ORAL PRESENTATION ABSTRACTS

OP001

PRODUCTION AND CHARACTERIZATION OF CHITOSAN NANOPARTICLE LOADED WITH COENZYME Q10 AND ST. JOHN’S WORT METHANOL EXTRACT FOR DIABETIC WOUND TREATMENT

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Objectives: We aim to increase their effects in diabetic wound treatment by producing nanoparticles loaded with Coenzyme Q10 and St. John’s wort.

Methods: Chitosan-TPP-PVA nanoparticles were prepared by the ionic gelation method. Coenzyme Q10 and St. John’s wort methanol extract (30%, w/v) were loaded into the particles. To prove the success of the production, FTIR, DSC, and 15-day drug release studies were conducted. The cytotoxic effects of nanoparticles were analyzed by MTT test.

Results: The particle size of the produced nanoparticles is 670.1 nm and the zeta potential is 0.158 mV. It has been proven that the drugs are successfully contained within the particles, do not melt at body temperature, even if they show an initial burst release, provide a controlled release for 15 days afterward and have no cytotoxic effects. Irisin and body mass index (r=-0.443, p=0.027), while a positive correlation was found between preptin and body weight (r=0.438, p=0.029).

Conclusions: It is thought that nanoparticles loaded with coenzyme Q10 and St. John’s wort extract will accelerate healing in diabetic wound treatment.

Keywords: Nanoparticles; Diabetic Wound Treatment; Coenzyme Q10; St. John’s Wort; Ionic Gelation Method

OP002

ANTIOXIDANT EFFECTS OF VITAMIN C AGAINST H2O2 ON ENTEROCOCCUS FAECIUM

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Objectives: Many drugs that are used for gastrointestinal cancer treatments show their effects through the generation of oxidative stress on cells. Reactive oxygen species (ROS) such as H2O2 can cause oxidative stress on bacterium which are natural inhabitants of gut microbiota. The aim of this study is investigating the antioxidant effect of Vitamin C (vit C) against oxidative stress caused by H2O2 on Entereccoccus faecium (E. faecium), one of the natural resident in gut microbiota.

Methods: E. faecium which was at exponential growth phase was inoculated as 500,000 CFU/ml in Mueller-Hinton broth contained at different concentrations of H2O2 (25, 50, 100, 200, 400, 600, 800, 1000 uM). After 24-hour incubation at 37°C, the densities of bacterium were measured via 600 nm and the highest non-toxic concentration of H2O2 was found. Then, the same density of E. faecium were inoculated in Mueller-Hinton broth which had that nontoxic concentration of H2O2 and also contained different concentrations of vit C (25, 50, 100, 200, 400, 600, 800, 1000 uM). After 24-hour incubation at 37°C, the results were read by measuring optical densities at 600 nm, and mean values of optical densities were analyzed statistically using t test (p<0.05).

Results: The highest nontoxic H2O2 concentration on E. faecium was determined as 500,000 CFU/ml in Mueller-Hinton broth contained at different concentrations of H2O2 (25, 50, 100, 200, 400, 600, 800, 1000 uM). After 24-hour incubation at 37°C, the densities of bacterium were measured via 600 nm and the highest non-toxic concentration of H2O2 was found. Then, the same density of E. faecium were inoculated in Mueller-Hinton broth which had that nontoxic concentration of H2O2 and also contained different concentrations of vit C (25, 50, 100, 200, 400, 600, 800, 1000 uM). After 24-hour incubation at 37°C, the results were read by measuring optical densities at 600 nm, and mean values of optical densities were analyzed statistically using t test (p<0.05).

Conclusions: Nutrition can have many different effects on both healthy and cancer-associated gut microbiota. Most drugs used in cancer treatment show their effects by generating oxidative stress in the cell.
Vit C, known for its antioxidant properties, can provide protection against lipid peroxidation by eliminating the effects of ROS such as H2O2. Thus, vit C in the diet may have a great impact on the maintenance of both healthy cells in the intestinal system and the healthy gut microbiota.

