased ($p<0.001$) compared to the control group, whereas tissue protein levels of KIM-1 ($p<0.0001$), Ang II ($p<0.0001$), and ACE ($p<0.05$) were increased.

CONCLUSIONS: The findings suggest that the potential therapeutic effects of the POP inhibitor in the LPS-induced sepsis model may be associated with inflammation and RAS.
This study was supported by the Scientific Research Projects Coordination Unit of Istanbul University. Project No: FYL-2024-40861.
Keywords: Kidney, Lipopolysaccharide, Prolyl oligopeptidase, Renin-angiotensin system

PC-75

LncRNA H19: A Potential Diagnostic and Therapeutic Target for Kidney Diseases

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AIM: Kidney diseases (KDs) impact over 800 million individuals globally, leading to significant morbidity and mortality. KDs impose significant socioeconomic burdens on healthcare systems and lower patients' quality of life. Recent advancements and persuasive evidence on RNA biology have highlighted that the lncRNA world is a promising field for elucidating molecular mechanisms of kidney diseases and identifying novel diagnostic markers and therapeutic targets. Recent studies have highlighted that lncRNA H19, the first-reported transcript, plays a critical role in a variety of kidney diseases and, therefore, merits further investigation. Here, we focus on what is currently known about the possible roles of lncRNA H19 in the molecular pathogenesis of KDs and discuss the current evidence regarding the diagnostic and therapeutic role of lncRNA H19 in the prevention and treatment of kidney diseases.

METHODS: A comprehensive literature review was performed using databases including PubMed, Scopus, and Web of Science till April 2025. The subsequent keywords were employed in the literature search: “lncRNA H19”, “long non-coding RNA”, “kidney disease”, “renal fibrosis”, “chronic kidney disease”, “diabetic nephropathy”, “renal carcinoma”, “nephrotic syndrome”, and “acute kidney injury”. Original research publications, systematic reviews, and relevant preclinical studies published in English were included.

RESULTS: Emerging evidence has suggested that lncRNA H19 may play a crucial role in the onset and progression of KDs by modulating a variety of cellular mechanisms, such as apoptosis, autophagy, inflammation, fibrosis, oxidative damage, proliferation, differentiation, and metastasis. lncRNA H19 regulates cellular functions via acting as a miRNA sponge, modulating gene methylation to upregulate gene expression, interacting with proteins, and serving as a precursor for small RNAs.

CONCLUSIONS: lncRNA H19 holds promise for improving the management and treatment of various kidney diseases by serving as both a diagnostic biomarker, as well as a therapeutic target.
Keywords: Apoptosis, lncRNA, lncRNA H19, Inflammation, Kidney disease, Renal pathology

PP-76

Investigation of the Role of Meteorin-Like and Myonectin in Experimental Hypertension Model

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AIM: It has been reported that Meteorin-like (METRNL) and myonectin released by skeletal muscle may be associated with obesity and cardiovascular diseases due to their effects

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on glucose metabolism. In this study, it was aimed to investigate the roles of METRNL and myonectin in hypertension and hypertension-related complications and their relationship with renal functions in an experimental hypertension model.

METHODS: In our study, male Spraque Dawley rats were divided equally into 2 groups (n=8) as control and hypertension. L-NAME was given to the hypertension group at a dose of 400 mg/L by adding it to their drinking water for 4 weeks. After collecting their 24-hour urine on the first day of the 5th week; the rats were euthanized by taking blood, muscle, heart and kidney tissues under xylazine (10 mg/kg) and ketamine (50 mg/kg) anesthesia. Data were analyzed with Student's t-test and Mann-Whitney U ($p<0.05$).

RESULTS: Compared to the control group; NO, glucose and mean arterial blood pressure ($p<0.05$) in the heart and muscle myonectin levels in western blot analysis ($p<0.001$) were significantly increased in the hypertension group. Serum myonectin, urea and muscle metrnl levels in western blot analysis were significantly decreased in the hypertension group ($p<0.05$). There was no significant difference in serum metrnl and myonectin and metrnl levels between the groups in urine, muscle and heart ($p>0.05$).

CONCLUSIONS: We think that meteorin-like and myonectin should be investigated more comprehensively in clinical and different experimental models in order to understand the possible mechanism on hypertension.

This study was supported by İnönü University Scientific Research Projects Unit (Project No: TSG-2021-2541).
Keywords: Hypertension, Meteorin-like, Myokine, Myonectin

PC-77

Investigation of the Effect of Exercise on Nuclear Factor-KB Ligand, Osteoprotegerin and Irisin Levels in an Experimental Hypertension Model

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AIM: The nuclear factor-KB ligand receptor activator (RANKL), nuclear factor-KB receptor (RANK), and soluble decoy receptor osteoprotegerin (OPG) (RANK/RANKL/OPG) pathways, as well as the myokine irisin, have been reported to play a role in the pathophysiology of cardiovascular diseases. Our study aimed to investigate the roles of RANK, RANKL, OPG, and irisin in the pathophysiology of hypertension and the effects of exercise on RANK, RANKL, OPG, and irisin levels.

METHODS: In the study, Sprague Dawley male rats were divided into control, control+exercise, hypertension and hypertension+exercise (n=8/group) groups. Hypertension and hypertension+exercise groups were given L-NAME (400 mg/L) with drinking water for 6 weeks. Control+exercise, hypertension+exercise groups were made to exercise at a speed of 20 m/min for 45 min for the last 4 weeks. After 24-hour urine collection; blood, muscle, heart and kidney tissues were taken under xylazine (10 mg/kg) and ketamine (50 mg/kg) anesthesia and euthanasia was performed. Data were analyzed with Student's t-test and Mann-Whitney U ($p<0.05$).

