

# **Oral Communications**

OC-001

Oral

**A meta-analysis of the relationship between red or processed meat intake and obesity**

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**Background:** A body of evidence exists regarding the relationship between red and processed meats and obesity. The objective of current study was to conduct a meta-analysis regarding the relationship between red and processed meat intake and obesity.

**Method:** Multiple electronic databases were used for searching observational studies direct and secondary data regarding relationship between red and processed meat intake and obesity through July 2013. Following keywords were used as search terms for searching in title, abstract and keywords: ("red meat" or "processed meat" or "meat product") and ("obesity" or "abdominal obesity" or "waist circumference" or "body mass index" or "body fat" or "fat mass" or "fat tissue" or "hip circumference" or "overweight" or "body weight" or "BMI" or "adiposity"). For access to secondary data regarding the association between red or processed meat consumption and obesity, we ran a separate search in title in which following terms were used: ("red meat" or "processed meat" or "meat product") and ("diabetes" or "diabetic" or "metabolic syndrome" or "cancer" or "coronary" or "stroke" or "disease"). Odds ratios (OR) and mean of obesity related indices and variables which may contribute to heterogeneity were extracted.

**Results:** Meta-analysis of odds ratios (n=127,079) showed that those who consumed more red or processed meats had greater risk of obesity (OR: 1.32; 95% CI: 1.13, 1.53; P=0.001). However the heterogeneity in these studies was significantly high (I<sup>2</sup>= 94.7%; P<0.001). We ran a subgroup analysis based on the gender of subjects to identify the source of heterogeneity. The pooled OR was statistically significant for studies which reported gender stratified results (OR: 1.35; 95% CI: 1.19, 1.52; P<0.001 and OR: 1.10; 95% CI: 1.05, 1.16; P<0.001 for men and women subgroups, respectively). In comparison to those in the lowest ntile, subjects in the highest ntile of red and processed meat consumption had higher BMI (OR:1.37, 95% CI: 0.90, 1.84 for red meat and OR:1.32, 95% CI: 0.64, 2.00 for processed meat) and WC (OR:2.79, 95% CI: 1.86, 3.70 for red meat and OR: 2.77, 95% CI: 1.87, 2.66 for processed meat).

**Conclusion:** Red and processed meats intake is directly associated with risk of obesity, and higher BMI and WC. However, the heterogeneity among studies is significant. These findings reveal that recommending to decrease red and processed meat intake to the general population may have favorable effect on the prevalence of obesity.

**Keywords:** Red meat, processed meat, obesity, meta-analysis

OC-002

Oral

**A meta-analysis of the effect of dietary glycemic index and glycemic load on energy intake among children and adolescents**

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**Background:** Several studies assessed the effect of dietary glycemic index (GI) and glycemic load (GL) on energy intake but findings is not consistent in this regard. The objective of present study was to summarize the effect of dietary GI and GL on energy intake by conducting a meta-analysis on published randomized clinical trials.

**Methods:** Our searching process was conducted in PUBMED, Web of Science and Google Scholar databases. These keywords were searched in any part of published articles: "glycemic index" OR "glycaemic index" OR "glycemic load" OR "glycaemic load" OR "energy intake" AND "child" OR "children" OR "adolescent" OR "youth". Finally 5099 articles were gathered. After that, non-clinical trial studies, those did not intervene by glycemic index or glycemic load or those without assessing energy intake as dependent variable and those which were conducted on subjects over than 18 years old were excluded. Each included study was evaluated three times for checking the exclusion criteria. Eventually the six studies from 1999 to 2012 could meet these criteria.

**Results:** Meta-analysis on 6 included studies showed that pooled mean difference in subsequent energy intake change was -95.63 (95% CI: -196.77, 5.52, P<0.001) (Figure 2). Heterogeneity was significant between included studies (P < 0.001, Q test, I<sup>2</sup>-square = 79.2 %). To find the possible source of heterogeneity, studies were categorized based on GI and GL intervention and subgroup analysis was conducted for each category. In GI category, analysis demonstrated that in comparison to other meals, LGI meals decreased subsequent energy intake (-142.43, 95% CI: -271.38, -13.49, P=0.006) while, heterogeneity was significant in this group of studies (P = 0.006, Q test, I<sup>2</sup>-square = 75.7 %). There were no significant changes in energy intake following low glycemic load (LGL) meals in comparison to high glycemic load (HGL) meals (-0.83, 95% CI: -80.99, 79.34, P=0.539). Heterogeneity was not significant in this group of studies (P = 0.54, Q test, I<sup>2</sup>-square = 0.0 %)

Sensitivity analysis showed that in studies investigating the effect of LGI meals, the overall effect size considerably changes to non-significant when a study done by Warren et al. was removed from analysis (-54.59, 95% CI: -141.42, 79.34, P=32.23).

**Conclusion:** Consuming LGI diet (not LGL) has favorable effect on reducing energy intake and obesity, subsequently.

**Keywords:** Dietary glycemic index, glycemic load, energy intake

OC-003

Oral

**Effect of current subsidy policy and socio-demographic components on milk consumption in West Azerbaijan, Iran, 2014**

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**Background:** Latest national research achievements, studying Iranian households in 1998-2000, implies that milk and other dairy products are consumed less than recommended amounts. This study was conducted to assess the milk consumption and related socio-economic factors in west Azerbaijan, Iran, 2014. Materials and

**Methods:** In this cross-sectional study, 650 households were selected from 3 cities (Urmia, Mahabad and Khoy and 9 rural areas of West Azerbaijan province by cluster systematic sampling method. data were collected by completing demographic and FFQ questionnaires through interviewing mothers.



Results: Findings indicated that 67% of households were Turkish, 32% were Kurdish and only 1% was from other ethnicity. The most consumed milk in urban and rural households was bulk milk (62.5%) by mean consumption of 478.6±22.6 (ml/wk) in cities and 730.4±64.4 (ml/wk) in rural areas. Moreover, milk consumption in three cities of west Azerbaijan (Urmia, Mahabad and Khoy) was reported 665.6±38.8, 375.3±35.8, and 328.4±30.7 ml per week, respectively. After establishing new policies, mean of milk consumption was reduced 2.9±1.8 lit/week in urban households; however, in rural areas, significant change was not observed in milk consumption. In higher tertiles of ethnic and family size score, consumption of both cow and pasteurized milk were significantly lower which resulted in lower amount of total milk consumption. However, milk consumption in higher tertiles of properties ownership increased.

**Conclusion:** Milk consumption in Azerbaijan is lower than recommended amounts, so designing and implementing policies in order to increase milk consumption such as allocating additional milk subsidies for low income households, solving distribution issues and culturalizing by media should be considered.

**Keywords:** Milk, Iran, Consumption, Household, Socio-demographic factors, Subsidy policy

#### OC-004

#### Oral

### **Dietary patterns are associated with cardio-metabolic risk factors among overweight and obese non-diabetic women in Tehran, Iran: A cross-sectional study**

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**Background:** By increasing obesity prevalence in developing countries and its association with health related conditions, it seems necessary to identify dietary determinants in this population. The importance of food and nutrient intake in development of obesity is well recognized and its association with some single nutrients is determined in previous studies. But the appropriate approach in studying the relationship between diet and diseases is detecting dietary patterns rather than single nutrients or individual foods. Foods are typically consumed in combinations and they contain compounds that are interacting. Studying dietary patterns makes it possible to evaluate these interactions and potential effects of dietary exposure and can provide insights into dietary changes. The aim of the study is to identify dietary patterns and their association with cardio-metabolic risk factors in overweight and obese women.

**Methods:** Dietary patterns (from an 120-item FFQ), anthropometric factors and biochemical markers were assessed in a cross-sectional study among two hundred 30-50 y women with body mass index ≥25 kg/m<sup>2</sup> during fall and winter 2009-2010 from health centers and school staffs in Tehran. Factor analysis was used to identify major dietary patterns from 33 food groups. Linear regression models were used to identify associations between dietary patterns and cardio-metabolic risk factors.

**Results:** Three food patterns were derived: prudent, traditional and western dietary pattern. Individuals in the highest quartile of prudent dietary pattern had greater intakes of energy (P=0.018), protein (P<0.0001), fat (P=0.024) and fiber (P<0.0001) intake than first quartile. In the same comparison in western dietary pattern, greater BMI (P=0.046), WC (P=0.006), and fat intake (P=0.007) were observed. After controlling for confounding factors, prudent di-

etary pattern was inversely associated with total cholesterol (β=-0.19, P for trend=0.015) and LDL-C (β=-0.18, P for trend=0.020) and western dietary pattern was directly associated with fasting plasma glucose (β=0.16, P for trend=0.042) and HOMA-IR (β=0.16, P for trend=0.041).

**Conclusion:** The western dietary pattern was directly and the healthy dietary pattern was inversely associated with cardio-metabolic risk factors. It seems change in dietary pattern of overweight and obese women might be important to prevent from co-morbidities of obesity. More studies are warranted to confirm these results in other high-risk populations especially in men.

#### OC-005

#### Oral

### **Patterns of dietary habits in relation to obesity in Iranian adults**

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**Abstract:** Findings from few studies, investigated the relation between dietary behaviors and obesity, are inconsistent. We aimed to assess the relation between dietary habits patterns, identified by latent class analysis (LCA), and obesity in a large sample of Iranian adults. In a cross-sectional study on 7958 adults, dietary behaviors were assessed in five domains (meal patterns, eating rate, intra-meal fluid intake, meal-to-sleep interval and fatty foods intake), using a pre-tested questionnaire. LCA was applied to identify classes of diet-related practices. Anthropometric measures were assessed through the use of a validated self-reported questionnaire. General and abdominal obesity were defined as a body mass index ≥30 kg/m<sup>2</sup> and a waist circumference ≥88 cm for women, ≥102 cm for men. General and abdominal obesity was prevalent in 9.7 and 27.7% of the study population, respectively. We identified three distinct classes of eating rates, two classes of meal patterns, two classes of intra-meal fluid intake, three classes of meal-to-sleep interval, and three classes of fatty food intake. After adjustment for confounders, individuals with 'irregular meal pattern' were 21%, 24% and 22% more likely to be overweight/obese, abdominally overweight/obese and abdominally obese, compared with those who had a 'regular meal pattern'. Individuals with 'much intra-meal drinking' had greater odds of overweight (OR: 1.37; 1.19-1.458) and obesity (OR: 1.51; 1.16-1.97) than those with 'moderate intra-meal drinking'. Moderate intake of fatty foods was inversely associated with abdominally overweight/obese (OR: 0.85; 0.73-1.00) and abdominally obesity (OR: 0.80; 0.68-0.96) compared with 'low intake of fatty foods'. No significant association was observed between eating rate, meal-to-sleep interval and general or abdominal obesity, after controlling for confounders. Irregular meal pattern and much intra-meal drinking were associated with increased odds of general and abdominal obesity, whereas moderate intake of fatty foods was related to the decreased odds of central obesity among Iranian adults.

**Keywords:** Dietary habits, Obesity, Abdominal obesity, Latent class analysis, Eating rate, Fluid intake, Meal regularity, Meal-to-sleep interval, Fatty food intake.

#### OC-006

#### Oral

### **Association between Healthy Eating Index and Metabolic Syndrome in women: A cross-sectional study**

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**Background:** Healthy nutrition is an important preventive measure for Metabolic Syndrome (MetS). This study aimed to evaluate the association of Healthy Eating Index (HEI) with MetS.

**Methods:** This cross-sectional study was performed among 420 Isfahani female nurses, selected by a multistage cluster random sampling method. Usual dietary intakes were assessed using a validated 106-item food frequency questionnaire (FFQ). HEI was calculated according to the consumption of vegetables, fruits, nuts and grains, the ratio of white to red meat, dietary fiber and the ratio of unsaturated fatty acid to saturated fatty acid. Anthropometric (weight, height, BMI, WHR), biochemical measurements (Fasting blood glucose, TG, LDL-c, HDL-c) and blood pressure were collected. MetS was defined according to ATP III.