Keywords: Gut microbiota; Enterococcus faecium; H2O2; Vitamin C

OP003

EVALUATION OF VITAMIN D LEVELS IN CHILDREN WITH IRON DEFICIENCY ANEMIA: A CASE OF ŞİRNAK PROVINCE
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Objectives: This study aims to examine the levels of vitamin D, which we think is related to the disease and plays a role in many vital reactions, including nutrition, in children with iron deficiency anemia (IDA) according to age and gender.

Methods: After the study was approved by a State University Ethics Committee (2022/105, date: 21.09.2022), the patients’ data were obtained from electronic health records in the hospital database. 1,955 patients who applied to Şırnak State Hospital between 2020-2022 and were diagnosed with iron deficiency were included in the study. In the study, vitamin D levels were evaluated according to the age and gender differences of the patients. Serum vitamin D levels <12 ng/mL were considered severe deficiency, 12-20 ng/mL were considered mild-moderate deficiency, 21-30 ng/mL were considered insufficiency, and >30 ng/mL were considered sufficiency. Statistics 21.0 package program (SPSS, Version 21.0. Armonk, NY: IBM USA) was used in the statistical analysis. The normality of the data was examined with the skewness-kurtosis test. The t-test was applied to determine whether there was a significant difference between the means according to gender. One-way ANOVA test was used to determine whether there was a significant difference between average vitamin D levels according to age. p <0.05 was considered statistically significant.

Results: In the study, findings from 1,115 women and 840 men were evaluated. The average vitamin D serum level in women was found to be 18.68 ± 0.31 ng/mL and in men, it was 23.15 ± 0.36 ng/mL. Vitamin D levels were statistically significant in both male and female patients across age groups (p<0.01). The average of males (n=216) aged 0-1 was 29.98±0.93, and that of females (n=209) was 30.19±0.91. The average age of males (n=306) between the ages of 2-6 was 22.53±0.48, and that of females (n=324) was 19.86±0.45. The average of males (n=197) between the ages of 7-12 was 19.70±0.53, and that of females (n=272) was 15.40±0.40. The average of men (n=121) between the ages of 13-18 was 18.12±0.64, and that of women (n=310) was 12.56±0.36. According to gender, the group between the ages of 0-1 was not found to be statistically significant. (p>0.05). All other groups were found to be statistically significant. (p<0.01). The average vitamin D level in patients aged 0-1 year (n=425) was 30.08±0.65 ng/mL, in patients aged 2-6 years (n=630) it was 21.16±0.33 ng/mL, 7- It was found to be 17.21±0.34 ng/mL in patients aged 12 years (n=469) and 14.12±0.34 ng/mL in patients aged 13-18 years (n=431).

Conclusions: Iron deficiency anemia is an important health problem for our country. In addition, we think that the vitamin D levels of these patients are not at the desired level and importance should be given to nutrition regulation and vitamin D supplementation, especially in the preschool period, before and after adolescence.

Keywords: Iron Deficiency; Vitamin D; Gender; Age

OP004

THE OXIDATIVE PHOSPHORYLATION METABOLISM IS A NOVEL DETERMINANT PATHWAY IN APOPTOTIC RESISTANCE OF GLIOBLASTOMA CELL LINES
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Objectives: Glioblastoma is the most common and aggressive primary brain tumor. Current treatment approaches include radio and chemotherapy following the resection of the tumor by surgery. However, in most patients, the tumor recurs and exhibits a more aggressive phenotype. Tumor necrosis factor–related apoptosis-inducing ligand (TRAIL) induces apoptosis specifically in tumor cells, making it a prime therapeutic candidate. However, many tumor cells, including glioblastoma, can generate an acquired resistance against TRAIL therapy and these mechanisms remain poorly understood. In addition to apoptotic resistance, these resistance mechanisms may also be related to non-genetic factors originating from the intracellular dynamics.

Methods: Transcription analyses were evaluated bioinformatically. Mitochondrial density was measured using MitoTracker dye. Cellular metabolism activity was measured with the Seahorse Extracellular Flux Analyzer.

Results: Our previous studies that generated TRAIL-resistant models found that metabolic pathway genes were differentially expressed in TRAIL-resistant glioblastoma cells. We detected a positive correlation in oxidative phosphorylation pathways in transcriptomic analyses performed in TRAIL-resistant cells. Looking at this gene family in more detail, commonly altered genes were detected in different cell lines. A significant increase in mitochondrial visualizations was observed in resistant cells. According to the Seahorse Analyzer results, resistant cells exhibited high oxygen consumption and were observed to be at an energetic level.