RESULTS: Compared to the control group; GSH levels decreased in the muscles and increased in the heart in the control+exercise group ($p<0.05$), mean arterial blood pressure, heart and kidney GSH levels and serum irisin level increased in the hypertension group ($p<0.05$). Compared to the hypertension group; MDA muscle level increased in the hypertension+exercise group ($p<0.05$).

CONCLUSIONS: Our findings suggest that exercise may be effective in the physiopathology of hypertension through irisin levels and oxidative stress parameters. It is thought that the effects of the RANK/RANKL/OPG pathway on hypertension require further studies with different experimental and clinical studies.

This study was supported by İnönü University Scientific Research Projects Unit (Project No: TYL-2023-3245).
Keywords: Exercise, Hypertension, Irisin, Ligand, Nuclear factor-KB, Osteoprotegerin,

PC-78

Effects of Apricot-Added Sports Drink and Commercial Sports Drinks on ABCA1 and UCP1 Expression in Rats

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Techniques, Medical Laboratory Techniques Program, Malatya, Türkiye

AIM: In our previous study, we observed that commercial sports drinks increased visceral fat in rats. Therefore, we compared the effects of apricot-added and commercial sports drinks on lipid metabolism, insulin levels, liver function, and the expression of liver ATP-binding cassette protein A1 (ABCA1) and brown adipose tissue uncoupling protein 1 (UCP1).

METHODS: A total of 30 male Sprague Dawley rats (11–12 weeks) were randomized into control (CG, n=10), commercial sports drink (CSD, n=10), and apricot-added sports drink (AASD, n=10) groups. The apricot drink was formulated to match the electrolyte and carbohydrate content of the commercial one. Rats consumed the drinks daily for 8 weeks, and weight, feed, water, and drink intake were recorded weekly. At the end of the study, serum ALT, AST, HDL, LDL, VLDL, cholesterol, triglycerides, glucose, and insulin were measured. Liver and brown adipose tissue samples were collected; protein localization was assessed by immunohistochemistry, and expression levels by Western blot. Data were analyzed using the Kruskal–Wallis and Dunn–Bonferroni tests ($p<0.05$).

RESULTS: Weight gain was significantly higher in the TSI and KKSI groups compared to the CG ($p<0.01$). The KKSI group exhibited lower LDL, cholesterol, triglycerides, VLDL, and insulin levels than CG ($p<0.05$), with no significant difference in HDL. Liver ABCA1 expression decreased in TSI but was preserved in KKSI. Additionally, KKSI showed significantly higher UCP1 expression in brown adipose tissue ($p<0.05$). Mild liver inflammation was observed in both beverage groups.

CONCLUSIONS: The occurrence of liver inflammation in both sports drinks may be related to their high fructose content. Due to the positive effects of apricot-added sports drinks on lipid, glucose, liver ABCA1, and brown adipose tissue UCP1 levels, use of natural fruit-infused drinks rich in flavonoids and vitamin C is recommended for health.

This study was supported by the Scientific Research Projects Unit of İnönü University under project # TYL-2022-3089.

Keywords: Apricot, ATP binding cassette subfamily a member 1, Sports drink, Rat, Uncoupling protein 1

PC-79

The Role of Phoenixin-14 in Reducing Oxidative Stress and Apoptosis in Acute Pancreatitis

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AIM: This study aimed to evaluate the effects of Phoenixin-14 (PNX-14) on oxidative stress, apoptosis, and histopathological changes in an experimental acute pancreatitis model induced by L-Arginine.

METHODS: A total of thirty-eight Sprague-Dawley rats were used in this study. The rats were divided into four groups: Sham control (saline, n=8), L-Arginine (250 mg/100 g, n=10), PNX-14 (50 µg/kg, n=10), and L-Arginine + PNX-14 (250 mg/100 g + 50 µg/kg, n=10). All injections were administered intraperitoneally at the 0th, 1st, and 2nd hours. The rats were euthanized 24 hours after the last injection. In pancreatic tissue, the levels of superoxide dismutase (SOD), malondialdehyde (MDA), and myeloperoxidase (MPO) were measured. Apoptosis was evaluated using caspase-3 immunohistochemistry and TUNEL. Histopathological examination was also performed. Data were analyzed using one-way ANOVA and Kruskal-Wallis tests, with Tukey post hoc comparisons performed.

RESULTS: L-Arginine decreased SOD levels and increased MDA and MPO levels in pancreatic tissue ($p<0.05$). PNX-14 treatment increased SOD and decreased MPO compared to the L-Arginine group ($p<0.05$); MDA levels showed a decreasing trend, though not statistically significant. Histopathological examination revealed marked acinar cell necrosis, edema, hemorrhage, and inflammation in the L-Arginine group compared to the control group. These pathological findings were significantly reduced in the PNX-14 group compared to the L-Arginine group ($p<0.05$). Moreover, the increased caspase-3 immunoreactivity and TUNEL-positive cell counts observed in the L-Arginine group were significantly reduced by PNX-14 treatment ($p<0.05$).

CONCLUSIONS: Phoenixin-14 demonstrated a protective effect on pancreatic tissue in the L-Arginine-induced acute pancreatitis model by reducing oxidative stress, suppressing apoptosis, and alleviating histopathological damage. This study suggests that PNX-14 may provide potential therapeutic benefits in the treatment of acute pancreatitis.