**Results:** After adjustment for potential confounders including age, energy intake and BMI, individuals in the highest tertile of HEI were 91% lower odds of the MetS, compared to those in the lowest tertile (OR: 0/09; 95%CI 0/01-0/60). Women in the highest tertile of HEI were 89% less risk of hypertriglyceridemia (OR: 0/11; 95%CI 0/09-0/89) and 87% less risk for hypertension (OR: 0/13; 95%CI 0/08-0/66). There was no significant association between HEI score and risk of enlarged waist circumference (Pvalue=0/64), abnormal glucose homeostasis (Pvalue=0/64) and low HDL-C levels (Pvalue=0/94).

**Conclusion:** The results indicated there might be a significant inverse association between HEI and MetS and some of its components. Prospective studies are needed to confirm these findings.

**Keywords:** Healthy Eating index, Metabolic Syndrome, female nurses

#### OC-007

#### Oral

##### **Association between nutrient patterns and asthenozoospermia: A case-control study**

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**Background:** The association of dietary nutrient patterns and sperm motility is not yet well elucidated, and previous studies have just focused on the isolated nutrients. This case-control study examined the association of nutrient patterns with asthenozoospermia among Iranian men.

**Methods:** In total, 107 incident asthenozoospermic men and 235 age-matched controls were interviewed through the infertility clinics in Tehran, Iran, from January 2012 to November 2013. Semen quality data were analyzed according to the fifth edition of WHO guideline. Nutrient patterns were identified using principal component analysis based on semi-quantitative 168-item food frequency questionnaires. All nutrient intakes were energy adjusted by the residual method. Unconditional logistic regression was used to estimate odds ratio (OR) with 95% confidence interval (CI) to assess the association between the factor score and asthenozoospermia risk.

**Results:** By design, age was similar in both groups (32.8 y vs. 33.4 y in cases and controls respectively). Compared to the controls, cases had significantly lower total

motility, progressive motility and seminal plasma TAC level. The percentage of smokers and residents in high-traffic areas and BMI (30.9 versus 26.3) were significantly more among cases in compare with controls. Three nutrient patterns derived from the scree plot in the factor analysis. The first pattern was abundant in vitamin E, vitamin D, vitamin C, zinc, folate, total fiber, selenium and polyunsaturated fatty acids (PUFAs). The second pattern was high in vitamin B12, vitamin B1, vitamin B2, vitamin B5, vitamin B6, biotin, manganese, iron, phosphorus, fluoride, calcium, niacin, vitamin K, copper and magnesium. The third pattern was characterized by high intakes of potassium, carbohydrate, fat, saturated fatty acids (SAFAs), sodium, monounsaturated fatty acids (MUFAs), cholesterol and protein. The percentages of variation explained were 28.7%, 14.3% and 10.9% for the first, second and third patterns respectively. After adjusting for potential non dietary confounding factors, the highest tertile of first pattern was associated with a lower risk of asthenozoospermia (OR: 0.49, 95% CI: 0.33-0.81, P for trend = 0.004). After fully adjustment for confounding variables, no significant trend in risk of asthenozoospermia emerged for factor 2 (OR = 0.89, 95% CI: 0.51-1.17) and factor 3 (OR = 2.45, 95% CI: 0.92-3.88).

**Conclusions:** Our findings suggest that adherence to the pattern comprising mainly of antioxidant nutrients may be associated with a reduced risk of asthenozoospermia.

**Keyword:** nutrient patterns; asthenozoospermia; sperm quality; male infertility

#### OC-008

#### Oral

##### **Dietary carbohydrate composition is associated with risk of polycystic ovary syndrome: a case-control study**

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**Background:** A diet low in carbohydrates may contribute to improvement of weight loss, fertility, endocrine/metabolic parameters and satiety in women with polycystic ovarian syndrome (PCOS); however the effect of dietary carbohydrate composition on PCOS characteristics has not yet well elucidated. The current study sought to investigate the contribution of dietary carbohydrate components to PCOS development in Iran, 2012-2014.

**Methods:** In this case control study, the diagnosis of PCOS was made based on the Rotterdam criteria. Usual dietary intakes were obtained using a validated semi-quantitative food frequency questionnaire. After excluding the under and over reporters of energy, 281 PCOS cases and 472 controls were included in the analyses. Participation rates were 97.5% among cases and 96.3% among controls. Participants were interviewed through the endocrine clinics in Tehran, Iran, from February 2012 to March 2014. Dietary average glycemic index (GI) and glycemic load (GL) were calculated by GI of Iranian foods table and international tables of GI and GL values. We also assessed dietary total carbohydrate, refined grains, whole grains, and fiber intakes. Analysis of variance was used to compare distribution of categorical variables and chi-square statistics were used to compare proportions. Unconditional logistic regression models were used to estimate odds ratio (OR) with 95% confidence interval (CI) to show the strength of association between PCOS and dietary carbohydrate composition. Models were mutually adjusted for age, body mass index (BMI), waist circumference (WC), physical activity, familial history of PCOS and non-carbohydrate energy intake as potential confounders.

**Results:** Mean  $\pm$  SD of dietary GI was 51.8  $\pm$  4.7 among control



patients and  $59.7 \pm 5.9$  among PCOS cases ( $P=0.02$ ); the corresponding numbers for GL were  $173.6 \pm 39.1$  and  $155.34 \pm 35.2$ , respectively ( $P < 0.001$ ). The multivariate adjusted OR comparing the highest tertile of dietary GI and GL with the lowest tertile were 2.18 (95% CI 1.29-3.81; p-test for trend = 0.012) and 2.39 (95% CI 1.23-3.01; p-test for trend = 0.001) respectively with a significant trend. Fiber intake was suggestively inversely associated with PCOS (OR= 0.73; 95% CI 0.49-0.91; p-test for trend = 0.013).

**Conclusions:** Our findings suggest that high dietary levels of GI and GL and low fiber intake are significantly associated with the risk of PCOS.

**Keywords:** Polycystic ovarian syndrome; Glycemic index; Glycemic load; Fiber; Carbohydrate

OC-009

Oral

**Healthy eating index and risk of multiple sclerosis: A case control study**

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**Background:** Diet quality indices are a unique approach to studying relations between diet and disease. Our objective was to investigate the association between the healthy eating index (HEI) and risk of multiple sclerosis (MS).

**Methods:** We recruited 68 subjects with MS and 140 control subjects in a case-control study. Dietary intake was collected using a valid and reliable food frequency questionnaire. The HEI was constructed based on the following components: Grains, vegetables, fruits, dairy, meat, saturated fatty acid, total fat, cholesterol, sodium, and variety. Data regarding sociodemographic factors, medical history, medications, and anthropometric measurements were collected. Logistic regression was used to evaluate the relationship between HEI score and MS, after adjustment for season of the birth, consumption of cow milk within the first two years of life, daily amount of imposed stress, total energy intake, and age.

**Results:** Cases had lower scores of total HEI ( $P = 0.07$ ), vegetable ( $P = 0.02$ ), grain ( $P = 0.07$ ), dairy ( $P = 0.02$ ), fruit ( $P = 0.02$ ), and variety ( $P = 0.01$ ) in comparison to controls. We observed that higher consumption of total dairy intake was accompanied with reduced MS risk in the fully adjusted model (OR = 0.53, 95% CI: 0.15-1.91,  $P$  for trend = 0.04).

**Conclusions:** Our study suggests that a high quality diet assessed by HEI may decrease the risk of MS.

**Keywords:** Multiple sclerosis; Healthy eating index, Case control

OC-010

Oral

**Designing a valid and reliable questionnaire to identify factors affecting nutritional behavior among patients with metabolic syndrome**

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**Background:** Management and treatment of metabolic syndrome reduce risk of cardiovascular diseases. Many studies show a clear relationship between diet and component of metabolic syndrome. The aim of this study was design a valid and reliable instrument that could identify factor affecting nutritional behavior among patient with metabolic syndrome based on reasoned action theory.

**Methods:** In this study through literature review, six focus group discussion and interview with nutrition specialist, we developed an instrument based on reasoned action theory. To determine validity of instrument we use content and face validity method with 15 person expert panel and to determine reliability (Cronbach's Alpha) coefficient used.

**Results:** A draft of 100 items questionnaire was developed and after evaluation validity and reliability, final questionnaire was 46 items: 17 items in attitude, 13 items in subjective norms and 16 items in intention. Average of content validity index (CVI) in final questionnaire was 0/92 and (Cronbach's Alpha) coefficient of final questionnaire was 0/85.

**Conclusion:** Based on the results of this study the developed questionnaire is valid and reliable instrument and it could be used to identify factor affecting nutritional behavior among metabolic syndrome patients based on reasoned action theory

**Keywords:** Questionnaire, content and face validity, Metabolic Syndrome, reasoned action theory

OC-011

Oral

**Exposure on nutrition and health information to mothers and coverage of growth monitoring program contributes to nutritional status of underfive children in rural area of Indonesia**

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**Background:** Malnutrition is a health problem in Indonesia, especially among infants and underfive children as the most vulnerable group. Underlying factors such as knowledge of mothers on nutrition and health, availability of health services and growth monitoring program are essential components that may influence nutritional status of children. Objective of this study was to observe the influence of exposure on nutrition and health information and growth monitoring program in rural area to nutritional status of underfive children.

**Methods:** A cross sectional study was conducted in four villages from two sub-districts in Central Java with different geographical setting. Two villages (Karangrejo and Kalianyar) are located in the farming area while the other two villages (Buko and Kenduren) in the coastal area. Interview by using structured questionnaire was conducted to 256 mothers of randomly selected underfive children to assess demographic data and exposure to nutrition information. Coverage of growth monitoring program was assessed by observation on possession of growth monitoring card. Nutritional status was assessed by measuring weight and height.

**Results:** Prevalence of underweight, stunting and wasting was 50.5%, 18.0% and 28.4% respectively. The highest prevalence of underweight and stunting was in Kenduren village, while wasting was in Buko village, both villages are located in the coastal area. Mean weight-for-age Z score ( $p=0.039$ ) and weight-for-height Z score ( $p=0.047$ ) were significantly lower in Kenduren compared to the other three villages. Types of information exposed to mothers were significantly different between villages ( $p < 0.05$ ) for information on breastfeeding, healthy food for children, children's health, immunization and vitamin A supplementation. Kenduren village had the lowest proportion of mothers exposed to nutrition and health information. Possession of growth monitoring card in Kenduren village was significantly lower compared to the other three villages ( $p < 0.001$ ). Prevalence of underweight

( $p=0.001$ ) or stunting ( $p=0.021$ ) was higher among children who did not possess growth monitoring card. Prevalence of stunting was higher among children who did not routinely go to Posyandu within the previous 3 months ( $p=0.018$ ).

**Conclusion:** Proportion of mothers exposed to nutrition information and low coverage of growth monitoring program in rural area, contributes to the prevalence of underweight and stunting among underfive children.

**Keywords:** nutritional status, nutrition information exposure, growth monitoring, underfive children, Indonesia

OC-012

Oral

**Nutritional intervention on malnutrition in 3-6 years old rural children in Qazvin Province, Iran**

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**Abstract:** Malnutrition is one of the major causes of mortality and morbidity in children. Not only include acute effects on children's health, but also it has long-term effects on their cognitive development and economic growth in the society. Wasting (weight for height with  $Z < -1$ ) is one of the malnutrition indices in children. The aim of this study was to determine the effect of a cooked meal for 175 days on the anthropometric indices of weight, height and weight for height (wasting) of 3-6 years old children in all the rural nursery of Qazvin province, in Iran. In this interventional study, 2385 children (48.8% female and 51.2% male) were recruited. Data were collected by a census in 2010. The children were received a cooked meal based on 360 +/- 20 kcal energy, 17% protein, 53% carbohydrate and 30% fat per day for 175 days at lunch time. The anthropometric indices were collected before and after the intervention. The results were analyzed using paired t-test by SPSS V.16 software. Prevalence of wasting (mild and moderate) and (severe malnutrition) after intervention reduced from 14.2 and 0.95-12.6 and 0.5%, respectively ( $p < 0.05$ ). Receiving a cooked meal significantly decreased wasting (15.2-13.2%) in all children ( $p < 0.05$ ). Nutritional intervention with cooked meal for 175 days had significant reduction in wasting in all children.