Conclusions: Together, according to the preliminary results, this study will be examined with high-throughput genetic and metabolomic screening. Our findings will make a significant contribution to the biology of cancer metabolism. Additionally, these target genes and metabolites will constitute a potential target for the development of new treatment approaches in cancer, especially glioblastoma.

Keywords: Glioblastoma; TRAIL; TRAIL-resistance; oxidative phosphorylation

OP005

THE IMPACT OF VITAMIN D ADMINISTRATION ON THE LIVER OF RATS WITH METABOLIC SYNDROME ASSOCIATED WITH OXIDATIVE STRESS AND PENTOSE PHOSPHATE METABOLISMS

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Objectives: Metabolic syndrome (MetS) is characterized by insulin resistance, obesity, hypertension, and hyperlipidemia. MetS contributes to the altered oxidative stress metabolism and inflammation in the liver associated with increased mortality and morbidity. Since vitamin D (vit D) deficiency is associated with an increased risk for diabetes and MetS, we investigated the impact of vit D administration on the liver metabolism of rats having MetS.

Methods: Male Sprague Dawley rats were divided into four experimental groups (n=7 for each group): healthy controls (C), vitamin D-treated controls (C+VD), MetS rats (MS), and vitamin D-treated MetS rats (MS+VD). MetS model was established by administration of high lipid (%17) and high fructose-containing food and water containing %20 fructose. vit D supplementation (oral 170 IU/week) was initiated in the treatment groups from the third week of the experiment and continued until the end of the 15th week.
Results: Body weight and blood glucose levels significantly increased in MetS rats compared to the healthy control and MetS+VD groups. Vacuolization, inflammatory cells, and glycogen accumulation were observed in hepatocytes. Accumulation of collagen fibers, which is an indicator of fibrosis, was also detected in portal areas and around the central vein. Vit D administration ameliorated histopathological alterations of liver samples in MetS groups. Glucose 6-phosphate dehydrogenase, 6-phosphoglucanate dehydrogenase, glutathione reductase, and glutathione S-transferase enzyme activities altered in MetS groups, and slightly ameliorated in Vit D-treated groups.

Conclusions: Vit D treatment ameliorated MetS-induced histopathological alterations and oxidative stress metabolism in the liver.

Keywords: Metabolic syndrome; liver; oxidative stress; pentose phosphate pathway; vitamin D

OP006

VITAMIN D SUPPLEMENT AND BLOOD PRESSURE IN POSTMENOPAUSAL WOMEN: A META-ANALYSIS

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Objectives: An estimated 1.28 billion adults aged 30-79 worldwide have hypertension. Cardiovascular diseases are the leading causes of mortality and morbidity worldwide in women aged 50 and over. After menopause, women’s risk of developing cardiovascular diseases increases as a result of changes in sex hormones. Studies conducted in recent years show that there is a proportional relationship between low vitamin D levels and cardiovascular diseases.

Methods: A literature search was conducted on the “Web of science” electronic database by two researchers based on the inclusion criteria. A total of 8 randomized controlled studies; Study year, participants’ health status, average age, number of people in the control and intervention groups, experimental period, supplement type and dose, systolic blood pressure (SBP) and diastolic blood pressure (DBP) change in the control and supplement groups, and Mean, SD value and p values were examined. All statistical analyzes were performed using the R 4.2.2 meta-package. The p<0.05 value was used to determine statistical significance. Data are shown as mean difference (MD) with 95% confidence interval (CI). Heterogeneity between arms was examined using the Cochran Q test and I² statistic.

Results: A total of 1536 postmenopausal female subjects were analyzed in 8 randomized controlled trials who received vitamin D supplementation for 2 to 12 weeks. As a result of the meta-analysis, vitamin D supplementation slightly reduced SBP at a statistically significant level of MD = -0.02mmHg p<0.03, heterogeneity I²: 54%, and DBP’ It was observed that MD=0.05mmHg p<0.66) did not affect the heterogeneity I²:0 statistically significantly.