This study was supported by Afyonkarahisar Health Sciences University Scientific Research Projects Coordination Unit (Project No: 23.LİS.003, Ethics No: AKUHADYEK-61/23).

Keywords: Acute pancreatitis, caspase-3, MDA, MPO, Phoenixin-14, SOD.

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PC-80

Choline as a Modulator of Obesity-Associated Inflammation: Insights into the Cholinergic Anti-inflammatory Pathway and Metabolic Regulation

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AIM: Obesity, marked by chronic low-grade inflammation, involves elevated pro-inflammatory markers such as IL-6 and TNF-α. Choline, an essential nutrient, supports lipid metabolism and modulates inflammation via the cholinergic anti-inflammatory pathway, particularly through α7-nicotinic acetylcholine receptors (α7nAChR). While choline-rich diets have anti-inflammatory effects, the link between choline levels and obesity-related inflammation remains unclear.

METHODS: This cross-sectional study was approved by The Clinical Research Ethics Committee of Izmir University of Economics. This study included 75 adults, categorized as normal weight (BMI 18.5–24.9 kg/m²) or overweight/obese (BMI ≥25 kg/m²). Serum choline, IL-6, TNF-α levels were assessed using ELISA. Body composition was measured via bioelectrical impedance, and dietary choline intake was evaluated with a food frequency questionnaire. Pearson correlation and regression models were used for analysis.

RESULTS: In overweight/obese individuals, serum choline, IL-6, and TNF-α levels were found to be significantly higher ($p<0.05$). Serum choline levels showed a moderate correlation with body fat percentage, while only weak associations were observed between BMI and inflammatory markers. The mean age of participants was 29.9 ± 1.3 years, and 22.7% had comorbidities such as hypertension, thyroid disease, insulin resistance, depression, asthma, and gastritis. The sample size was determined based on power analysis with 95% confidence and 80% power. These findings suggest that choline may play a role in obesity-related inflammatory processes.

CONCLUSIONS: Our study demonstrated that serum choline levels were elevated in obese individuals, alongside increased IL-6 and TNF-α levels. This finding suggests that choline may play a role in obesity-related inflammatory processes. However, the paradoxical increase in choline observed in obese individuals makes it difficult to clarify whether this relationship is causal or represents a compensatory response. Therefore, further comprehensive and mechanistic studies are needed to determine the optimal intake levels of choline and to elucidate its potential therapeutic effects.
Keywords: Body fat, Body mass index, Choline, Dietary choline intake, Inflammation.

PC-81

Effects of Acetylcholinesterase Inhibition in the Pancreatic Tissue of Septic Rats on Inflammation and Oxidative Stress

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AIM: Sepsis is a deadly condition in intensive care unit. Pro-inflammatory cytokines released in response to inflammation and the disrupted oxidant/antioxidant balance in sepsis contribute to the pathophysiology leading to tissue and organ damage, organ failure, and mortality. Inflammation in response to infection activates the cholinergic anti-inflammatory pathway(CAP) to terminate the pro-inflammatory process. Pancreas is an organ with cholinergic innervation that can become life-threatening due to acute and chronic pancreatitis resulting from inflammation caused by many different mechanical or systemic reasons. This study investigated inflammation and oxidative stress in rats. Rats were given acetylcholinesterase inhibition (bicuculline methiodide) to increase cholinergic activity.

METHODS: Adult male Sprague dawley rats were experimentally induced with sepsis using lipopolysaccharide (LPS) and divided into four groups: control, LPS(10 mg/kg i.p.), bicuculline(1.5 mg/kg s.c.), and LPS+bicuculline. Bicuculline methiodide, an acetylcholine esterase inhibitor and GABAA receptor antagonist, was administered to inhibit acetylcholinesterase. LPS was administered at a dose of 10 mg/kg i.p. for 24 hours. TNF-α,

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IL-10, and SOD levels were measured in pancreatic tissues obtained under anesthesia using the ELISA method, while lipid peroxidation was analyzed using the Buege method to measure TBARS levels. The results were analyzed using ANOVA and Tukey test in SPSS software.

RESULTS: TNF-α levels in the pancreatic tissue of rats with sepsis induced by LPS were significantly higher in the LPS group than in the other groups, while IL-10 levels were increased in the LPS+Bicuculline group compared to the LPS group ($p<0.05$). TBARS levels were significantly higher in the LPS group compared to other experimental groups ($p<0.05$). No significant differences were found between other groups.

CONCLUSIONS: In light of these results, we suggest that bicuculline reduces inflammation and oxidative stress levels by stimulating the cholinergic anti-inflammatory response through acetylcholinesterase inhibition. Further analysis is needed to fully elucidate the mechanism.

Keywords: Cholinergic anti-inflammatory pathway, Oxidative stress, Pancreatitis, Sepsis.

PC-82

Effects of GLP-1 Receptor Agonist Liraglutide and Lactobacillus Plantarum on Cortisol Levels and Gut Health in BALB/c Mice with Induced PTSD

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AIM: The gut–brain axis has emerged as a key area of interest in understanding the relationship between intestinal health and neuropsychiatric disorders. Liraglutide, a GLP-1 receptor agonist, has shown limited but promising effects on anxiety-like behaviors. This study aimed to evaluate the effects of liraglutide and Lactobacillus plantarum on gut integrity and stress response in a BALB/c mouse model of post-traumatic stress disorder (PTSD).