**Keywords:** Nutritional Intervention, wasting, cooked meal, rural nursery, malnutrition

OC-013

Oral

**Assessing the Relationship between Food Insecurity & Weight Status of the Elderly applying FaCPS-FSSM Measurement Tool, Adopted for Iranian Elderly**

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**Background:** Food security as a social determinant of health is defined as "access by all people at all times to adequate food for an active and healthy life. In older adult years prevalence of Food Insecurity (FI) will further increase and underlying causes of FI will become broader. This situation by affecting total food consumption, food habits and choices, would impact weight status in the elderly. As there is no clear data reflecting the relationship between FI and weight status of the elderly, this study aims to investigate the mentioned relationship.

**Methods:** For the purpose of this study, 504 were selected through systematic cluster sampling method from 11 districts of Tehran (Districts 1, 3, 6, 7, 10, 12, 13, 16, 18, 20 and 21). FaCPS-FSSM FI measurement tool, which was previously

adjusted and validated for Iranian elders, has been used for examining the FI status. The content validity, internal consistency, criterion validity, construct validity, repeatability and reliability of FaCPS-FSSM FI measurement tool were examined during this study and for height, weight and BMI measurement we use National Institutes of Health (NIH) method.

**Results:** The results obtained through FaCPS-FSSM showed a high degree of food insecurity (59.3%) among the elderly; 29.4%, 19% and 10.9% of elders respectively suffer from mild, moderate and severe food insecurity. This study also showed that there is a high prevalence of overweight and obesity among the elderly and 79.4% of total participants were suffering from overweight and type1 and 2 obesity. The Results from multivariate analysis indicate that lack of food security especially in moderate FI is associated with a higher body weight status with the relationship strongest in females ( $p < 0.0001$ ). Our results from logistic regression models suggested that in spite of severe FI, mild FI status is associated with increased risks of overweight and obesity among the elderly.

**Conclusion:** According to our findings, FI status could be a voluble predictor of weight status among the elderly. Considering that obesity in older ages could increase likelihood of chronic diseases like hypertension, coronary heart diseases and diabetes, special preventive health care services and FI eliminating national-wide programs should be taken into consideration to make appropriate quality of life and to enhance health conditions during older ages.

**Keywords:** Food Insecurity, Elderly, Weight Status, FaCPS-FSSM

OC-014

Oral

**Empirically-derived dietary patterns in relation to dyslipidemia among Iranian adults**

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**Background:** Inconsistent data have reported the relationship between dietary patterns and dyslipidemia in western countries, this investigation was conducted to determine the association between dietary patterns identified by factor analysis and dyslipidemia in a large sample of Iranian adults.

**Methods:** This cross-sectional study was conducted on 1433 Iranian adults in the framework of Isfahan Healthy Heart Program (IHHP), a comprehensive community-based trial for CVD prevention, among a representative sample of Iranian adults. Usual dietary intakes were assessed with the use of a forty-eight-items food frequency questionnaire (FFQ). Fasting blood samples were taken for biochemical assessment. Factor analysis was used to identify dietary patterns.

**Result:** Three major dietary patterns were identified: western, semi healthy and healthy fat patterns. After adjustment for potential confounders, subjects in the upper quartiles of western dietary pattern were more likely to have high total cholesterol concentrations than those in the first quartile (OR: 2.07; 95% CI: 1.25-3.42). Individuals with greater adherence to western dietary pattern had greater odds of having high LDL-c levels compared with those in the lowest quartiles (2.53; 1.45-4.40). Semi healthy dietary pattern was not associated with CVD risk factors. The same finding was also resulted for the healthy fat dietary pattern.

**Conclusion:** Significant association was found between western dietary pattern and dyslipidemia among Iranian adults. Further prospective investigations are warranted to



confirm this association

**Keywords:** dietary: pattern, dyslipidemia, adults, cross-sectional study, Iran

OC-015

Oral

**Dietary diversity score and obesity: a systematic review and meta-analysis on observational studies**

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**Background:** Studies about the association between dietary diversity score (DDS) and obesity, have led to controversial results. Therefore, the purpose of this review was to summarize and if possible elucidate the source of heterogeneous results found by different studies.

**Methods:** PubMed, ISI web of science, Scopus and Google scholar were searched to December 2013 to identify all relevant published papers. Through screening steps, 20 articles met inclusion criteria for the systematic review whereas 10 papers were entered to the meta-analysis which of them eight studies were included in overweight/obesity odds ratio (OR) and eight in comparing mean BMI among subjects with highest versus lowest DDS.

**Results:** Meta-analysis on eligible studies failed to clarify a significant association either on overweight/obesity OR (OR 0.72; 95%CI: 0.45-1.16; P = 0.174) or mean differences (MD) of BMI (MD: 0.22; 95%CI: -0.70-1.14; P = 0.643) comparing highest to lowest diverse diet. Albeit, the between-study heterogeneity was high and in spite of subgroup analysis, we could not find the source of heterogeneity.

**Conclusion:** The study showed that there may not be a significant association between DDS and BMI status and this might be because of various methods used to assess the DDS and analysis of its association with BMI status by different studies. Well-designed prospective studies with the same approach to assess DDS are required to investigate the DDS-BMI association and the causal link as well.

**Keywords:** diet diversity, body mass index, obesity, meta-analysis.

OC-016

Oral

**Assessment of obesity and metabolic syndrome risk factors in male former power-sports athletes in comparison with control groups**

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**Background:** Obesity is an excessive accumulation of fat in the body and is associated with several problems, including cardiovascular diseases, diabetes, high blood pressure and other metabolic issues. Metabolic syndrome is a group of metabolic risk factors that directly results in development of cardiovascular disease, and type 2 diabetes mellitus increases the risk of developing it. Many of athletes start to have a sedentary lifestyle after their retirement from professional sports and thus obesity could be a potential health threat for them. Objective: To assess obesity, overweight, metabolic syndrome risk factors and its prevalence among former power-sports athletes (i.e. ex-athletes) and compare them to age-matched active athletes and non-athletes.

**Methods:** Anthropometrics, blood pressure, and biochemical factors were measured among the active athletes (n=30; 31.62 ± 6.51 years), ex-athletes (n=34; 34.07 ± 3.93

years), and non-athletes (n=30; 33.53 ± 3.16) groups from Mashhad, Iran. Anthropometrics measurements included weight, height, waist circumference (WC), body mass index (BMI), and body fat percentage. A 10 ml fasting blood sample was taken from each participant and was analyzed to determine concentrations of low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), total cholesterol, triglycerides (TG), fasting blood sugar (FBS), insulin, and high-sensitive C-reactive protein (hs-CRP). Also HOMA-IR and HOMA-%β-cell were calculated.

**Results:** Statistical analysis revealed that some variables differed significantly among three groups. Ex-athletes had significantly higher mean values in weight, BMI, DBP, LDL-C, Insulin, HOMA-IR, and HOMA-%β-cell than the active athletes and non-athletes. In the case of HDL-C, ex-athletes had significantly lower mean value compared to non-athletes. The prevalence of metabolic syndrome by considering NCEP-defined criteria among three groups showed no significant difference although it was higher among ex-athletes.

**Conclusion:** The results of the present study showed that abandoning regular athletic exercise and weight-cycling in power sports leads to increased BMI, body fat percentage, DBP, serum LDL-C, and TG as well as an increase in serum insulin concentration and insulin resistance, however no correlation was detected between leaving regular athletic exercising in power sports and development of metabolic syndrome

**Keyword:** Obesity, Metabolic syndrome, Risk factors, Insulin resistance, Former athlete

OC-017

Oral

**Magnesium supplementation improves indices of mental health in insomniac elderly subjects: a double blind randomized clinical trial**

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**Background:** Recent studies suggesting a two-way relationship between some mental disorders and insomnia. Also there is evidence implying magnesium role in improvement of aforementioned disorders. The objective of this study was to determine the effects of dietary magnesium supplementation on mental health in insomniac elderly subjects. Materials and

**Methods:** A double-blind randomized clinical trial was conducted on 46 insomniac elderly subjects randomly allocated into the magnesium or the placebo group, receiving, daily for 8 weeks, either 500 mg magnesium or a placebo, respectively. GHQ-28 and insomnia severity index questionnaires were conducted at baseline and at the end of the intervention period. Serum magnesium and cortisol levels were also determined in the patients. In addition, information was obtained on anthropometric confounding factors and daily intakes of magnesium, calcium, potassium and caffeine using the 24-hr dietary recall questionnaire for 3 days. The N4 and SPSS19 were used for data analysis.

**Results:** No significant differences were observed in the assessed variables between the two groups at baseline. As compared to the placebo group, in the experimental group, dietary magnesium supplementation brought about statistically significant decreases in general health score, insomnia severity index, somatic, anxiety/insomnia and depression symptoms as in serum cortisol concentration. While the social function score and serum magnesium concentration were not different between the experimental and the placebo groups.

**Conclusion:** In this study dietary magnesium supplementation resulted in improvements in insomnia severity index and total mental health. However, it had no beneficial effect on the social function score.

**Keywords:** Magnesium Supplementation, Mental health, Insomnia, Elderly

OC-018

Oral

**Effects of a single dose of vitamin D on Quantitative Insulin Sensitivity Check Index**

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**Background:** Evidence suggests that reduced vitamin D availability is associated with impairment in glucose tolerance and increased risks of incident Type 2 diabetes. With regard to the role of vitamin D in insulin resistance, we examined that administration of a mega doses vitamin D post-partum supplementation to women with gestational diabetes could improve Quantitative Insulin Sensitivity Check Index (QUICKI) as a simple accurate Method for assessing insulin sensitivity in humans.

**Methods:** Forty-five participants in a randomized controlled trial on gestational diabetes mellitus were divided into an intervention group (IG) and a control group (CG). Only subjects in the IG received one intramuscular injection of 300 000 IU of vitamin D3. The immunoassay method was used for serum 25-hydroxyvitamin D; Fasting serum insulin concentrations were also assessed using ELISA kits with a sensitivity of 2 µIU/ml. Glucose concentration of serum was also assessed using an enzymatic (glucose oxidase-peroxidase) in vitro test. QUICKI calculated using the logarithmic transformation:  $1 / [\log \text{fasting insulin (U/ml)} + \log \text{fasting glucose (mg/dl)}]$ .

**Results:** Nearly 80% of the participant had a degree of vitamin D deficiency at baseline. After three month post-intervention, the deficiency was remained in 4.2 and 71.4% in the IG and CG, respectively. Only the mean concentration of the calcium in IG increased significantly after the supplementation. Mean fasting blood glucose did not differ between the study groups, either at baseline or after the intervention nor did it increase with supplementation in participants in the IG, although in the participants in the CG it increased significantly ( $P < 0.05$ ). The mean QUICKI did not show a significant difference between the study groups at baseline but at the end of the study the index was lower in CG compare with IG, The ranges of this index at the end of the supplementation in the IG and the CG were  $0.38 \pm 0.02$  and  $0.36 \pm 0.02$ , respectively ( $p$ -value for difference between two groups: 0.006). However the mean of this index increase after supplementation in the IG ( $p < 0.09$ ), but this index decreased significantly in the CG ( $P < 0.008$ ).

**Conclusion:** A single post-partum injection of 300 000 IU of vitamin D in women with gestational diabetes is safe and effective procedure for improving vitamin D status, glucose tolerance and QUICKI in mothers with gestational diabetes after delivery.

**Keywords:** vitamin D, Insulin resistance, QUICKI, GDM

OC-019

Oral

**Substitution of red meat with legumes in the therapeutic life style change diet based on dietary advice improves cardiometabolic risk factors in overweight type 2 diabetes patients: A crossover randomized clinical trial**

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**Background:** Diet as one of the most important lifestyle factors play an important role in the control and treatment of diabetes and related outcomes. Among dietary factors, legumes as a functional food are rich source of nutrients such as vitamins, minerals, fiber, polyphenols and other antioxidants. The aim of this study was to determine the effects of substitution of red meat with legume intake within a the therapeutic life style change (TLC) diet on cardiometabolic risk factors in type 2 diabetes patients.

