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Posters

Roni Lara Moya, J Nutr Food Sci 2017, 7:1 (Suppl)
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Biomedical integrative approach to oncology: From vitamins to cellular therapy

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Despite of all efforts and scientific development in cancer research and treatments, the corresponding estimates for total cancer deaths in 2012 were 8.2 million (about 22,000 cancer deaths a day)–2.9 million in economically developed countries, and 5.3 million in economically developing countries. By 2030, the global burden is expected to grow to 23.6 million new cancer cases and 13 million cancer deaths simply due to the growth and aging of the population. However, the estimated future cancer burden will probably be considerably larger due to the adoption of lifestyles that are known to increase cancer risk, such as smoking, poor diet, obesity, physical inactivity, chronic inflammatory diseases, etc. Cancer can actually be defined by a group of diseases characterized by the interaction between abnormal cells with its natural environment, resulting in uncontrolled growth and spread of these abnormal cells. If the spread is not controlled, it can result in death. Cancer is caused by external factors, such as tobacco, toxins, infectious organisms, and an unhealthy diet, and internal factors, such as inherited genetic mutations, hormones, and immune conditions. These factors may act together or in sequence to cause cancer. One of the most important problems in oncology is the immunological compromising due to the ability of cancer cells to thrive in a chronically inflamed microenvironment, evade immune recognition and suppress immune reactivity. In consequence, the chronic inflammation and extreme oxidative stress, will allow an enhancement of genomic instability, DNA damage, epigenetics change, apoptosis evasion, metastasis, etc. Some important functional nutrients with specifics antioxidants and polyphenols, together with purified cellular derived peptides and mitochondrial extracts, rich in immunomodulators factors, work on innate or acquired immunity by the stimulation of fundamental organs as the thymus, spleen and bone marrow, regulating the transcription, apoptosis, oxidative stress, the activation of dendritic cells, B lymphocytes, CD4, CD8, and Natural Killer (NK); as well as the production of its main cytokines (IFN, TNF, IL4, etc.). The purpose of this conference is to address the clinical practical aspects and protocols based on the most relevant scientific studies of integrative biomedical treatments with the best functional nutrients and cellular derived extracts as potent immunomodulators in cancer cases. Besides the increasing of conventional treatments techniques and pharmaceuticals, there is also an eminent and continuous need to seek the best and smartest integrative biomedical and nutritional treatment to help prevent and fight cancer.

Biography

Roni Lara Moya has done his studies in Biomedicine from the University of Mogi das Cruzes, Sao Paulo. He has done his specialization in Anti-Aging Medicine from Seville University, Spain. He completed his Master of Science in Molecular and Cellular Immunology and Biology from the University of Coimbra, Portugal and Master of Science in Clinical Advanced Nutrition from the University of Barcelona, Spain. He did his PhD in Biomedicine and Immunology from the Gulbenkian Institute of Science and Coimbra University. He is the Coordinator of Orthomolecular Medicine of ReGenera Research Group for Aging Intervention. He is the Professor and Director of the Graduation Program in Orthomolecular Therapy - CESPU University, Portugal. He is the Scientific Advisor for Nutraceuticals and Cell Therapy Companies in Europe.

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Ferulic acid ameliorates oxidative stress, endothelial dysfunction and vascular remodeling in high-carbohydrate and high-fat diet fed rats

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Statement of Problem: Chronic intake of high-carbohydrate and high-fat (HCHF) diet causes metabolic abnormalities, including insulin resistance, dyslipidemia and hypertension. Decreased nitric oxide (NO) bioavailability and increased angiotensin II signaling are implicated in the pathogenesis of endothelial dysfunction and hypertension by accelerating the formation of reactive oxygen species. Therefore, current nutritional advice emphasizes the benefits of fruit and vegetable consumption. Ferulic acid (FA) is a major phenolic compound found in rice oil, cereals and various types of fruits and vegetables. This study was designed to test whether FA supplementation could reduce oxidative stress, endothelial dysfunction and vascular remodeling in rats fed a HCHF diet.