METHODS: A total of 42-male Balb/c mice (8–10 weeks) were divided into six groups: SF, Liraglutide, Lactobacillus, Stress+SF, Stress+Liraglutide, and Stress+Lactobacillus. PTSD was induced in experimental groups using a single prolonged stress model. Treatments were administered for 21 days:SF or liraglutide injections, or Lactobacillus plantarum by oral gavage. Weekly body weight and blood glucose levels were measured. At the endpoint, blood was collected at 13:30 for cortisol analysis by ELISA, and intestinal tissues were examined histologically. Pairwise group comparisons were performed using independent sample t-tests. All experimental procedures were approved by the Local Animal Ethics Committee of Çukurova University (25.07.2024-7/3).

RESULTS: Blood glucose levels were significantly reduced in the Liraglutide, Stress+Liraglutide, and Stress+Lactobacillus groups compared to SF ($p<0.05$). Cortisol levels were elevated in the Lactobacillus, Stress+SF, and Stress+Lactobacillus groups compared to SF ($p<0.001$). Interestingly, the Stress+Liraglutide group demonstrated a trend toward reduced cortisol levels compared to Stress+SF ($p=0.058$). Histological evaluation showed that liraglutide produced no notable changes compared to SF, whereas Lactobacillus uniquely prevented submucosal edema. However, neither treatment alleviated the severe intestinal injury associated with stress exposure.

CONCLUSIONS: Liraglutide reduced blood sugar; however, it did not markedly improve intestinal damage. Lactobacillus treatment prevented submucosal edema; however, it was unable to reverse the severe stress-induced injury. While cortisol levels increased under stress conditions, only Liraglutide administration exhibited a trend toward reduction in this elevation.

This study was supported by the Scientific Research Projects Fund of Çukurova University (TSA-2024-17147).

Keywords: Cortisol, Lactobacillus, Liraglutide, PTS

PC-83

Effect of Spexin on Pancreatic Injury Induced by Diabetic Neuropathy

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AIM: Diabetic neuropathy (DN) causes pancreatic damage by promoting hyperglycemia, hyperlipidemia, and inflammation, which in turn promote mitochondrial dysfunction and oxidative stress. Spexin (SPX) is a peptide hormone known to exert its primary physiological effects on energy metabolism, appetite control, and reproductive behavior. Studies have reported that SPX suppresses hypoxia-induced mitochondrial dysfunction and oxidative stress and also exhibits antioxidant activity in renal dysfunction. The effect of SPX on pancreatic damage caused by DN is unknown in the current literature, and this study was conducted to investigate the effect of SPX on pancreatic damage associated with DN.

METHODS: In the study, 40 Balb-C male mice were divided into 4 groups as Control, DN, DN+SPX-12.5 and DN+SPX-25 (n=10). A single dose of streptozotocin (150mg/kg) was injected intraperitoneally (ip) into the groups except control and blood glucose level was measured 72 hours later and animals above 250mg/dL were considered diabetic. While the control group was not treated, the DN group was treated with saline for 15 days, and the DN+SPX-12.5 and DN+SPX-25 groups were treated with SPX ip at 12.5 µg/kg and 25 µg/kg doses, respectively. At the end of the experiment, mice were decapitated and pancreatic tissues were collected. Hematoxylin-Eosin and caspase-3 staining methods were used in the tissues. Data were analyzed by Kruskal Wallis H test, multiple comparisons were performed by Mann Whitney U test with Bonferroni correction and $p<0.05$ values were considered statistically significant.

RESULTS: Histopathological damage was reduced in the groups treated with SPX, while a small amount of vascular congestion, mononuclear cell infiltration, and edema were observed ($p<0.05$). The number and staining intensity of caspase-3-positive cells were significantly reduced compared to the DN group ($p<0.05$).

CONCLUSIONS: The study results show that SPX reduces DN-induced pancreatic damage. Acknowledgments:
This study was supported by the TUBITAK 1002-A (124S122).
Keywords: Caspase-3**,** Diabetic neuropathy, Spexin.

PC-84

Effect of Metformin on Thermal Denaturation Properties of Rectus Femoris Muscle in Rats Fed a High-Fat Diet: A Differential Scanning Calorimetry Study

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AIM: The thermal denaturation behavior of muscle proteins is an important parameter in areas such as ultrasonic physiotherapy, tissue engineering, and treatment of soft tissue injuries. Muscle protein structure can be influenced by both diet and pharmacological agents. Metformin, a common antidiabetic drug, may affect muscle protein stability, but its mechanism of action on skeletal muscle remains unclear. Differential Scanning Calorimetry (DSC) is a thermoanalytical method that detects structural changes in proteins by analyzing heat flow and denaturation peaks. Although DSC has been used in muscle studies, the combined effects of a high-fat diet and metformin on muscle thermal stability have not been previously examined. This study aims to evaluate how 20 days of metformin treatment affects the thermal denaturation profile of rectus femoris muscle in a rat model of diet-induced hyperglycemia.

METHODS: Adult female Wistar rats (n=21) were fed ad libitum with either standard chow and tap-water or a high-fat diet with 10% sucrose-supplemented water for eight weeks. Animals in the high-fat group that developed hyperglycemia and weight gain were assigned to control or metformin subgroups. Metformin (36.43 mg/kg/day) was administered orally by gavage for 20 days. After treatment, rectus femoris muscles were collected, stored at –80°C, and analyzed by DSC. Approximately 30 mg of each muscle sample was sealed in aluminum pans and scanned at a heating rate of 10 °C/min from 25-130 °C. All samples were measured in triplicate.