**Methods:** This study was a randomized, controlled, crossover trial. Thirty one participants (24 women and 7 men; age:  $58.1 \pm 6.0$  years; BMI:  $27.7 \pm 0.6$ ) with type 2 diabetes were randomly assigned to consume a control diet (legume-free TLC diet) and legume-based TLC diet for 8 week. Legume-based TLC diet was the same as the control diet, but 2 servings of red meat was advice to replace with different types of cooked legumes such as lentils, chickpeas, peas and beans, 3 day per week. After the interventional period, a washout period was conducted for 4 weeks. Then groups followed the alternate treatment for 8 weeks. Cardiometabolic risk factors such as fasting blood glucose (FBG), insulin, blood pressure, body mass index, waist circumference, and lipid profiles were measured. Repeated-measures ANOVA were used to compare means of cardiometabolic factors at the end of the intervention diets, with baseline values, age, and physical activity as covariate

**Results:** Compared with legume-free TLC diet, Legume-based TLC diet significantly decreased FBG ( $-19.5 \pm 5.5$  vs.  $-28.7 \pm 6.7$ ,  $P = 0.04$ ), fasting insulin ( $-1.5 \pm 0.5$  vs.  $-3.5 \pm 0.4$ ,  $P = 0.04$ ), triglyceride concentrations ( $-19.5 \pm 6.4$  vs.  $-38.5 \pm 6.6$ ,  $P = 0.04$ ), and LDL cholesterol ( $-8.7 \pm 2.7$  vs.  $-15.6 \pm 5.1$ ,  $P = 0.02$ ). Total cholesterol concentrations decreased after consumption of both TLC diet and legume TLC diet ( $-17.7 \pm 4.9$  vs.  $-18.3 \pm 5.4$ ); however, the data did not differ significantly between the two diets. HDL cholesterol, BMI, waist circumference, systolic and diastolic blood pressure did not change significantly after consumption of either the legume-free TLC diet or the legume-based TLC diet.

**Conclusions:** Dietary advice to substitution of red meat with legume intake within a TLC diet improved lipid profiles and glycemic control among diabetes patients, which were independent from BMI change. This trial was registered in the Iranian Registry of Clinical Trials (<http://www.irct.ir>) as IRCT201202251640N7. **Keywords:** legumes, therapeutic life style change, diabetes patients, cardiometabolic risk factors.

OC-020

Oral

**Effects of Whey Protein Concentrate Consumption Compared with Isolated Soy Protein on Metabolic Indices, Inflammatory and Oxidative Stress Factors in Healthy Overweight and Obese Men**

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**Background:** Regarding the beneficial effects of dietary proteins especially whey and soy protein in improving certain diseases, we compared the effects of chronic consumption of WPC and ISP on metabolic, inflammatory and oxidative stress factors in healthy overweight and obese men.

**Methods:** In this parallel double-blind randomized clinical trial, 45 healthy overweight and obese men consumed either 65 grams of WPC or 60 grams of ISP, solved in 500 cc cold





water 30 minutes before lunch. Before and after the study, systolic blood pressure (SBP), diastolic blood pressure (DBP) and fasting blood samples were analyzed.

**Results:** In WPC group: the decreases of SBP were ( $p=0.001$ ) and that of DBP were ( $p<0.001$ ) and their differences between the groups were respectively ( $p<0.02$ ) and ( $p=0.001$ ), the decrease of fasting blood glucose was ( $p<0.001$ ) and the differences between the groups were ( $p=0.44$ ), the increase of apo A-I and decrease of apo B and MDA and their differences between the groups were ( $p<0.001$ ), decrease of total cholesterol was ( $p=0.001$ ) and the differences between the groups were ( $p=0.22$ ), decreases of VLDL and TG ( $p<0.001$ ) and the differences between the groups were ( $p=0.19$ ), decrease of LDL was ( $p<0.001$ ) and the differences between the groups were ( $p=0.015$ ), increase in HDL was ( $p=0.001$ ) and the differences between the groups were ( $p=0.017$ ), the decrease of hs-CRP was ( $p=0.001$ ) and the differences between the groups were ( $p=0.002$ ). In SPI group only DBP decreased ( $p=0.001$ ) and changes in other variables in this group were nonsignificant.

**Conclusion:** Consumption of 65 grams of WPC and 60 grams of ISP before meal during 12 weeks can decrease CHD risk factors in healthy over weight and obese men.

**Keywords:** Whey Protein Concentrate, Isolated Soy Protein, metabolic indices, inflammation, oxidative stress.

#### OC-021

#### Oral

##### **A comparison of serum vitamin D concentration between women with normal and preeclamptic pregnancy**

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**Background:** Preeclampsia is a condition with high blood pressure and proteinuria during pregnancy. The cause of preeclampsia is multifactorial, and vitamin D deficiency is considered to be associated with increased risk of preeclampsia. This study aimed to investigate serum vitamin D concentration of women with normal and preeclamptic pregnancy.

**Methods:** This comparative cross sectional study was conducted in Tarakan hospital, Jakarta, Indonesia. Using consecutive sampling method, this study involved 33 women with normal pregnancy and 33 women with preeclampsia. Age of women, parity, gestational age, MUAC and serum vitamin D concentration were assessed. Estimate intake of vitamin D was assessed using semi-quantitative FFQ.

**Results:** Mean age, parity and gestational age were not different between the two groups. The prevalence of preeclampsia was higher among multiparous (64%) as compared to primiparous (36%). None of the pregnant women consumed vitamin D supplements. No differences of MUAC, vitamin D intakes and serum vitamin D concentration were observed between the two groups. The proportion of preeclamptic women with vitamin D deficiency (serum vitamin D concentration  $<10\text{ng/mL}$ ) was 50%, while it was 33% among women with normal pregnancy.

**Conclusion:** Serum vitamin D concentration was not different between women with normal and preeclamptic pregnancy

#### OC-022

#### Oral

##### **Intake of Zinc and Risk of Esophageal Squamous Cell Carcinoma; A Prospective Observational Study**

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**Background:** In animal models, a zinc deficient diet creates a precancerous condition in the upper digestive tract, including esophagus via different mechanisms, but there is little information from studies on the effect of zinc deficiency on esophageal cancer in human. The objective of this study was to investigate the association between intakes of zinc with esophageal squamous cell carcinoma in Golestan Cohort Study.

**Methods:** Golestan Cohort Study was launched in Golestan province, a high risk region for esophageal cancer in Iran. About 50000 participants were enrolled between January 2004 and June 2008 and were followed to January 2014. Intake of zinc was assessed with a validated food frequency questionnaire at baseline. A Cox proportional hazard model was used to estimate Hazard risks and 95% confidence intervals.

**Results:** During about ten years of follow-up, we identified 207 esophageal squamous cell carcinoma cases according to pathology report. Negative association was found for zinc intake and risk of esophageal cancer (HR = 0.87, 95% CI = 0.77 to 0.98); however, the relationship was not linear (P for trend = 0.09, P for quadratic form = 0.006). Including factors that affect zinc bioavailability such as fiber, calcium, iron, copper and histidine in the model did not affect HR.

**Conclusion:** The results suggest that higher intake of zinc is associated with a lower risk of esophageal squamous cell carcinoma.

**Keywords:** Esophageal cancer, Minerals, Zinc, Cohort

#### OC-023

#### Oral

##### **The effect of Vitamin D Supplementation on blood pressure in patients with hypertension and Vitamin D deficiency: a randomized, double blind placebo-controlled trial**

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**Background:** Existing evidence suggests an inverse relationship between vitamin D status and hypertension. The purpose of this study was to determine the effect of vitamin D supplementation on blood pressure in patients with hypertension and vitamin D deficiency.

**Methods:** Forty two outpatients with hypertension and vitamin D deficiency aged 25-50 years living in Yazd, Iran, participated in this randomized, double-blind, placebo-controlled, parallel-group trial, and were randomly assigned to two groups (treatment and control), receiving either 50000 IU/week of cholecalciferol or matching placebo (edible liquid paraffin) for 8 weeks. Outcome measures included systolic blood pressure, diastolic blood pressure, mean arterial pressure, and pulse pressure, which were measured in all subjects, both at baseline and end of the study.

**Results:** Thirty nine patients completed the 8-week intervention. At end of the study, subjects in the treatment group had significantly higher mean serum 25-Hydroxyvitamin D concentration and lower means of systolic blood pressure, diastolic blood pressure, and mean arterial pressure compared to the patients in the control group ( $P < 0.01$  for all four variables). In addition, mean pulse pressure of subjects in the treatment group was significantly lower at end of the study compared to the baseline ( $P < 0.01$ ).

**Conclusions:** These findings suggest greater efficacy of vitamin D compared to placebo as an adjuvant to anti-hyper-

tensive medications in the treatment of vitamin D deficiency and hypertension. **Keywords:** Cholecalciferol, Vitamin D deficiency, Hypertension, Randomized controlled trial

**OC-024**

Oral

**Magnesium supplementation affects metabolic status and pregnancy outcomes in gestational diabetes: a randomized, double-blind, placebo-controlled trial**

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**Background:** We are aware of no study that examined the effects of magnesium supplementation on insulin action, lipid profiles, inflammatory factors, oxidative stress and pregnancy outcomes in gestational diabetes (GDM). Objective: This study was designed to assess the effects of magnesium supplementation on metabolic status and pregnancy outcomes of pregnant women with GDM.

**Methods:** This randomized double-blind placebo-controlled clinical trial was performed among 70 women with GDM. Patients were randomly assigned to receive either 250 mg magnesium supplements as magnesium oxide (n=35) or placebo (n=35) for 6 weeks. Fasting blood samples were taken at study baseline and after 6 weeks of intervention to quantify related variables.

**Results:** Subjects who received magnesium supplements had significantly increased serum magnesium concentrations ( $+0.06 \pm 0.28$  vs.  $-0.12 \pm 0.32$  mg/dL,  $P=0.02$ ) compared with placebo. In addition, magnesium-supplemented subjects had reduced FPG ( $-9.28 \pm 11.58$  vs.  $+1.29 \pm 8.48$  mg/dL,  $P<0.001$ ), serum insulin levels ( $-1.60 \pm 7.02$  vs.  $+6.04 \pm 11.32$   $\mu$ U/mL,  $P=0.001$ ), HOMA-IR ( $-0.61 \pm 1.62$  vs.  $+1.43 \pm 2.58$ ,  $P<0.001$ ), HOMA-B ( $-2.29 \pm 29.43$  vs.  $+23.03 \pm 45.64$ ,  $P=0.007$ ) and increased QUICKI score ( $+0.005 \pm 0.02$  vs.  $-0.01 \pm 0.01$ ,  $P=0.007$ ) compared with placebo. Taking magnesium supplements, compared with placebo, resulted in a significant difference in serum triglycerides ( $+1.17 \pm 64.03$  vs.  $+37.17 \pm 39.19$  mg/dL,  $P=0.006$ ) and VLDL-cholesterol levels ( $+0.23 \pm 12.80$  vs.  $+7.43 \pm 7.83$  mg/dL,  $P=0.006$ ) between the two groups. Finally, serum hs-CRP ( $-432.90 \pm 2535.64$  vs.  $+795.53 \pm 2483.23$  ng/mL,  $P=0.04$ ) and plasma MDA levels ( $-0.43 \pm 1.41$  vs.  $+0.44 \pm 1.41$   $\mu$ mol/L,  $P=0.01$ ) were significantly decreased in magnesium group compared with placebo. A trend toward a significant effect of magnesium supplementation on increasing plasma NO levels ( $+15.82 \pm 38.54$  vs.  $-1.39 \pm 41.82$   $\mu$ mol/L,  $P=0.07$ ) was seen. There were no significant differences between the magnesium and placebo groups in terms of changes in other lipid profiles, plasma TAC and GSH concentrations.