Methodology & Theoretical Orientation: Male Sprague- Dawley rats were fed either a standard chow diet and tap water or a HCHF diet with 15% fructose solution for 16 weeks. HCHF rats were treated orally with FA (30 and 60 mg/kg/day) for the final 6 weeks of the experimental period. At the end of the experiment, hemodynamic status, vascular functional and structural changes, oxidative stress markers, angiotensin-converting enzyme (ACE) activity and angiotensin II type 1 receptor (AT1R) expression were measured.

Findings: FA reduced oxidative stress via suppressing $p47^{phox}$ NADPH oxidase and increasing eNOS expression. FA decreased arterial blood pressure, reduced aortic stiffening and improved endothelial dysfunction by increasing the endothelium-dependent vasodilator responses. Moreover, FA reduced HCHF diet-induced hypertrophic remodeling of the aortic wall and decreased matrix metalloproteinase-2 (MMP-2) and MMP-9 expression. The ameliorative effects of FA were associated with a reduction of ACE activity and downregulation of AT1R, indicating that FA could inhibit the renin-angiotensin system.

Conclusion & Significance: Overall findings suggest the beneficial effect of FA on preventing vascular complications in metabolic syndrome.

Biography

Ketmanee Senaphan has done her DVM from Khon Kaen University, Thailand in the year 2011. She has completed her PhD in Medical Physiology from Khon Kaen University, Thailand, 2016. She has received a Scholarship i.e., The Royal Golden Jubilee PhD Program, the Thailand Research Fund. Her research interests are Endothelial dysfunction, arterial stiffening and vascular remodeling in animal models of metabolic syndrome, diabetes and hypertension, with special focus on many dietary antioxidants in improvement of cardiovascular function and reduction of cardiovascular risk.

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Dairy products intake in older adults across Europe based on SHARE database

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The number of older adults worldwide is expected to triple, by 2100. There is evidence that dairy products intake is associated with a reduced risk of obesity and cardiovascular diseases, playing also an important role on calcium content and bone metabolism. However, dairy consumption has declined sharply in recent decades, particularly in developed countries. Better knowledge of health and nutritional status, as well as of appropriate nutritional behavior, might help oppose this trend. The aim of this study is to evaluate the dairy intake pattern among older adults across Europe. We conducted a cross-sectional analysis using data from wave 4 of SHARE (Survey of Health, Aging and Retirement in Europe) database. Prevalence rates of the number of weekly servings of dairy in individuals who are 50 years old and above were calculated for 16 European countries. From 56,223 registered individuals, 56.0% (n=31,460) were women. Overall prevalence rates of daily intake of dairies in Europe were 66.95 % (IC95%: 66.28-67.63%). Its prevalence in men was 63.35% (IC95%: 62.37-64.35%), and in women was 70.72% (IC95%: 69.79-71.66%). Among men, the highest prevalence was found in Denmark (85.50% [IC95%: 80.73-92.25%]) and the lowest in Poland (31.20% [IC95%: 27.37-35.51%]). Among women, the highest prevalence was found in Spain (89.40% [IC95%:85.90-94.57%) and the lowest in Poland (32.20% [IC95%:28.82-36.14%]). The prevalence of intake of dairy products less than once a week was higher in Hungary for men (11.50% [IC95%: 9.83-13.61%]) and in Slovenia for women (8.90% [IC95%: 7.52-10.61%]). An association between higher age and lower dairy products intake was also found. The pattern of dairy product intake is very heterogeneous in European countries, differing with gender and age within a country; men and older individuals showed a lower intake.

Biography

Inês Ribeiro is currently attending last year of her Integrated Master's in Pharmaceutical Sciences at the Faculty of Pharmacy in Porto University (FFUP), Portugal. She has particular interest in the area of Healthy Ageing and has worked on Therapeutic Compliance and Education for Health among elders living in Porto. Currently, she is working on the topics of Nutrition and Eating Patterns in Europe, at the Department of Biological Sciences in FFUP.