RESULTS: DSC thermograms showed consistent two or three-state-transitions across all groups. Mean and standard deviation profiles indicated that metformin-treated rats exhibited thermal behavior more similar to controls, suggesting partial restoration of protein structure disrupted by high-fat diet–induced-stress.

CONCLUSIONS: These findings indicate that metformin may stabilize muscle protein structure under metabolic stress caused by a high-fat diet. This stabilization could potentially aid in muscle preservation/regeneration in metabolic disease contexts.

Keywords: Differential scanning calorimetry, High-fat diet, Metformin, Skeletal muscle, Thermal denaturation.

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PC-85

Does High-Fat Diet Increase Aggression-Related Spontaneous Deaths in C57BL/6J Male Mice?

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AIM: In addition to its metabolic effects, high-fat diet (HFD) has also been investigated in behavioral impacts. Studies on aggression focus on the effects of maternal HFD intake during gestation/lactation on the offspring's behaviors, or on the role of HFD in adult animals in triggering aggression toward unfamiliar conspecifics. We aimed to investigate aggression-related mortality in male C57BL/6J mice, born from the same dam, consuming HFD.

METHODS: Following ethical approval (PAUHDEK-2024-13), a total of 242 male C57BL/6J mice (Kobay, Ankara) were used. Offspring from the same dam were housed in groups of four/cage at 22 ± 2 °C, 55 ± 5% humidity, under 12:12 h light/dark cycle. Environmental enrichment was provided using wooden blocks and paper. After one-week quarantine period, animals were divided as: Control (standard chow), HFD (60% kcal from fat; Research Diets, D12492). Food, water were provided *ad libitum*. Mice were monitored daily, deaths were recorded and assessed via necropsy. The presence of deep wounds and tissue/organ loss was classified as spontaneous death due to aggression. For animal welfare and ethics, mice with severe wounds unresponsive to treatment were euthanized and excluded. Fisher's exact test was used for statistical comparisons, $p<0.05$ considered significant.

RESULTS: No deaths occurred during quarantine period. From the beginning of the protocol, weekly mortality rates in HFD group were 9.23%, 7.63%, 7.34%, 11.88%, respectively. In the control group, only one death (0.89%) occurred in the second week, with no deaths in other weeks. In all weeks, spontaneous death rates due to aggression were significantly higher in the HFD group compared to control ($p<0.05$).

CONCLUSIONS: Our findings suggest that HFD may increase spontaneous mortality associated with aggression. Considering this phenomenon in HFD-based experimental designs may improve data integrity.

This study was supported by TUBITAK 1001 (#124S711).

Keywords: Aggression, Behaviour, C57BL/6J mice, High fat diet, Spontaneous mortality.

PC-86

Does Maresin-1 Affect the Levels of Feeding Hormones in Rats with Experimental Obesity Model?

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AIM: Maresin 1 (MaR1) is a novel docosahexaenoic acid derivative pro-resolution agent with anti-inflammatory and analgesic effects, promoting the resolution of inflammation. This study aims to investigate the effects of Mar-1 on the levels of feeding-related hormones in rats with an experimental obesity model.

METHODS: Thirty-two male Wistar Albino rats weighing 40-50 g were used in the study. The animals were divided into four groups (n=8): control, sham, MaR-1 50, and 100 ng/kg/day. All rats were fed a high-calorie diet (HCD) for 12 weeks. At 12 weeks, the rats were confirmed to be obese by Lee Index, and brain infusion kits were placed in all three groups except the control group. The animals were allowed to recover for seven days, after which the sham group received the solvent MaR-1 (artificial cerebrospinal fluid) for seven days, while the treated groups received two different doses of MaR-1 via osmotic minipumps. Body weights and feed consumption of rats were recorded. After scarification, determined in the serum leptin, ghrelin and insulin levels from collected blood samples using ELISA method. Oneway ANOVA post-hoc Tamhane test was used for statistical comparisons between the groups. $P<0.05$ was considered statistically significant. Ethical approval was obtained for the study from the Inonu University Faculty of Medicine Animal Experiments Local Ethics Committee (HADYEK NO: 20874).

RESULTS: It was determined that the body weights of the Mar-1-treated groups remained unchanged, but their feed consumption decreased significantly ($p<0.05$). Serum insulin, leptin, and ghrelin levels did not differ in the 50 ng Mar-1-treated groups, while 100 ng Mar-1 administration increased serum insulin and leptin levels ($p<0.05$).

CONCLUSIONS: Our study results revealed that Mar-1 administration increased leptin and insulin levels in YKDY-

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fed rats, resulting in an anorexigenic effect and decreased food intake.

Acknowledgement: This study was supported by TÜBİTAK (Project No: 323S451).
Keywords: Ghrelin, Insulin, Leptin, Maresin-1, Obesity

PC-87

The Effects of Oral Contraceptive Treatment on Cognitive Functions, Hormonal Parameters, and Oxidative Stress in Women with Polycystic Ovary Syndrome

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AIM: Polycystic ovary syndrome (PCOS) is a common endocrine disorder in reproductive-age women, associated with hormonal imbalance and cognitive impairment. This study evaluated the effects of anti-androgenic oral contraceptive (Diane-35) on cognition, hormones, and oxidative stress in PCOS.