Conclusions: As a result of this meta-analysis, it was observed that vitamin D supplementation provided a slight decrease in systolic blood pressure in postmenopausal women, but had no effect on diastolic blood pressure. It is thought that vitamin D supplementation in postmenopausal women may help reduce the risk of cardiovascular disease.

Keywords: Vitamin D supplement; systolic blood pressure; diastolic blood pressure; cardiovascular disease; postmenopausal woman

OP007

OXIDATIVE STRESS MARKERS IN GROUPS SEPARATED ACCORDING TO THE AVICENNA’S TEMPERAMENT THEORY

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Objectives: Increased oxidative stress is related to many diseases including cardiovascular diseases. Cardiovascular diseases are the leading causes of mortality and morbidity worldwide in women aged 50 and over. After menopause, women’s risk of developing cardiovascular diseases increases as a result of changes in sex hormones. Studies conducted in recent years show that there is a proportional relationship between low vitamin D levels and cardiovascular diseases.

Methods: A literature search was conducted on the “Web of science” electronic database by two researchers based on the inclusion criteria. A total of 8 randomized controlled studies; Study year, participants’ health status, average age, number of people in the control and intervention groups, experimental period, supplement type and dose, systolic blood pressure (SBP) and diastolic blood pressure (DBP) change in the control and supplement groups, and Mean, SD value and p values were examined. All statistical analyzes were performed using the R 4.2.2 meta-package. The p<0.05 value was used to determine statistical significance. Data are shown as mean difference (MD) with 95% confidence interval (CI). Heterogeneity between arms was examined using the Cochran Q test and I² statistic.

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Conclusions: As a result of this meta-analysis, it was observed that vitamin D supplementation provided a slight decrease in systolic blood pressure in postmenopausal women, but had no effect on diastolic blood pressure. It is thought that vitamin D supplementation in postmenopausal women may help reduce the risk of cardiovascular disease.

Keywords: Vitamin D supplement; systolic blood pressure; diastolic blood pressure; cardiovascular disease; postmenopausal woman
Objectives: The aim of this study was to investigate the relationship between some anthropometric measurements and the oxidative stress markers including total antioxidant status (TAS), total oxidant status (TOS) and TOS/TAS ratio among groups separated according to Avicenna’s temperament theory.

Methods: The study included 120 healthy volunteers between the ages of 20-65 years, 53 males and 67 females. The individuals were divided into 4 groups as Balghami (n=15), Damavi (n=54), Safravi (n=43) and Saudavi (n=8) according to Avicenna’s temperament theory. The groups were divided according to the temperament assessment questionnaire designed by the Central Council of Unani Medicine. Exclusion criteria were being pregnant/nursing, smoking 1 pack/day, drinking 1 glass/day of alcohol and taking vitamin/food supplements.

Results: Among the anthropometric measurements, a significant difference was found between the Damavi and Saudavi groups in weight, body mass index, visceral adiposity and waist/hip ratios (p=0.04, p=0.041, p=0.043, p=0.007 respectively), while no significant relationship was found between height, fat percentage and muscle mass (p>0.05 for each). There was no significant difference between TAS, TOS, TOS/TAS ratio, glucose, insulin and HOMA-IR values between the groups (p>0.05 for each).

Conclusions: Although some anthropometric measurement results showed differences between the groups separated according to Avicenna’s temperament theory, no significant difference was found between TAS, TOS and TOS/TAS ratio, which are oxidative stress markers. Genetic differences, diet, lifestyle, physical activity and many other factors that may affect serum levels of these markers indicate the need for further studies.

Keywords: Temperament; oxidative stress markers; anthropometric measurement

OP008
MACROPROLACTIN SCREENING IN A ROUTINE CLINICAL LABORATORY

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Objectives: This study aimed to evaluate the macroprolactinemia requests that came to our laboratory over approximately 3 years.

Methods: A total of 63 patients, 2 males and 61 females were included in the study. Serum prolactin(PRL) levels before and after polyethyleneglycol(PEG) procedure between March 2020 and July 2023 were obtained from the laboratory information system. The incidence of macroprolactinemia was evaluated during this period. Recovery value below 40% was considered macroprolactinemia, between 40-60% was considered gray zone, and above 60% was considered normal.