**OC-025**

Oral

**Calcium plus vitamin D supplementation affects pregnancy outcomes in gestational diabetes: randomized, double-blind, placebo-controlled trial**

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**Abstract:** Gestational diabetes mellitus (GDM) is associated with adverse health complications for both mother and infant both perinatally and long-term. This study was designed to assess the effect of calcium plus vitamin D supplementa-

tion on pregnancy outcomes of pregnant women with GDM. This randomized, double-blind, placebo-controlled trial was done on 56 women with GDM. Subjects were divided into two groups to receive calcium plus vitamin D supplements or placebo randomly. Individuals in the calcium-vitamin D group (n=30) received 1000 mg calcium daily and 50000 IU vitamin D3 pearl twice during the study (at study baseline and day 21 of intervention) and those in the placebo group (n=30) received two placebos at the mentioned times. Fasting blood samples were taken at baseline to measure fasting plasma glucose, serum calcium and vitamin D levels. Calcium plus vitamin D treated patients had a significant decrease in cesarean section rate (23.3 vs. 63.3%,  $P=0.002$ ) and maternal hospitalization (0 vs. 13.3%,  $P=0.03$ ) compared with the placebo. In addition, newborns' of GDM women randomized to calcium plus vitamin D had no case of macrosomia, while the prevalence of macrosomia among those randomized to placebo was 13.3% ( $P=0.03$ ). Lower rate of hyperbilirubinemia (20.0 vs. 56.7%,  $P=0.03$ ) and hospitalization (20.0 vs. 56.7%,  $P=0.03$ ) was also seen in supplemented group than that in placebo.

**Keywords:** Calcium, vitamin D, supplementation, pregnancy outcomes, GDM

**OC-026**

Oral

**Effects of coenzyme Q10 supplementation on health status in patients with rheumatoid arthritis**

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**Background:** Cartilage damage, bone resorption and extra-articular manifestations of disease, causing pain and disability in patients with rheumatoid arthritis. Despite the use of antirheumatic drugs, a third of patients in the first year and almost 50% of them ten years after the onset of disease will be disabled. The physical, emotional and social effects of disease adversely affect the quality of life in rheumatoid arthritis patients. Coenzyme Q10 as a mediator in the mitochondrial respiratory chain, plays an important role in health. The aim of this study was to evaluate the effect of coenzyme Q10 on health status in patients with rheumatoid arthritis.

**Methods:** This RCT performed on 50 rheumatoid arthritis patients attending the rheumatology clinic of Urmia University of Medical Sciences. Patients received 100 mg coenzyme Q10 (n=24) and placebo (n=26) every day for two months. Health status of patients were examined using the Health Assessment Questionnaire (HAQ) consisting of 20 questions. Data were analyzed using SPSS.

**Results:** The mean age of the patients (43 females and 7 males) was  $50.2 \pm 11.6$  years. Health status and pain level at base line did not differ between the two groups but the difference was significant after intervention ( $p=0.000$ ). In coenzyme Q10 group, health status score was significantly improved and dropped from  $1.07 \pm 0.7$  to  $0.20 \pm 0.3$  ( $p=0.000$ ).

**Conclusions:** It can be concluded that coenzyme Q10 supplements can improve health status in patients with rheumatoid arthritis.

**Keywords:** coenzyme Q10, rheumatoid arthritis, health assessment, HAQ.

**OC-027**

Oral

**The role of omega-3 fatty acids in the corneal light refractive correction**

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**Background:** Light refraction is the change in direction of a wave due to a change in its transmission medium, and it's essentially a surface phenomenon. Beam of light passes from corneal layers, aqueous humor, and lens capsule until it reaches to vitreous humor and retina photoreceptors layers. In this pass way, there are four refractive surfaces that power diopter of anterior cornea is upper than all. Disorders in the corneal refractive is a multifactorial condition that affects the surface of the eye and induces vision responses disorders. The corneal epithelium is the most outer layer, consisting of seven layers of stratified non keratinized epithelia. The basal cells have a prominent nucleus, are mitotically active, and adhere to the basement membrane through an adhesion complex that anchors the epithelium to the Bowman's layer. The outer layer of the epithelium is in intimate contact with the tear film that keeps the surface moist and creates corneal light refractive.

**Results:** Transparent elements of cornea cover on anterior surface of eyeball and admit light rays, refract them, and focus images on the retina screen. Partial dehydration of the cornea is essential for corneal transparency. The lens and cornea combine to form a single optical element in which transparency and light refraction are the fundamental biophysical characteristics required for a visual system. Corneal layers play an important role in the maintenance of a healthy ocular surface and especially optic refraction. Omega-3 fatty acids is located in the outer surface of the cornea and they play roles in light refractive correction.

**Discussion:** Essential fatty acids particularly omega-3 are effective in healing of corneal layers, it not only via iris vessel plasma diffuse into corneal layers but also there in the lacrimal gland and with tears coming out. The human body has a limited stock of omega-3 fatty acids and does not synthesize it de novo. Omega-3s are found mainly in fish and green leafy vegetables, legumes, and flax. Omega-3 fatty acids are a family of polyunsaturated essential and they play roles in providing cellular structural support and many physiological functions as corneal light refraction. These fatty acids through tear diffuse into outer layers of the cornea and bind to transparent elements of cornea.

**Keywords:** Omega-3 fatty acids- Cornea layers- Light refractive

OC-028

Oral

**Effect of L-arginine supplementation on blood pressure in patients with type 2 diabetes: a randomized clinical trial**

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**Background:** Diabetes has been known as an important risk factor in creating cardiovascular diseases and prevalence of hypertension in patients with type 2 diabetes is approximately 2-fold other members of society. This study was designed to investigate the effect of L-Arginine supplementation on blood pressure in patients with type 2 diabetes.

**Methods:** In a double-blind randomized clinical trial, 75 patients with type 2 diabetes were randomly divided into three groups. First group received 3g/d, Second group 6g/d of L-arginine and third group 3g/d placebo for 3 months. Height, weight, waist circumference, dietary intake and blood pres-

sure were measured before and after intervention.

**Results:** In the intervention group 1 (receiving 3 g/d L-arginine), no significant difference was observed between blood pressure before and after the intervention ( $p > 0.05$ ), but when the study was limited to patients with high blood pressure, the effect of L-arginine on reducing systolic blood pressure ( $p = 0.036$ ) and diastolic blood pressure ( $p = 0.027$ ) was significant. There was significant difference at the end of the study compared with the beginning of study in intervention group 2 (receiving 6 g/d of L-arginine) on systolic blood pressure ( $p = 0.025$ ) and diastolic one ( $p = 0.031$ ).

**Conclusion:** The daily intake of 6 g of L-arginine for 3 months in patients with type 2 diabetes may improve blood pressure. Taking 3 g of this supplement adjusts blood pressure only in patients with hypertension.

**Keywords:** L-arginine, diabetes, blood pressure, clinical trial.

OC-029

Oral

**The Effect of L-Carnitine Supplementation On Serum Level of miRNA-217 In Non-alcoholic Steatohepatitis Patients**

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**Background:** More than 75% of obese people suffer from nonalcoholic steatohepatitis. It may be complicated by liver fibrosis, cirrhosis or hepatocellular carcinoma. MicroRNA-217 inhibits SIRT1 (Silent information regulator1) expression by binding to the 3'-untranslated region (UTR) of miRNA-217. This inhibition plays a major role in the pathogenesis of non-alcoholic fatty liver disease and non-alcoholic steatohepatitis. The aim of this study is determine a specific diagnosis test (as a biomarker) for NASH patients and the effect of L-carnitine supplementation on miRNA-217 expression for treatment and management of NASH disease.

**Method:** Study subject was divided in the 3 groups of 46 ones: NASH intervention group (whom receiving L-carnitine supplementation), NASH control (whom receiving the placebo) and healthy controls. Intervention group received 2000mg L-Carnitine daily as 8 tablets with meals and NASH control subjects received 8 placebo tablets daily, for 12 weeks with notice that Blood samples have obtained from subjects before and after the experiment. Then its serum was separated by centrifuge at 3000 rpm. Total RNA was extracted with mirVana PARIS kit (Ambion) and the microRNA expression levels were measured by quantitative Real Time-PCR method.

**Results:** Serum level of this microRNA increased in alcoholic fatty liver disease suggested that this microRNA is an oncomir.

**Keywords:** MiRNA-217, L-Carnitine Supplementation, Non-alcoholic Steatohepatitis.

OC-030

Oral

**Investigation of Anticancer Activity of Teucrium polium and its Effect on Glucocorticoid Receptors of Liver Cells in Animal Model of Hepatocellular Carcinoma**

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**Background:** The word of cancer has been connected to despair, agony, and dreadful death. Like many other diseases, herbal therapy has been used to inhibit or suppress

cancer. The present study investigated the capability of the decoction of Teucrium polium L. to protect liver cells against hepatocellular carcinoma (HCC) in carcinogenesis-induced animal model.

**Methods:** 40 male rats, 8±1 weeks old, with average weight 243.1±6.7g have been used. Hepatocarcinoma was induced in

30 of the rats by single intraperitoneal injection of 200mg/kg diethyl nitrosamine (DEN) and then followed by a cancer promotion period of 2 weeks on food, which was mixed with 2-acetylaminofluorene (0.02% AAF) as a promoter of hepatocarcinogenesis. After the cancer initiation period, the leftover rats were weighed again and divided randomly into two groups with no significant differences in their weight. The treatment group was force-fed 0.7 mL/100 g body weight/day of Teucrium polium decoction. At the end of the study, serum blood cancer markers, and histology of liver cells and their glucocorticoid receptors has been done using Fluorescent in situ hybridization (FISH) method.

**Results:** After 28 weeks treatment with decoction of Teucrium polium L., serum biochemical markers including ALT, AST, AFP, GGT, ALP, HCY, TNF- $\alpha$ ,  $\alpha$ 2MG, and CBG have been regulated auspiciously. Total antioxidant status also has been increased intensely. Liver lesion score as well as mortality rate in treated group was lessened significantly. The decoction also has intensified the number of glucocorticoid activity and its receptors in liver cell.

**Discussion and Conclusion:** In conclusion, Teucrium polium L. decoction positively improved cancer markers and by increasing glucocorticoid activity and its receptors in liver cell, could control HCC significantly. This decoction might be considered as a way to inhibit or suppress liver cancer development.

**Keywords:** Hepatocellular carcinoma, Teucrium polium, glucocorticoid, cell receptors

OC-031

Oral

**Factors associated with the weight gain in patients with tuberculosis during the first three month intensive phase of treatment in Benin in 2013 (West Africa)**

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**Background:** Patients with tuberculosis (TB) often suffer from severe weight loss, a symptom that is considered immuno-suppressive and a major determinant of disease treatment outcome. Malnutrition is an important determinant of the treatment issue, because cell-mediated immunity is the key host defense against TB. The association between body weight gain <5% during the intensive phase of treatment is associated with relapse of tuberculosis. This study aims to assess the weight gain during intensive phase of treatment and its associated factors in patient with TB.

**Methods:** This is retrospective study include 52 patients with TB treated under directly observed treatment short-course at the he national reference center for treatment of tuberculosis patients in Cotonou from May to July 2013. Questionnaires were used to collect data from interviews. Anthropometric measurements were made at the onset of the intensive treatment phase and three months later at the end of this first part of TB treatment. A food consump-

tion score that reflects the quality of food intake through dietary diversity and frequency of food consumption was calculated. Proportions or percentages were calculated for categorical variables. Arithmetic mean and standard deviation were performed for quantitative variables with Gaussian distribution. Means were compared using the Student t test or analysis of variance.

**Results:** The average weight gain was 2.4 ± 3.0 kg. The average BMI increase was 0.9 ± 1.1. Among the 52 patients, 50.0% showed weight gain less than 5% in comparison with their weight at the onset of the treatment. Among 34 patients with IMC <18.5 at the onset of the treatment, 26.9% experienced less than 5% weight gain and considered at risk of relapse. Young age (<30 years) is associated with a higher weight gain. Institutional food support was not associated with weight gain, but food consumption score was statistically associated with weight gain among TB patients during the intensive phase (p <0.001).

**Conclusion:** Weight gain in patients with TB during intensive treatment phase needs to be improved. Beyond food support, nutrition education is needed to optimize nutritional intake and the weight gain in TB patients during the intensive phase of treatment

**Keywords:** nutrition, weight gain, tuberculosis, treatment, Benin

OC-032

Oral

**Effect of saffron on serum leptin levels in patients with metabolic syndrome, a double-blind, randomized and placebo-controlled trial study**

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**Background:** Metabolic syndrome is a risk factor for cardiovascular disease and diabetes mellitus. A decreased level of serum leptin level is reported for obese populations. Beneficial effects of saffron on human health, including appetite-regulation, have been reported previously. The aim of this present study was to investigate the effect of saffron supplementation on serum leptin levels in patients with metabolic syndrome.