METHODS: Thirty-nine women aged 20–30 years with PCOS (Rotterdam criteria) were included. Exclusion criteria: pregnancy, lactation, use of hormonal/psychiatric/neurological drugs, smoking, alcohol, diabetes, thyroid dysfunction, hypertension, cardiovascular or other conditions affecting cognition. Blood samples were obtained on day 2 of the cycle before and after 3 months of Diane-35. Analyses: Testosterone, androstenedione, LH, AMH, insulin, TAS, and TOS were measured with ELISA. Cognitive functions were tested with the Vienna Test System (VTS, version X.X): reaction speed (DT), reasoning (SPM), attention (LVT), visual memory (TAVTMB). Statistics: Wilcoxon test for pre–post differences, Spearman correlation for associations ($p<0.05$).

RESULTS: Reaction time (DT, $p=0.006$) and reasoning (SPM, $p=0.003$) improved significantly. Testosterone ($p=0.002$), androstenedione ($p=0.015$), LH ($p=0.007$), AMH ($p=0.014$) decreased; insulin increased ($p=0.041$). TAS and TOS showed no changes. LVT and TAVTMB scores remained unchanged. No correlation emerged between hormone shifts and cognition.

CONCLUSIONS: Diane-35 provided short-term improvement in reaction speed and reasoning in PCOS women. Cognitive gains did not parallel hormonal changes, suggesting multifactorial mechanisms (neurotransmitters, neuroplasticity, psychosocial factors). The insulin rise is clinically relevant and warrants monitoring. No oxidative stress effect may reflect short duration. Larger, longer studies are needed.

This study is a medical specialty thesis and was approved by the Clinical Research Ethics Committee of Manisa Celal Bayar University.
Funding: This study was supported by the Scientific Research Projects Coordination Unit (BAP) of Manisa Celal Bayar University.
Keywords: Cognitive functions, Hormonal levels, Oral contraceptive treatment, Oxidative stress, Polycystic ovary syndrome.

PC-88

The Role of Uridine on Folliculogenesis in a Dehydroepiandrosterone-Induced Polycystic Ovary Syndrome Model

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AIM: Polycystic Ovary Syndrome (PCOS) is a common metabolic disorder affecting about 10% of women of reproductive age. Increased granulosa cell apoptosis has been reported in PCOS. Uridine, a pyrimidine nucleoside, exhibits anti-apoptotic properties. This study aimed to evaluate the effects of uridine on ovarian folliculogenesis in DHEA-induced PCOS rat model.

METHODS: The study was approved by the Animal Ethics Committee of Bursa Uludağ University (BUU) (No:2024–14/07). Female Sprague Dawley rats (8-week old, n=19) were randomly divided into five groups:Control (n=4), PCOS+S (n=4), PCOS+250mg/kg Uridine (n=4), PCOS+500mg/kg Uridine (n=4) and Sham (n=3). PCOS was induced via 21-day subcutaneous DHEA administration (60mg/kg). Uridine was given intraperitoneally for 5 days after DHEA treatment. Animals in diestrus phase were sacrificed. One ovary per rat was processed for H&E staining and follicule counting in 5 sections (1 in every 10). Data were analyzed with One-Way ANOVA and Holm-Sidak post hoc tests using Sigma Plot.

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RESULTS: Primordial follicule numbers decreased in PCOS+S group (p=0.001) and primordial follicule survival improved with uridine treatment (p<0.05). Primary and secondary follicule numbers decreased in PCOS+S group (p<0.05), without significant change after uridine. Atretic follicule numbers were higher in PCOS+S group (p<0.01), and were reduced by uridine treatment at both doses (p<0.05 and p<0.01,respectively). Cystic structures were prominent in PCOS+S (p<0.001) and diminished with uridine (p<0.05). No significant differences were noted for Graafian follicules or corpus luteum.

CONCLUSIONS: In PCOS model, decreases in the numbers of primordial, primary, and secondary follicules, and increases in the numbers of atretic and cystic follicules were observed. Uridine treatment notably improves primordial follicule survival and reduces cystic and atretic structures. These findings reveal that uridine has an effect on ovarian folliculogenesis in PCOS model. This study was supported by the BUU Scientific Research Projects Unit (TGA1-2025-2098).

Keywords: Dehydroepiandrosterone, Folliculogenesis, Polycystic ovary syndrome, Uridine

PC-89

Relationship between Hypothalamic-Pituitary-Adrenal Axis and Autonomic Nervous System Activities and Menstrual Duration in Young Women with Regular Menstrual Cycles

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AIM: Stress causes menstrual cycle irregularities through the hypothalamic-pituitary-adrenal axis (HPA) and the autonomic nervous system (ANS). However, the relationship between these two stress axes and menstrual duration in women with regular menstrual cycles is unknown. The aim of the current study was to investigate the relationships between menstrual duration and cortisol secretion (for measuring HPA activity) and heart rate variability (HRV) parameters (for measuring ANS activity) in young women with regular menstrual cycles.

METHODS: The study was conducted on 100 female students after obtaining ethics committee approval. Saliva samples were collected from the menstruating female students for cortisol measurement, and five-minute ECG recordings were performed for Heart Rate Variability (HRV). Additionally, stress perception was measured using various scales (Spielberger State-Trait Anxiety Inventory (STAI); Karolinska Sleep Scale; Visual Analog Scale (VAS); American College of Obstetricians and Gynecologists (ACOG); and Beck Depression Inventory). All tests were performed on the participants once between between 10:00 a.m. and 2:00 p.m. on any day of the menstrual period. For correlation analyses, Pearson's test was applied to normally distributed data, and Spearman's rho test was applied to non-normally distributed data.