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Accepted Abstracts

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Manipulation of the gut microbiome in weight management

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The pathophysiology of obesity is still unknown, however there is mounting evidence that the gut microbiome, intestinal permeability, systemic inflammation, cytokines, subclinical endotoxemia and insulin resistance may play important roles in disease pathogenesis and are possibly targets for treatment. Alterations in diet have been shown to shift the gut microbiome's effects on metabolism and regulation of body weight by a number of mechanisms that involve the gut microbiome. This session will provide a focused overview of the scientific literature regarding the potential role of gut microbiome as a therapeutic target of weight management and cardiometabolic health. The lecture will first review the pathophysiology of obesity and discuss how an evidence-based approach can achieve optimal weight management by dietary manipulation of the gut microbiome along with prebiotics and probiotics. Learning objectives: To discuss the influence of the gut microbiome on energy metabolism; to understand how disruption of the gut microbiome can lead to obesity; to know how prebiotic and probiotic foods and supplements may influence weight by favorably altering the gut microbiome.

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Tools 4 teen moms: A challenge-based social media educational intervention

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Tools 4 teen moms (T4TM) is a social-media educational intervention designed to promote healthy infant feeding practices: Infant-centered feeding, maternal responsiveness, and proper introduction of complementary foods. The T4TM intervention consists of 6 weeks of daily challenges appropriate for teen moms. The T4TM challenge-based intervention has been field tested among 51 low-income, first-time adolescent mothers of infants under two months of age, recruited from the maternal infant health programs (MIHP) in five Michigan counties in USA for program efficacy and participant engagement and satisfaction. Participants randomized to the intervention received a text message each day for six weeks that included the day's challenge and website URL. Post intervention self-report survey revealed that participants in the intervention were more likely to know that propping the bottle was not a safe feeding practice (p=0.04), and that infants under 6 months of age did not require more than breast milk or formula (p=0.08). When asked the proper time to introduce solid foods, 92% of intervention participants answered correctly compared to 76% of control participants. Participant responses indicated a high level of program satisfaction. Website activity revealed moderate engagement with the program. Average number of challenge completions was 21 out of 42, and the participants visited the website on an average of 22 out of 42 days. Results indicate that a tailored, social media-based educational intervention to be a promising method of message delivery among adolescent mothers.

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The availability, affordability and consumption of fruits and vegetables in 18 countries across income levels: Findings from the prospective urban rural epidemiology (PURE) study

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Several international guidelines recommend the consumption of two servings of fruits and three servings of vegetables per day, but their intake is thought to be low worldwide. We aimed to determine the extent to which such low intake is related to availability and affordability. We assessed fruit and vegetable consumption using data from country-specific, validated semi-quantitative food frequency questionnaires in the prospective urban rural epidemiology (PURE) study, which enrolled participants from communities in 18 countries between Jan 1 2003 and Dec 31 2013. We documented household income data from participants in these communities; we also recorded the diversity and non-sale prices of fruits and vegetables from grocery stores and market places between Jan 1 2009 and Dec 31 2013. We determined the cost of fruits and vegetables relative to income per household member. Linear random effects models, adjusting for the clustering of households within communities, were used to assess mean fruit and vegetable intake by their relative cost. Of 143,305 participants who reported plausible energy intake in the food frequency questionnaire, mean fruit and vegetable intake was 3.76 servings (95% CI 3.66-3.86) per day. Mean daily consumption was 2.14 servings (1.93-2.36) in low-income countries (LICs), 3.17 servings (2.99-3.35) in lower-middle-income countries (LMICs), 4.31 servings (4.09-4.53) in upper-middle-income countries (UMICs), and 5.42 servings (5.13-5.71) in high-income countries (HICs). In 130,402 participants who had household income data available, the cost of two servings of fruits and three servings of vegetables per day per individual accounted for 51.97% (95% CI 46.06-57.88) of household income in LICs, 18.10% (14.53-21.68) in LMICs, 15.87% (11.51-20.23) in UMICs and 1.85% (-3.90 to 7.59) in HICs (P_{trend}=0.0001). In all regions, a higher percentage of income to meet the guidelines was required in rural areas than in urban areas ($p<0.0001$ for each pairwise comparison). Fruit and vegetable consumption among individuals decreased as the relative cost increased (P_{trend}=0.00040). The consumption of fruit and vegetables is low worldwide, particularly in LICs, and this is associated with low affordability. Policies worldwide should enhance the availability and affordability of fruits and vegetables.