**Material and Methods:** Patients with metabolic syndrome were randomly divided into two groups; a case group receiving saffron and a control group, receiving placebo. Concentration of serum leptin was measured at baseline and after 12 weeks of the start of study. SPSS software was used to analyze the data.

**Results:** There was a borderline (P=0.05) significant difference in serum leptin before and after treatment with saffron, but not in the placebo group. There was a significant difference in serum leptin concentrations between the groups (P=0.001).

**Conclusion:** Saffron supplementation has no significant effect on serum leptin levels in patients with metabolic syndrome.

**Keywords:** Leptin, Saffron, Metabolic Syndrome

OC-033

Oral

**Serum leptin is decreased, while ghrelin is not, by dietary macronutrients in women with polycystic ovary syndrome: A case-control study**

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**Background:** Polycystic ovary syndrome (PCOS) is the most common endocrinopathy in women. It may involve an impairment of physiologic regulation of leptin and ghrelin. There is limited data with controversy on the relation of dietary components with leptin and ghrelin in PCOS, so the current study was conducted to explore effect of different macronutrients on serum levels of leptin and ghrelin in PCOS and healthy subjects.

**Materials and Methods:** Thirty PCOS patients and 30 healthy age and body mass index (BMI) matched controls were selected randomly. Intake of macronutrients (protein, total fat, saturated, monounsaturated and polyunsaturated fatty acids, carbohydrate, dietary fiber) and energy were assessed using 3-day, 24-hour food recall and food frequency questionnaire. Fasting hormonal status were measured.

**Results:** In PCOS women, serum leptin, insulin, testosterone, and LH were higher, while sex hormone-binding globulin was lower than healthy women. There wasn't significant difference in mean ghrelin concentrations between two groups. Among PCOS women independent of body mass index and total energy intake, inverse association was observed between leptin concentration and total dietary fat ( $\beta = -0.16$ ,  $P < 0.05$ ) and saturated fatty acid intake ( $\beta = -0.58$ ,  $P < 0.05$ ). This relationship was not seen in the healthy subjects. Neither in PCOS nor in healthy group significant association was observed between ghrelin and macronutrients.

**Conclusion:** In conclusion, our findings suggest that some habitual dietary components such as: fat and saturated fatty acids may decrease serum leptin, while ghrelin is not influenced by them in PCOS women. More studies are needed to better clarify the effects of dietary macronutrients on the serum leptin and ghrelin.

**Keywords:** Leptin; ghrelin; macronutrient; habitual diet; polycystic ovary syndrome.

OC-034

Oral

**Effect of crocin on Oxidative Stress in Subjects with Metabolic Syndrome: A randomized, placebo-controlled clinical trial**

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**Background:** Metabolic syndrome underlies the cardiovascular disease which is considered as a leading cause of death in most communities. This is while the oxidative stress is one of the risk factors associated with development of metabolic syndrome and subsequently cardiovascular diseases. On the other hand, it is likely that the crocin, a carotenoid from saffron, has remarkable properties including antioxidant effect. Objective: The aim of this study was to investigate the effect of crocin pills in the reduction of oxidative stress in subjects with metabolic syndrome.

**Materials and Methods:** This was a randomized placebo-controlled clinical trial (RCT) that carried out on 60 volunteers with metabolic syndrome diagnosed by the International Diabetes Federation (IDF) criteria. Participants were randomly divided into two groups of 30 people; intervention (13 men, 17 women) and control group (12 men, 18 women). Intervention group received crocin tablets for 8 weeks with a dose of 30 mg (15 mg twice a day) and the control group were given

placebo pills. All subjects received similar diet advices base on the basis of American Heart Association (AHA) guidelines. Drop was 3.3% and 58 subjects, 29 patients in each group, completed the trial. Before and after the intervention, blood samples were taken and Prooxidant-Antioxidant Balance (PAB) was used to evaluate the oxidative stress before and after the intervention.

**Results:** Average PAB in the intervention group reduced 11.7%, which was statistically significant ( $P = 0.006$ ), while the PAB reduction in the control group was 0.7%. Also the difference of mean changes of PAB between the intervention and control groups was significant ( $P = 0.014$ ).

**Conclusion:** This study demonstrate the usefulness of crocin in reducing serum PAB in patients with metabolic syndrome. Therefore, it is recommended to take the anti-oxidative properties of crocin into account and to conduct wider examinations in future in this field.

**Keywords:** crocin, oxidative stress, PAB, Metabolic Syndrome

OC-035

Oral

**The Effect of Urtica dioica extract on Glycemic Control and Insulin Resistance Indices in Patients with Type 2 Diabetes: A Randomized Doubled-blind Clinical Trial**

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**Background:** Diabetes is a common endocrine disorder caused by deficiency of insulin secretion or insulin resistant. Today, in addition to trying to find a safe way to control diabetes, find the low side effect way is important. This study was designed to find the effect of Urtica dioica (U. dioica) extract on glycemic control and insulin resistance in patients with type 2 diabetes.

**Methods:** A parallel randomized clinical trial was conducted with participating 60 patients with type 2 diabetes who met inclusion criteria were recruited. Patients were randomly assigned to receive 100mg/kg/day extract of U. dioica (UG) or the other group which received placebo (PG) over a 8 weeks period. Fasting blood sugar (FBS) concentration and insulin resistance indices (insulin concentration, insulin resistance (IR), insulin sensitivity (S%) and  $\beta$ -cell function ( $\beta\%$ )) were measured at baseline and end of the study. Data was analyzed using SPSS 16.0 and  $p < 0.05$  was considered significant.

**Results:** The mean difference of FBS in UG and PG were  $20.16 \pm 52.6$  mg/dl and  $-0.7 \pm 45.29$  mg/dl ( $p$ -value=0.14), respectively. The mean difference of insulin concentration in UG and PG were  $-2.5$  mU/L and  $-0.2$  mU/L ( $p$ -value=0.003), respectively. The mean difference of IR in UG and PG were 0.3% and -0.1% ( $p$ -value=0.01), respectively. The mean difference of  $\beta\%$  in UG and PG were  $-24.16 \pm 35.07\%$  and  $1.22 \pm 18.14\%$  ( $p$ -value=0.003), respectively and the mean difference of S% in UG and PG were  $-54.72 \pm 69.3\%$  and  $1.1 \pm 74.01\%$  ( $p$ -value=0.009), respectively that showed increase in insulin concentration,  $\beta\%$  and S% and decrease in IR in UG compared to PG.

**Conclusions:** In the present study we demonstrated that consumption of 100mg/kg/day extract of U. dioica for 8 weeks don't have significant effect on FBS and it has significant effect on insulin resistance indices.

**Keywords:** Diabetes mellitus, U. dioica.

OC-036

Oral

**The effect of sumac (Rhus coriaria L.) powder on insulin resistance, malondialdehyde, hs-CRP, and paraoxonase**

**1 activity in type 2 diabetic patients**

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**Background:** Sumac (*Rhus coriaria* L.) has been used in traditional treatment of some diseases. The aim of this study was to determine the effect of sumac (*Rhus coriaria* L.) powder on insulin resistance, malondialdehyde (MDA), high sensitive C-reactive protein (hs-CRP) and paraoxonase 1 (PON1) activity in type 2 diabetic patients.

**Methods:** A double blind randomized placebo controlled trial on 41 type 2 diabetic volunteers was conducted. Participants randomly assigned into 3g/day sumac powder (n = 22) or placebo (n = 19) groups for 3 months. Insulin resistance was assessed using the homeostatic model assessment of insulin resistance (HOMA-IR) which including measurement of insulin by immunoassay method and measurement of glucose by enzymatic method. MDA and PON1 activity were measured colorimetrically, hs-CRP turbidimetrically.

**Results:** There were a significant increase in PON1 activity (from  $84.72 \pm 30.59$  to  $92.91 \pm 32.63$ ) and significant decrease in insulin (from  $7.09 \pm 4.28$  to  $5.32 \pm 3.22$ ), HOMA-IR (from  $2.56 \pm 1.58$  to  $1.67 \pm 0.94$ ), MDA (from  $2.71 \pm 0.73$  to  $1.97 \pm 0.49$ ), and also hs-CRP (from  $18.49 \pm 16.96$  to  $15.89 \pm 16.70$ ) in the sumac group at the end of study compared with initial values ( $P < 0.05$ ). Also, there were significant differences in MDA and PON1 between the two groups at the end of study ( $P < 0.05$ ). Furthermore, the mean of differences of insulin, HOMA-IR, MDA, hs-CRP and PON1 activity between groups were significant ( $P < 0.05$ ).

**Conclusion:** We concluded that daily intake of 3 g sumac for 3 months may be beneficial for diabetic patients to make them less susceptible to cardiovascular disease (CVD).

**Keywords:** sumac (*Rhus coriaria* L.), insulin resistance, MDA, hs-CRP, PON1, type 2 diabetes

**OC-037**

Oral

**Antiobesity effects of antioxidants supplement, astaxanthin, vitamin E, C' in rat fed a high-fat diet**

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**Background:** obesity is independently associated with increased oxidative stress in men and women. Natural antioxidants showed substantial antioxidative and anti-inflammatory activities in vivo. In this study, we examined the preventive effect of antioxidants supplement and/or restricted diet on the development of obesity induced by feeding a high-fat (HF) diet.

**Methods:** Forty-eight male wistar rats were randomly assigned to HF purified diet (61% kcal from fat) ad libitum, HF restricted (30%), HF supplemented with astaxanthin, vitamin E and C (HFS), HFS restricted (30%) for 12 weeks. Daily food intake and weekly body weight gain measured.

**Results:** Dietary antioxidants suppressed body weight gain in the HF-diet ad libitum (-9.8%), and in HF restricted diet (-18.14%). Energy intake was not significant in HF with HFS (58.8 and 58.6 kcal/rat/d, respectively) and in HF restricted with HFS restricted (41.7 and 41.6 kcal/rat/d, respectively).

**Conclusion:** These results suggest that antioxidants supplement might be of value in reducing likelihood of obesity in rats of fed high-fat diets, especially if accompanying with restricted diets.

**Keywords:** Antioxidant, High-Fat Diet, Obesity

**OC-038**

Oral

**Association of the Apo BEcoRI polymorphism and saturated fatty acids intake and energy intake with body mass index in patients with type-2 diabetes mellitus**

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**Background:** Animal and human studies have demonstrated controversial results about the relationship between Apolipoprotein B (Apo B) gene polymorphism and body mass index (BMI). However, this relationship may be modified with the amount of saturated-fatty-acids (SFA) intake and energy intake – these areas have not been addressed in other studies. We therefore investigated whether SFA intake and energy intake modify the association of Apo BEcoRI gene polymorphism with BMI variation in patients with type-2 diabetes mellitus. **Methods:** The study was carried out on 648 patients (252 men and 396 women; age 35-65 years). We measured weight and height and calculated BMI through dividing the weight by height squared. We used a semi-quantitative food-frequency questionnaire (FFQ) for estimating food intake and PCR-RFLP to determine polymorphism. The Apo BEcoRI polymorphism and SFA-intake and energy intake relationships with BMI were evaluated.

**Results:** Genotype frequency for dominant homozygote (E+E+), heterozygote (E+E-) and recessive homozygote (E-E-) was 77.7%, 21.1% and 1.2%, respectively. Subjects with E+E+ and SFA intake >7% of calorie and energy intake level more than median (>median (2426.3Kcal) had lower BMI than those with E- allele (E+E- and E-E- genotypes) ( $p=0.02$ ).

**Conclusions:** Our results showed a gene-diet relationship between EcoRI polymorphism and SFA intake and energy intake for BMI values in patients with type-2 diabetes mellitus.

**Keywords:** type-2 diabetes mellitus-body mass index-saturated fatty acids

**OC-039**

Oral

**Phylloquinone supplementation increases adiponectin levels in prediabetic premenopausal women: a double-blind randomized controlled clinical trial**

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**Background:** Vitamin K, as a cofactor in the gamma carboxylation of certain glutamic acid (Gla) residues, has been related to glucose metabolism and insulin sensitivity. Osteocalcin, also known as bone  $\gamma$ -carboxyglutamic acid, increases  $\beta$ -cell proliferation as well as insulin and adiponectin secretion, which improve glucose tolerance and insulin sensitivity. Thus, the purpose of the present study was to examine the effect of phylloquinone supplementation on adiponectin as a mediator of glucose homeostasis in pre-menopausal women with prediabetes.