Results: The mean±SD age of the patients included in the study was 35.07±10.3. Initial PRL levels and after PEG treated PRL levels mean±SD were 74.48±54.9µg/L and 44.44±46.44µg/L, respectively. Recovery of the patient’s results after PEG treatment was between 9-97%. The incidence of macroprolactin in samples whose recovery was under 40% was 7/63 (11.11 %) and the number of samples in the gray area with a recovery value of between 40%-60% was 10 (15.87%). The remaining samples 46/63 (73.02%) had a recovery value of 60% or more and macroprolactinemia was not present. Forty two of the patients had MRI scans, 6 of which were normal. Only 1 of 6 patients with normal MRI had macroprolactinemia with 10% recovery and prolactin level was 101.18µg/L.

Conclusions: It is currently advised that total samples with elevated PRL should be screened for the existence of macroprolactin. This approach will not only support accurate diagnosis of patients but will also reduce unnecessary radiological examinations, as seen in one of our cases.

Keywords: Prolactin; Macroprolactin; Hyperprolactinemia; PEG6000
OP009

CORRELATION BETWEEN SERUM VITAMIN-D, VITAMIN-B12, HOMOCYTEINE, AND FOLATE LEVELS AND ALSFRS-R SCORES IN AMYOTROPHIC LATERAL SCLEROSIS PATIENTS: A RETROSPECTIVE STUDY

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Objectives: Amyotrophic lateral sclerosis (ALS) is a neurodegenerative condition characterized by the progressive loss of motor neurons. Patients usually die 3–5 years after diagnosis of respiratory failure. This retrospective study aimed to investigate the correlation between the Amyotrophic Lateral Sclerosis Functional Rating Scale (ALSFRS-R), a commonly used tool for assessing the functional status of ALS patients, and serum levels of 25-OH vitamin D, vitamin B12, homocysteine, and folate.

Methods: 23 ALS patients were included in the study. In these patients, 25-OH vitamin D, vitamin B12, homocysteine, folate levels, body mass index (BMI), age at onset, the site of the onset of the disease, and ALSFRS-Rs were questioned.

Results: The patients’ mean 25-OH vitamin D level was 17 ng/mL. 25-OH vitamin D levels were significantly lower than average (p<0.001). It is remarkable that BMI and homocysteine levels had a higher positive correlation with ALSFRS-R scores compared to other metabolic values, and vitamin B12 was negatively correlated, but no statistically significant correlation was found.

Conclusions: These findings indicate a possible relationship between 25-OH vitamin D, vitamin B12, homocysteine, folate levels, and ALS. However, further research is needed to understand this association fully.

Keywords: Amyotrophic lateral sclerosis; ALSFRS-R; 25-OH vitamin D; Vitamin B12; Folate

OP010

THE ESSENTIAL ROLE OF IRON DURING THE CHILDHOOD AND ADOLESCENT PERIODS

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Objectives: According to the World Health Organization (WHO) reports, iron is the essential element whose deficiency is most frequently encountered in the world. Iron has important roles in clinical practice due to its roles in cell growth and differentiation, participation of myelin sheath synthesis in central nervous system and brain metabolic activities. In this study, we aimed to investigate the iron, ferritin and blood counting parameters (CBC) throughout the pediatric age groups between age of 1-18 years, evaluate the relation between iron status and blood counting parameters.

Methods: The study group consisted of the remaining blood samples of children aged 1-18 years (n = 30,504) who applied to the Istanbul Public Health Laboratory. Study groups; 1-6 years old (n=3870), 7-12 years old (n=11,019), 13-18 years old (n=15,615). Serum ferritin levels were measured by sandwich enzyme immunoassay using DXI 800 (Beckman Coulter, Brea, CA, USA), iron was evaluated by colorimetric method with iron binding capacity (TIBC) AU-5800 (Beckman Coulter, Brea, CA, USA), and CBC was performed using Sysmex XE-2100 (Sysmex Corp. Kobe, Japan) analyzer.