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The nutritional and social importance of meat consumption: A comparison of young men in urban and rural Zambia

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Background: Global demand for meat and dairy products has escalated with the demand particularly increasing in East and South Asia, and Latin America countries. The effect has been termed the livestock revolution. These consumption patterns have serious consequences for environmental sustainability and food security.

Objective: The aim of this study was to assess the nutritional contribution of meat in the diet of young adult men in urban and rural Zambian populations. It was also to ascertain the social and psychological importance of meat in the two populations.

Methods: A mixed method study, 20 male participants 18-30 years were selected each from the urban area (Lusaka) and the rural area (Chongwe). Food frequency questionnaire, 24-hour dietary recall for 4 days, anthropometric measurements, qualitative interviews and a background questionnaire were used to collect demographic data and nutrient intake data. Nutrition Survey dietary software, SPSS and NVIVO were used for analysis.

Results: Participants at both locations had an isocaloric diet. All macronutrients intakes except carbohydrates were significantly higher in urban population as compared to rural population. There was 15% protein contribution to energy as compared to 11.5 protein contribution to energy among rural population ($P<0.05$). Also urban population had protein and fat intakes above the expected recommended intakes. Chicken was viewed as meat for visitors and showing respect/authority at household level, beef was considered meat for the wealthy, and highly essential for successful celebrations.

Conclusions: The study found difference in nutrient and behaviors relating to the consumption of meat. This study revealed a clear evidence of nutrition transition as the urban population had consumption similar to the western world. Lastly, participants held strong social and cultural importance to meat consumption detailing the symbolic meanings of these meats such as respect, authority, good gesture and prosperity among others. Interventions could be developed weaving in these specific cultural beliefs to achieve healthy eating practices.

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Obesity, insulin resistance and gene variation in multi-ethnic Malaysian adults

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In order to tackle obesity-related non-communicable diseases, we aimed to evaluate and explore interaction between anthropometric indices, blood biochemical parameters, dietary intake and selected gene polymorphisms in apparently healthy Malaysians of three ethnic groups. Malaysian adults (Malaysian Malays, Malaysian Chinese and Malaysian Indians) with BMI>23 from communities living in Selangor are our participants. Our results reveal, mean age (±SD) is 43.0y (±10.1) for women (n=93) and 41.0y (±13.5) for male (n=20) participants. Average BMI on the combined data is 29.7kg/m2 (±5.1), significantly higher (P=0.01) than 23 kg/m2 which is the current cut off for categorization as 'overweight' for South East Asian individuals. Mean fat mass for females is 33.9 kg (±1.1) and for the male is 31.3 kg (±17.6). Mean body fat percentage is 42.7% (±5.3) for females (normal range: 18~28) and 34.2% (±7.8) for the male (normal range: 10~20). Mean waist circumference is 92.1 cm (±12.2) for females (normal: 80) and 106.5 cm (±14.9) for the male (normal: 90). Indians have significantly lower HDL cholesterol (p=0.001), higher fasting insulin (p=0.002) and HOMA-IR (p=0.001) (1.3±0.3 mmol/L, 14.3±13.3 uU/ml and 1.8±1.5) compared to Malays (1.7±0.5 mmol/L, 7.0±5.20 uU/ml and 0.9±0.6) and Chinese (1.6±0.4 mmol/L, 7.9±5.2 uU/ml and 1.0±0.6), respectively. There is ethnicity difference on the effect of FTO gene variants as below. Indians carrying GG genotype of FTO rs9930501 were compromised when compared to GA and AA genotypes respectively, with respect to fasting glucose (6.4±2.2 mmol/L against 4.7±0.1mmol/L and 5.0±0.6mmol/L, p=0.016) and HOMA-IR (2.3±1.6 against 2.0±1.7 and 10±0.5, p=0.018), BMI (34.6±13.1 kg/m^2 against 26.7±3.6 kg/m^2 and 28.8±4.3 kg/m^2, p=0.052) and body weight (97.6±52.6 kg against 66.6±10.0 kg and 76.6±15.2 kg/m^2, p=0.034). Whereas the Chinese carrying GA genotype were compromised with respect to body weight (72.1±4.3 kg against 109.1 kg), BMI (27.8±10.8 kg/m^2 against 37.3 kg/m^2), WC (82.9±1.8 cm against 121.0 cm) and serum leptin level (7.0±1.6 ng/ml against 17.8 ng/ml) when compared to AA genotype. A diet and exercise intervention is ongoing in the above population.