**Methods:** Eighty two women were randomized to consume vitamin K1 supplement (n=39) or placebo (n=43) for four weeks. Participants in vitamin K1 treatment group received one pearl softgel capsule containing 1000 micrograms phylloquinone while the placebo group received one placebo capsules daily for four weeks. The Blood samples were collected at baseline and after a four-week intervention to quantify osteocalcin, adiponectin, leptin and relevant variables.



**Results:** Phylloquinone supplementation significantly increased serum adiponectin concentration ( $1.24 \pm 1.90$  compared with  $-0.27 \pm 1.08$   $\mu\text{g/mL}$ ), and did not alter total osteocalcin ( $0.50 \pm 4.11$  compared with  $0.13 \pm 1.85$  ng/ml) and leptin ( $-0.29 \pm 8.23$  compared with  $-1.15 \pm 5.25$  ng/mL) compared with placebo.

**Conclusions:** In conclusion our study demonstrated that phylloquinone supplementation increases adiponectin levels in prediabetic premenopause women.

**Keywords:** Phylloquinone, vitamin K1, osteocalcin, adiponectin, prediabetes

OC-040

Oral

**Effect of non-soy legume consumption on inflammation and serum adiponectin level among first degree relatives of diabetic patients: a randomized cross-over study**

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**Background:** The first degree relatives of diabetic patients are at more risk for endothelial dysfunction and inflammation. The aim of the present study was to determine the effects of non-soy legumes enriched diet on inflammatory biomarkers and serum adiponectin level among first degree relatives of diabetic patients.

**Methods:** 26 participants (14 women and 12 men) with family history of diabetes were recruited to this randomized cross over study. The participants were randomly assigned to legume enriched diet or habitual diet for 6 weeks that was separated by a 2 weeks washout. The inflammatory markers including high sensitive C reactive protein (hs-CRP), interleukin 6 (IL-6), tumor necrosis factor  $\alpha$  (TNF- $\alpha$ ) and serum levels of adiponectin were measured at the beginning and the end of each intervention period according to the standard protocol.

**Results:** Energy intake of participants was not statistically different between legume diet and habitual diet ( $1821.5 \pm 100.11$  vs.  $1788.2 \pm 92.68$  kcal/d respectively). Following legume diet consumption, percent change of hs-CRP reduced significantly compared to habitual diet overall ( $-4.86 \pm 1.86\%$  vs.  $3.55 \pm 1.97\%$ ,  $p=0.008$ ) and among women subgroup ( $-12.96 \pm 1.96$  vs.  $3.24 \pm 2.65$ ,  $p=0.004$ ). The percent change of other inflammatory markers and serum concentrations of adiponectin were not significantly different between two groups.

**Conclusion:** The results of this study showed that a legume enriched diet significantly reduced the hs-CRP concentrations in first degree relatives of diabetic patients after 6 weeks of intervention compared to habitual diet.

**Keywords:** legume, inflammatory markers, adiponectin, at risk for diabetes, clinical trial

OC-041

Oral

**Evaluation of the developed tool for assessing the nutritional status of hospitalized patients**

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**Background:** Under-nutrition is one of the common problems among hospitalized patients. Although, nutritional screening tools are central to identifying malnourished

patients, only few healthcare providers have a specific set of protocols or screening tools for identifying patients at nutritional risk who need appropriate nutritional care plan. The present study aimed to evaluate the developed brief user-friendly tool to assess the patients' nutritional status, diets and exercise patterns; a "pocket card" tool that contains nutritional status assessment components in one side and recommendations in other sides.

**Methods:** The experts in the field of nutrition and dietetic reviewed the completed contents, wording and the figures of the pocket card and gave their comments and suggestions. Further, fifteen healthcare professionals who are dealing with nutritional care process in the hospitals justified the format, contents and the presentation of the information in the pocket card. This step aimed to confirm the understandability, creditability and relevance of the message before the final pocket card produced. According to the comments given by the experts and professionals who are going to use this tool, the modifications were done and prepared the final version of the pocket card. Final version of the "pocket card" was given with a questionnaire which was designed to evaluate end-users satisfaction. The health care professionals' satisfaction was considered from the content aspect and format aspect of the pocket card. The content aspect referred to correspond with language, concise, and appropriate for understanding. The format referred to size of the tool, font, colour, attractiveness and quality of the figures and pictures. The closed ended questions of rating scale (Likert) with 4 levels of measurement were used. The evaluated sample was asked to indicate his or her degree of likeness with given content, format and overall aspects of the developed tool. After the questionnaire was completed, item responses were summed and presented as number and percentage.

**Results:** Results shown that seventy two percent of the respondents gave appearance of the developed tool as good, while 64% were accepted overall format was good and 64% were accepted recommendation were informative. The overall comments of health care professionals who evaluated the developed "pocket card" said that this tool was an appropriate tool to quick assessment of patients' nutritional status.

**Conclusion:** The developed "pocket card" was a user-friendly simple assessment tool to assess nutritional status of hospitalized adult patients

**Keywords:** Assessment, Nutritional status, Patients, tool

OC-042

Oral

**Measurement of Adductor Pollicis Muscle Thickness in a Healthy Population in Iran and Its Correlation with other Healthy Population in Iran and Its Correlation with other Anthropometric Parameters Anthropometric Parameters**

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**Background:** In clinical settings, anthropometric parameters are used as a measure of nutritional assessment. Assessment of the thickness of the adductor pollicis muscle has been reported as an indicator of muscle compartments of the body. The adductor pollicis is the muscle of the hand with two heads that adducts the thumb in bringing it toward the plane of the palm. The adductor pollicis muscle has a well-defined anatomical position and can be directly measured. We determined thickness values of this new parameter and also its correlation with conventional anthropometric parameters.

**Methods:** total of 432 apparently healthy volunteers who were grouped by sex and age were assessed for the measurements of mid-arm circumference, triceps skin fold, mid-arm muscle circumference, mid-arm area, mid-arm muscle area and adductor pollicis muscle thickness in both hands.

**Results:** average thickness of the adductor pollicis muscle in the dominant and non-dominant hands were  $14.55 \pm 3.17$  and  $13.74 \pm 3.19$  mm in males and  $11.24 \pm 2.37$  and  $10.21 \pm 2.41$  mm in females, and their differences were significant ( $P < 0.001$ ). The average thickness of adductor pollicis muscle was progressively higher in subjects with small, medium, and large frame sizes in both genders ( $P = 0.0001$ ). The APM thickness had a high correlation with the anthropometric variables in subjects ( $P < 0.001$ ).

**Conclusion:** Measurement of adductor pollicis muscle thickness is simple, fast, non-invasive and easily reproducible, rendering it a useful anthropometric parameter for evaluating nutritional status of individuals.

**Keywords:** Anthropometry, nutritional assessment, reference values

#### OC-043

#### Oral

##### **The effect of appetite-regulating hormones on malnutrition in pediatric patient in predialysis stage**

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**Background:** Protein-energy malnutrition (PEM) is a common complication in pediatric patients with chronic kidney disease (CKD). Components which incorporate in the regulation of appetite and body composition appear to be of attention in renal insufficiency and may influence the CKD-associated protein energy malnutrition. So the purpose of this study was to investigate plasma levels of appetite-regulating hormones and their correlation with the body composition variables in pediatric in predialysis stage of CKD.

**Methods:** 30 children with CKD in predialysis stage were selected and compared with 30 healthy sex and age matched controls. Blood samples were collected in fasting. Serum total ghrelin, leptin and obestatin levels were measured using enzyme immunometric assay methods. Anthropometric parameters measurement and body composition analysis were done by using bioelectric impedance analysis (BIA) method.

**Results:** Patients showed insignificant elevated total ghrelin ( $105.40 \pm 30.83$  ng/l), leptin ( $5.32 \pm 1.17$  ng/ml) and obestatin ( $5.07 \pm 1.09$  ng/ml) levels in comparison to healthy participants. By using BIA, patients had significantly different Dry Lean Weight ( $p = 0.048$ ), Extra Cellular Water ( $p = 0.045$ ), Body Cell Mass (BCM) ( $p = 0.021$ ), Basal metabolic rate ( $p = 0.033$ ) and Body Mass Index ( $p = 0.029$ ) compared to controls. Furthermore, total body water slightly and ECW significantly were higher in CKD participants. There were significant negative correlation between obestatin and BCM ( $r = -0.40, p = 0.03$ ) and fat free mass index (FFMI) ( $r = -0.40, p = 0.029$ ) in patients.

**Conclusion:** It seems that our results are insufficient to clarify the role of appetite-regulating hormones in PEM in CKD patients and show that there are still many unknown points related to both appetite regulating and CKD-associated protein energy malnutrition.

#### OC-044

#### Oral

##### **Effects of Oral L - carnitine supplementation on C-Reactive Protein and Blood Sugar in Hemodialysis Patients: A Randomized Clinical Controlled Trial**

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**Background:** Inflammation is a common complication in patients treated with hemodialysis and increasing in inflammatory factors such as C-reactive protein (CRP) is associated with increased cardiovascular disease and mortality in these patients. The purpose of this study was to investigate the effect of oral L- carnitine supplementation on serum CRP concentration and fasting blood sugar (FBS) in patients undergoing hemodialysis.

**Methods:** This study was a randomized clinical trial with participating of 50 patients (30 males and 20 females) undergoing hemodialysis in the age range of 21-84 years from hemodialysis units of Yazd hospitals . Participants randomly divided into two groups, the carnitine group (CaG); consumed daily oral syrup of L- carnitine containing 1000 mg of carnitine for three months and the control group (CoG) did not use carnitine. Serum levels of CRP and FBS were measured in baseline and at the end of the intervention. Statistical analysis was performed using the SPSS version 16.0.

**Results:** the mean difference of CRP concentration in CaG and CoG were,  $1.95 \pm 9.4$  and  $0.6 \pm 10.8$  ( $\mu\text{g/l}$ ), respectively ( $p$ -value=0.7) and the mean of FBS at the baseline and after 12 weeks in the CaG were  $118.7 \pm 51.4$  mg/dl and  $110.1 \pm 48.2$  mg/dl , respectively ( $p$ -value=0.3) and in the CoG were  $142.8 \pm 88.7$  mg/dl and  $131.8 \pm 68.9$  mg/dl ( $p$ -value=0.26).

**Conclusions:** The oral administration of daily 1000 mg of L- carnitine for three months doesn't effect on serum CRP and FBS concentrations in patients undergoing hemodialysis.

**Keywords:** L-carnitine, Hemodialysis, inflammation, blood sugar

#### OC-045

#### Oral

##### **Effect of Genistein and L-carnitine and their combination on gene expression of hepatocyte HMG-COA Reductase and LDL receptor in experimental nephrotic syndrome**

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**Background:** One of the disorders taking place in nephrotic syndrome would be hyperlipidemia. L-carnitine, too, which plays a direct role in  $\beta$ -oxidation in addition to phyto-estrogens such as genistein: all being among substances that have the capability to somehow control this specific syndrome by means of bringing about conversion in lipid metabolism. In this present study, we have delved into the separate in addition to the twin-effects of these two supplements on the gene expressions of PPAR- $\alpha$  and CPT-1 within the rat hepatocytes afflicted by the nephrotic syndrome.

**Methods:** In this controlled experimental study, 50 male Sprague-Dawley rats were randomly divided into five groups consisting of 10 animals each with similar mean body weights ( $300 \pm 50$  g) by randomized block design **Method:** NC (normal-control), PC (patient-control), LC (L-carnitine), G (genistein), LCG (L-carnitine-genistein). All groups received the AIN 93 M diet during the study (8 weeks) and patients groups were injected with adriamycin at week 2 for inducing nephrotic syndrome. The urine samples at the end of weeks 2, 3 and 7 were collected and urine protein-to-creatinine ra-





tio from spot urine samples was measured for checking nephrotic syndrome inducing. Hepatocytic RNA was extracted and real-time PCR was used for hepatocyte HMG-CoA Reductase and LDL receptor gene Expression measurement. Statistical analysis was done using SPSS 18.0.