Results: The hemoglobin (Hb), hematocrit (HCT),
mean corpuscular volume (MCV), red cell distribution (RDW) were significantly different between the age groups. Hb and Hct levels of the boys aged 13-18 years were significantly higher compared to the girls at same age group (p<0.001). Serum iron, TIBC and ferritin concentrations were also different between the age groups (p<0.001), therefore these parameters were significantly higher in the boys at age of 7-12 years and 13-18 years than those of girls at same age groups (p=0.033, p=0.011, p<0.001, respectively). The prevalence of iron deficiency was 12.3% for girls and 4.2% for boys, and showed a significant difference at age of 7-12 years and 13-18 years between boys and girls (p=0.009, p<0.001, respectively). When variables affecting iron status were evaluated with multiple logistic regression analysis, it was seen that the risk of iron deficiency in girls increased 2.7 times, and the risk increased 2.0 times as age increased.

Conclusions: The results of this study reveal the importance of monitoring iron along with Hb levels in pediatric life span due to its roles in metabolic, emotional and mental development. In addition, this study reveals the importance of disseminating basic food practices such as iron-fortified milk and bread in terms of public health.

Keywords: Socioeconomic status; childhood age groups; iron deficiency prevalence

OP011
DEVELOPMENT OF BIODEGRADABLE CHITOSAN ACTIVE PACKAGING MATERIAL AS AN ALTERNATIVE TO PLASTIC PACKAGING TO PREVENT HARMFUL CHEMICAL MIGRATION INTO FOODS
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Objectives: People are exposed to toxins when plastic-based packaging materials leach into foods. Even at extremely low concentrations, long-term chemical exposure has been linked to an increase in several chronic diseases. To achieve this goal, we investigated the bioactive properties of packaging materials and developed eco-friendly, biodegradable alternatives that will not harm human health when in contact with food.

Methods: Our experimental groups consist of films made of chitosan (C), essential oil-containing chitosan (CE), chitosan nanoparticles (CN) and essential oil-loaded chitosan nanoparticles (CEN). Antimicrobial activity tests, release tests with food simulants and applications to foods were carried out by comparing the films obtained for food packaging with the control group (stretch).

Results: The active packaging material, chitosan, showed strong antimicrobial activity against pathogens compared to the control group, and the resulting films (C) increased the shelf life by 3 to 14 days, depending on the food type and environmental conditions. Additionally, the inclusion of essential oil (CE) increased the antibacterial activity of the films, helping the foods last 4 to 20 days longer than those in the control group. Experimental groups CE and CEN showed the highest release results for similar A, B, C. Similar results were obtained for all experimental groups in Simulant D1, D2. Stretch films, which were our control group, did not have any antimicrobial effects.

Conclusions: Environmentally friendly, biodegradable and biocompatible essential oil-added chitosan films extended the shelf life of foods by 3-20 days compared to the control group.

Keywords: chitosan; antimicrobial; food packaging
OP012

EFFECT OF TIME RESTRICTED NUTRITION ON LIPID PARAMETERS

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Objectives: Due to changes in dietary habits from past to present; Metabolic syndrome, obesity and related hyperlipidemia and cardiovascular diseases constitute a serious public health problem. Lifestyle changes and pharmacologic treatments are recommended for a solution to these problems, also clinicians’ most common recommendation is to change dietary habits.

In this study, we planned to investigate the changes in lipid parameters in time-restricted feeding.

Method: Twenty-four individuals who were admitted to the Endocrinology outpatient clinic of Selcuk University Faculty of Medicine Hospital in April 2022 and had lipid profile test results were included in the study. All patients were following the time-restricted dietary recommendations strictly. After 30 days, serum samples obtained from the same individuals were analyzed for lipid parameters with Roche Cobas c702 (Roche Diagnostics, Germany) and analyzed with the SPSS 27 statistical package program. Parametric-nonparametric distribution was compared using the Shapiro Wilk test and the data was assessed by the Wilcoxon test.

Results: The mean age of the group was 29 (23-25) years. LDL cholesterol values before and after the diet were 99.2 mg/dL (39.4-188) and 100.1 mg/dL (48-197.6), respectively, p=0.009; HDL cholesterol values were 47 mg/dL (32-88) and 43 mg/dL (34-74), p=0.700, Triglyceride values were 102 mg/dL (43-331) and 74.5 mg/dL (30-270), p=0.003 and Total Cholesterol values were 170.5 mg/dL (130-288) and 169 mg/dL (118-268), p=0.976.

Conclusions: Time-restricted nutrition in hyperlipidemia may help individuals to improve their lipid profiles.