RESULTS: No significant correlations were observed between menstrual duration and cortisol or HRV parameters. Furthermore, no significant correlation was observed between menstrual duration and anxiety, depression, sleep problems, or pain levels during the menstrual cycle phases.

CONCLUSIONS: The findings indicate that in healthy women with regular menstrual cycles, menstrual duration is not associated with HPA and ANS axis activity, stress perception, sleep patterns, or menstrual pain levels. It was concluded that other factors (genetics, metabolic factors, etc.) may be more important in these women.
This researcher was supported within the scope of the 2224-B Domestic Scientific Event Participation Support Program (2025/4).

Keywords: Cortisol, Heart rate variability, Menstrual duration, Pain, Stress.

PC-90

Effects of Duration and Frequency of Neonatal Tactile Stimulation on Pain Threshold

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AIM: Neonatal tactile stimulation (NTS) is a known intervention with beneficial effects on anxiety- and depression-like behaviors. Some studies have also suggested that NTS may influence pain perception. However, the effects of varying duration and frequency of

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NTS on pain modulation remain unclear. This study aimed to investigate the effects of NTS applied with different durations and frequencies on pain threshold during the postnatal days 8–14, a period considered behaviorally critical in early development.

METHODS: Wistar rat pups were randomly assigned to five groups, with 11 pups in each group: control (no intervention), once daily 5-minute tactile stimulation (1×5), once daily 15-minute stimulation (1×15), three times daily 5-minute stimulation (3×5), and three times daily 15-minute stimulation (3×15). NTS was applied using a soft brush between postnatal days 8 and 14. Pain threshold was assessed using the hot plate test. The one-way ANOVA was used in statistical analysis. All procedures were approved by the Kocaeli University Local Ethics Committee (KOÜ HADYEK 3/1-2023).

RESULTS: The results showed that the group receiving three 5-minute sessions per day (3×5) had a significantly lower pain threshold compared to all other groups ($p < 0.05$). Conversely, the group receiving three 15-minute sessions per day (3×15) demonstrated a significantly higher pain threshold than both the control and the other experimental groups ($p < 0.05$). The groups receiving once-daily stimulation (1×5 and 1×15) did not show significant differences from the control group.

CONCLUSIONS: These findings suggest that the duration and frequency of NTS have distinct modulatory effects on pain perception. While frequent and short-duration stimulation appears to lower the pain threshold, frequent and prolonged stimulation seems to increase it. This highlights the importance of stimulation parameters in early-life sensory interventions.

Keywords: Hot plate test, Pain threshold, Rat, Tactile stimulation.

PC-91

The Effects of Resistance Exercise on Aerobic and Anaerobic Capacity in Pediatric Patients with Fontan Circulation and Single Ventricle Physiology

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AIM: The Fontan procedure is a unique circulation model used in individuals with univentricular heart defects, characterized by direct venous return to the pulmonary arteries. This physiology is associated with sarcopenia, increased adiposity, and reduced exercise capacity. Enhancing the peripheral muscle pump may improve venous return and performance. This study evaluates the effects of a 12-week lower extremity–focused resistance training on body composition, muscle strength, anaerobic power, and aerobic capacity in children with Fontan circulation.

METHODS: Nineteen children aged 6–18 years with Fontan physiology were included. Participants engaged in a progressive, three-phase, online lower extremity resistance training program using resistance bands, three times per week. Exercise intensity was monitored through band color, number of repetitions, and post-session perceived exercise (RPE) scores. Body composition was assessed using regional bioelectrical impedance analysis. Muscle strength (handgrip), anaerobic power (Wingate test), and aerobic capacity were evaluated using a metabolic analyzer during exercise test on cycle ergometry. Parametric (paired t-test, Pearson) or non-parametric (Wilcoxon, Spearman) analyses were performed. Ethics approval: Kartal Koşuyolu Training and Research Hospital (No:2021/16-547).

RESULTS: Significant increases occurred in body weight ($p<0.001$) and height ($p<0.001$), while BMI remained unchanged. Regional impedance and fat mass increased ($p<0.05$), while fat-free mass (FFM) showed no significant change. Handgrip strength and anaerobic power (peak and mean) increased significantly ($p<0.001$). Strong positive correlations were found between regional FFM (arms, legs, trunk) and anaerobic power parameters (r_s = 0.87–0.94, $p<0.001$). No significant differences were observed in maximal oxygen consumption (VO_2max) or in the other parameters.

CONCLUSIONS: The 12-week resistance exercise training improved muscle strength and anaerobic performance, strongly associated with lean mass both in upper and lower extremities. Aerobic capacity did not show a statistically significant change. This is the first study demonstrating beneficial effects of resistance exercise on anaerobic performance in Fontan circulation.

Keywords: Aerobic capacity, Anaerobic power, Fontan circulation, Muscle strength, Resistance training.

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PC-92

Poster was not presented at the meeting

PC-93

Investigation of EEG Responses to Emotional Distractors in Adolescents Diagnosed with Attention Deficit Hyperactivity Disorder

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AIM: Considering the difficulties experienced by adolescents diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) in social interaction, there is debate as to whether these difficulties are primarily due to emotional processes or secondary to attention deficit. This study investigates the interference effect of emotional facial expressions on performance during an attention task in healthy and ADHD-diagnosed adolescents, and its correlates on brain electrophysiology.