**Results:** At the end of the study, final weight of the LCG group was considerably higher than the NC group ( $P=0.04$ ), and weight gain of the NC group was higher than the other groups ( $P<0.05$ ). The differences of proteinuria and urine protein-to-creatinine ratio were statistically significant between PC group and LC, G and LCG groups at week 7 ( $P=0.000$ ). The expression of HMG-CoA Reductase mRNA down-regulated in LC, G and LCG groups in comparison with PC group ( $p<0.001$ ). LDLr mRNA showed a non-significant differences between the PC group and the other patients groups.

**Conclusion:** This study shows a significant decreasing and non-significant increasing trend in HMG-CoA Reductase and LDLr gene expression, respectively, and synergistic effect of L-carnitine and genistein on these genes in experimental nephrotic syndrome.

**Keywords:** gene, genistein, L-carnitine, LDL receptor, nephrotic syndrome

OC-046

Oral

**Effects of synbiotic fortified with beta-carotene food consumption on metabolic status among type 2 diabetic patients with nephropathy: a double-blind randomized cross-over controlled clinical trial**

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**Background:** We are aware of no study indicating the effects of synbiotic fortified with beta-carotene food consumption on metabolic profiles, inflammation and oxidative stress among type 2 diabetic patients with nephropathy. The aim of the current study was to investigate the effects of synbiotic fortified with beta-carotene food consumption on metabolic profiles, inflammatory factors and biomarkers of oxidative stress among type 2 diabetic patients with nephropathy.

**Methods:** This randomized double-blinded cross-over controlled clinical trial was conducted among 50 diabetic nephropathy patients aged 35-70 y. After a 2-wk run-in period, individuals were randomly assigned to consume either a synbiotic fortified with beta-carotene ( $n=50$ ) or control food ( $n=50$ ) for 6 weeks. A 3-week washout period was applied following which subjects were crossed over to the alternate treatment arm for an additional 6 weeks. The synbiotic fortified with beta-carotene food was containing a probiotic viable and heat-resistance strain *Lactobacillus sporogenes* ( $1 \times 10^7$  CFU), 0.1 g inulin as prebiotic and 0.04 g beta-carotene. Control food (the same substance without probiotic bacteria, prebiotic inulin and beta-carotene) was packed in identical 9-gram packages. Patients were asked to consume the synbiotic and control foods three times a day. Fasting blood samples were taken at baseline and after 6-wk phase of intervention to measure metabolic profiles, inflammatory markers and biomarkers of oxidative stress.

**Results:** Synbiotic supplementation resulted in a significant decrease in serum insulin ( $-1.00 \pm 7.90$  vs.  $+3.68 \pm 6.91$   $\mu$ U/mL,  $P=0.002$ ), HOMA-IR ( $-0.73 \pm 3.96$  vs.  $+1.82 \pm 4.09$ ,  $P=0.002$ ), HOMA-B ( $-0.52 \pm 19.75$  vs.  $+8.71 \pm 17.15$ ,  $P=0.01$ ), serum triglycerides ( $-2.86 \pm 49.53$  vs.  $+20.14 \pm 50.10$  mg/dL,  $P=0.02$ ), VLDL-cholesterol levels ( $-0.57 \pm 9.90$  vs.  $+4.03 \pm 10.02$  mg/

dL,  $P=0.02$ ) and total-/HDL-cholesterol ratio ( $-0.01 \pm 1.08$  vs.  $+0.64 \pm 0.81$ ,  $P=0.001$ ) compared to the control food. In addition, supplementation of synbiotic to diet compared with the placebo elevated plasma NO levels ( $+6.83 \pm 16.14$  vs.  $-3.76 \pm 16.47$   $\mu$ mol/L,  $P=0.001$ ). Similarly, elevated plasma GSH ( $+36.58 \pm 296.71$  vs.  $-92.04 \pm 243.05$   $\mu$ mol/L,  $P=0.01$ ) and serum magnesium levels ( $+0.08 \pm 0.37$  vs.  $-0.26 \pm 0.41$  mg/dL,  $P<0.001$ ) was recorded in the synbiotic-fed group than control-fed group. We did not observe any significant effect of synbiotic food consumption on FPG, QUICKI, other lipid profiles, hs-CRP, MDA, liver enzymes, calcium, iron levels and blood pressures.

**Conclusion:** In conclusion, consumption of synbiotic food for 6 weeks among type 2 diabetic patients with nephropathy had beneficial effects on insulin metabolism, serum triglycerides, VLDL-cholesterol, total-/HDL-cholesterol, plasma NO, GSH and serum magnesium levels; however, did not influence other metabolic profiles compared to control food. This trial was registered at [www.irct.ir](http://www.irct.ir) as IRCT201301195623N5.

**Keywords:** Synbiotic, metabolic profiles, inflammation, oxidative stress, diabetic nephropathy

OC-047

Oral

**Effect of high fat diet and restricted diet on BDNF gene expression and apoptosis in hippocampus of rat**

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**Background:** A diet high in total fat reduces hippocampal levels of brain-derived neurotrophic factor, a crucial modulator of synaptic plasticity and learning. In present study, we have evaluated the capacity of antioxidant supplementation and caloric restricted to interact with the effects of diet at the molecular level.

**Methods:** Animal groups were exposed to the high fat diet for 9 months with free access to high fat diet and high fat diet with antioxidant supplementation, restricted diet with %30 reduction in received diet and control with regular diet. In the end of study after anaesthesia blood collected and hippocampus removed. Biochemical factors in serum and expression of BDNF, Synapsin I, TrkB and CREB genes measured.

**Results:** High fat diet reduced %15 BDNF, %43 synapsin I, %40 TrkB and %25 CREB expression genes in hippocampus of high fat group. Diet with high fat increased caspase 3 as programmed cell death protector in hippocampus. Supplementation diet with antioxidant doesn't reversed effects of high fat. Caloric restricted reversed effects of high fat on expression BDNF gene.

**Conclusion:** Results indicate that antioxidant supplementation and diet restricted don't interact with the same molecular systems disrupted by the high fat diet. Reactive oxygen species, and BDNF in conjunction with caspase 3, are common molecular targets for the action of the high fat diet and antioxidant supplementation and diet restricted. Results unveil a possible molecular mechanism by which lifestyle factors can interact at a molecular level, and provide information for potential therapeutic applications to decrease the risk imposed by certain lifestyles.

**Keywords:** Neurotrophic factor, High fat diet, Apoptosis

OC-048

Oral

**Verification of the Gluten Absence in Gluten-free Breads in Isfahan City**

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**Abstract:** Celiac disease or gluten-sensitive enteropathy is an immune-related disease which is a permanent sensitivity to wheat gliadin or barely Prolamine in people who are genetically predisposed. Gluten is a protein found in wheat, barley and rye. This substance causes the stretching of the dough and crunchy texture of the final product. Gluten is composed of two subunits, gliadin and glutenin. Gliadin is alcohol-soluble and glutenin is just soluble in dilute acids and bases and based on these features gliadin can be isolated. The detection of gluten in gluten-free bread flour can verify the manufacturers' claims on these products and also comparison the gluten free breads with ordinary ones. In this study, the presence or absence of gluten in gluten-free breads by electrophoresis gel (SDS-PAGE) can be identified in Isfahan city. There was no band in the range of gliadin bands on the gel obtained from these tests. This technique can be applied as a preventive administrative policy in order to avoid clinical complications caused by gluten in celiac disease. Also trace amounts of gluten can be detected due to the high accuracy of this technique, thus it will prevent the clinical symptoms in consumers. In addition, electrophoresis would work as a screening test for preventing celiac and to separate the gluten-free flour in the society.

**Keywords:** gluten, celiac, gluten free bread, SDS-PAGE

OC-049

Oral

**Evaluation of immunological indices related to gluten sensitivity and the prevalence of inherited immunoglobulin type A deficiency in patients with Autism Spectrum disorders in Tabriz**

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**Background:** The term Autism Spectrum Disorder (ASD) refers to a range of neurodevelopmental disorders that include the more specific diagnoses of autism, Asperger syndrome, and Pervasive Developmental Disorder not otherwise specified. The defining features of ASD include impairments in social interaction, communication, imagination, restricted interests, and stereotypic behaviors. Immunological dysfunction is a recognized feature in ASD. The Human Leukocyte Antigen (HLA) genes are among the strongest predictors of risk for autoimmune conditions and are associated with neurodevelopmental disorders, such as schizophrenia and ASD. Over the past years, several studies have been accomplished to identify the association between ASD and Gluten, in order to determine the sensitivity of antigens involved in immune response and also their pathogenic connection with ASD. The objectives of this study were to evaluate the immunological indices related to Gluten sensitivity and the prevalence of inherited Immunoglobulin type A deficiency in patients with Autism Spectrum Disorders in Tabriz.

**Methods:** The present cross-sectional study was performed over 80 subjects diagnosed with ASD, ages 4-16. After convenient and accessible sampling and considering inclusion and exclusion criteria, patients entered the research. Written informed consent was obtained and a demographic questionnaire was completed by interviewing parents. Fasting Blood samples were obtained and immunological measure consisting of IgA, tTG IgA, tTGlgG and EMAIgG were analyzed.

**Results:** The average age of children was  $7.90 \pm 3.35$  (58 boys and 22 girls). The mean IgA in this study was  $104.28 \pm 49.93$

mg/dl. 9 patients were identified with IgA deficiency. The tTGlgG of 9 individuals was above 12 U/ml and 2 patients were in borderline (8-12 U/ml). tTGlgG and EMAIgG were not positive for any of the patients with IgA deficiency.

**Conclusion:** Inherited deficiency of the immune system may prevent the patient from clearing a pathogen in a timely and normal fashion, placing the patient at higher risk for the pathogen to interfere with brain development and triggering an autoimmune response resulting in the symptoms of ASD. According to the results obtained from this research, there were immunity dysfunctions in children with ASD and therefore raises the importance of providing suitable strategies to support their immune system.

**Keywords:** Autism Spectrum disorders, Gluten, IgA, Human Leukocyte Antigen, Pathogen

OC-050

Oral

**Assessment of dietary exposure to hydroxymethylfurfural from traditional Iranian flat breads**

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**Background:** Environmental factors including food toxicants are considered important in incidence of different malignances. Among these factors, hydroxymethylfurfural (HMF), as one of the heat damage indices, is attributed to induction of both mutagenic and carcinogenic effects. Little is known about the dietary exposure to this bioactive compound. The aim of present study was to determine HMF content, its bioaccessibility and to look for any correlation between HMF level and physicochemical parameters.

**Methods:** In order to conduct this experimental study first, each type of traditional Iranian flat breads including Lavash, Taftoon, Barbari and Sangak were selected with simple sampling. The breads were analyzed for some physicochemical properties including moisture, ash, pH, protein, total carbohydrates and fiber. HMF content of the breads was measured by high-performance liquid chromatography in pre and post digested samples to calculate its bioaccessibility. The model consisted of a peptic digestion and a subsequent intestinal digestion. The bioaccessibility of HMF from breads was calculated by dividing HMF concentration in post-digested breads by HMF concentration in pre-digested breads.

**Results:** The mean (SE) concentration of HMF between the four types of breads was significantly different before the in vitro digestion but not among the digested samples. HMF content of Taftoon, Sangak and Barbari decreased after digestion. A slight increase was observed for Lavash. The mean (SE) concentration of HMF were 48.5 (8.09) and 40.4 (6.89) mg/kg of the test items in pre and post digestive samples respectively, implying 83.0% bioaccessibility. Correlation analyses between physicochemical properties of the breads and HMF content before digestive process revealed a moderate reverse relationship between HMF level and carbohydrate content of breads ( $r = -0.5$ ,  $p = 0.003$ ).

**Conclusion:** It is concluded that both HMF content and its bioaccessibility from traditional Iranian breads were high. Resultant value is above of the threshold of concern (1600  $\mu$ g HMF/day). As traditional bread is one of the main dietary items in Iranian food basket, it seems necessary to apply a strategy for modifying the baking method of bread and its consumption to decrease HMF content and its bioaccessibility.

**Keywords:** bioaccessibility, traditional bread, hydroxymethylfurfural, Iran, high-performance liquid chromatography