METHODS: Participants were 15 ADHD-diagnosed and 15 healthy adolescent boys and girls, aged 12–16. The emotional facial expressions task utilized 300 facial photographs from the Karolinska Directed Emotional Faces database, containing five basic emotions. The symbols ">>>>" or "<<<<" were randomly superimposed on each face. Participants were instructed to press the right or left key corresponding to the presented arrow direction. Each image was presented for 300 ms. EEG recordings were conducted using 30 electrodes (10–20 system). Independent samples t-tests were used for behavioral data; repeated measures ANOVA was used for EEG data. Consistent with similar EEG studies, the group sample sizes and the use of 300 trials per participant ensured a high signal-to-noise ratio standards.

RESULTS: The groups did not significantly differ in age or gender. The total accuracy rate in the ADHD group (0.82±0.11) was significantly lower than that of the control group (0.95±0.03) ($p<0.001$). P150 wave (average amplitudes of 120–180 ms), an early-to-mid-latency visual potential in the parieto-occipital region was analyzed. The P150 potential was significantly right lateralized in the ADHD group compared to the control group (Lateralization × Group interaction, $p<0.001$).

CONCLUSIONS: The right parieto-occipital localization of the P150 potential in the ADHD group during a task requiring focus on presented arrow cues suggests that the emotional facial expression component of the stimuli was processed more prominently leading to greater interference effect with lower behavioral performance.
Keywords: ADHD, Emotion, Event-related potential P150.

PC-94

Effects of Pioglitazone and Ivabradine on Long-Term Potentiation in Post-Traumatic Stress Disorder

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AIM: Post-traumatic stress disorder (PTSD) is a disorder characterized by fear, stress, and mood changes that occur following exposure to a traumatic event. Pioglitazone is a drug used in the treatment of type 2 diabetes and anti-inflammatory and neuroprotective properties. In the literature, the effect of pioglitazone on neuronal excitability has been demonstrated using ivabradin.This study aimed to investigate the effects of pioglitazone on PTSD-related synaptic plasticity changes.

METHODS: 35 Wistar albino rats were randomly assigned to 5 groups (n=7): control, PTSD, PTSD+Pioglitazone, PTSD+Ivabradine, and PTSD+Pioglitazone+Ivabradine. The PTSD experimental model was performed using restraint stress, a forced swim test, and ether exposure. A 32-day experimental protocol was then followed, with the forced swim test repeated every 7 days. Pioglitazone (20 mg/kg, i.p.) treatment was administered once daily from days 8 to 32 of the protocol. Ivabradine (15 mg/kg, i.p.) was administered 1 hour before the induction of long-term potentiation (LTP). LTP was induced in response to high-frequency stimulation (HFS) of the perforant pathway. LTP was recorded from the dentate gyrus for 1 hour as excitatory postsynaptic potential (EPSP) slope and population spike (PS) amplitude. Statistical analysis was performed using SPSS software with unpaired Student's t-test and one-way ANOVA.

RESULTS: Input/output curve analysis showed that both EPSP slope and PS amplitude increased as stimulus intensity increased ($p>0.05$). PS amplitudes measured following HFS and during the last 5 minutes of electrophysiological recording showed statistically significant differences compared to baseline values in all groups ($p<0.05$).

However, no statistically significant differences were found between the groups in either the input/output curves or the follow-up LTP recordings.

CONCLUSIONS: Preliminary findings indicate that hippocampal LTP is not significantly affected in PTSD. Pioglitazone does not have a significant effect on synaptic plasticity in PTSD.

This study was supported by TUBITAK (Project #: 124S032).
Keywords: Ivabradine, Long term potentiation, Pioglitazone, Stress

PC-95

Investigation of the Effect of Exercise on Meteorin-Like and Myonectin Levels in an Experimental Hypertension Model

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AIM: The cause of hypertension is unknown in 95% of cases. Regular exercise has beneficial effects on hypertension. However, this mechanisms aren't understood. Myokines released during exercise may play an important role. It has been reported that Myonectin and Meteorin-like are released due to exercise. In our thesis, we aimed to investigate the role of Meteorin-like and Myonectin in the pathophysiology of hypertension, its relationship with kidney functions, and the effect of exercise on Meteorin-like and Myonectin levels.

METHODS: In our study, male Sprague Dawley rats were divided equally into 3 groups (n = 24; Control, Hypertension, Hipertension+Exercise). Rats in the Hypertension and Hipertension+Exercise were given L-NAME by adding it to their drinking water (6 weeks). Systolic, diastolic and mean arterial blood pressure values were measured every week. in the Hipertension+Exercise were subjected to running exercise on the treadmill 20 m/min, 45 minutes for the last 4 weeks. After collecting the 24-hour urine of the rats; Euthanasia was performed under anesthesia by removing blood, muscle and kidneys. Data were analyzed with Student's t-test and Mann-Whitney U ($p<0.05$).

RESULTS: It was determined that systolic, diastolic and mean arterial blood pressures increased and renal nitric oxide, muscle Myonectin and Meteorin-like concentrations decreased in the Hypertension compared to the C ($p<0.05$). It was found that diastolic blood pressure values and malondialdehyde and serum glucose levels decreased in the Hypertension+Exercise group in the 4th and 6th weeks compared to the hypertension group ($p<0.05$).

CONCLUSIONS: The decrease in this myokines muscle concentration indicates that they may have a role in the pathophysiology of hypertension. We think that the duration/type/starting time of exercise and dose of L-NAME should be reviewed. It should be investigated thoroughly for future research.

This study was supported by İnönü University Scientific Research Projects Unit (Project #: TYL-2021-2715).

Keywords: Exercise, Hypertension, Meteorin-like, Myokine, Myonectin.

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