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Dietary guidelines for Indians: Need for its revision and importance in public health

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Dietary guidelines (DGs) play a very important role in guiding the population to adopt healthy life style practices at the individual level. In India, National Institute of Nutrition (NIN) is the nodal agency for promoting these dietary guidelines at the community level. The first dietary guidelines were formulated in the year 1998 by NIN and translated in to different languages to promote at the population level. After a decade, a committee was constituted for the revision of these dietary guidelines taking into consideration of change in the dietary habits of the population, influence of western food chains in Indian market, lack of physical activity among the people and growing trends in non communicable diseases at the population level. Further, DGs emphasize promotion of community health and prevention of non communicable and other diseases. Special focus on the importance of nutrition was emphasized for vulnerable segment of the population such as infants, children and adolescents, pregnant and lactating women and the elderly. The presentation mainly focuses on the need for the revision of the dietary guidelines and key differences in the new guidelines with doable and practical solutions under the "points to ponder" mentioned in the revised dietary guidelines. Further, the presentation also provides insight into different communication strategies to be applied at the community level in order to encourage people to follow the dietary guidelines.

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A pilot study prevalence of non-communicable disease urban population in Udaipur (Rajasthan)

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Non-communicable diseases continue to be important public health problems in India, being responsible for sizeable mortality and morbidity. Demographic changes and changes caused in the environment and the economy are the major reasons for shift against a predominantly communicable diseases scenario. A pilot study, consisting of a total sample of 568 comprising both male (40.49%) and female (59.51%) subjects of age ≥18 years, was conducted. All subjects lived in Udaipur district of Rajasthan. Blood glucose levels, blood pressure, height, weight, waist girth and hip circumference was measured. The prevalence of type 2 diabetes was 7.8% among male and 7.1% in female individuals. Prevalence of pre-hypertension and hypertension was found to be 34.4% and 19.7% among males and 24.5% and 17.5% in females. The risk for diabetes was equal in both men (6.1%) and women (6.5%), while that for high blood pressure was higher in females (22.9%) as compared to males (17.8 %). The percentage of individuals with BMI with age 23-25 males was 12.1 % and for >25 was 18.7%. Among the females the percentage of individuals with BMI with age 23-25 was 16.0% and for >25 it was 20.1%. Females were found to have a higher BMI as compared to males. Prevalence of liquor consumption was (57.6 %) among male individuals. The results of our screening suggest that long exposure to an unhealthy lifestyle involving cigarette smoking, obesity, and sedentary lifestyle, consumption of diets rich in highly saturated fats, sugars and salt, typified by "fast foods" to increase higher levels of risk factors, such as hypertension, dyslipidemia, diabetes, obesity, coronary and other vascular disease.

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Remission of latent autoimmune diabetes of adulthood via holistic approach

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A 32 years old female patient with fasting blood sugar readings over 250 mg/dl, postprandial blood sugar over 500 mg/dl was seeking for alternative treatment as three independent physicians recommended immediate insulin therapy. The patient had lost 12 kg in a month before diagnosis and the body mass index was 19 kg/m2. Further lab exams showed glycosylated hemoglobin (HbA1c) of 12.5%, positive urine oxone, positive urine sugar, positive GAD antibodies (IgG>250 IU/ml) and fasting C- peptide of 0.65 ng/ml. These exams confirmed diabetes type 1 (L.A.D.A). Instead, the patient was placed on typical triple oral drug treatment (2 Janumet 1000 mg per day, and 2 Solosa 4 mg per day), and was given food supplement containing large doses of niacinamide, vitamin E, B6, vitamin D3, magnesium, Zn, alpha lipoic acid and a proprietary mix of antioxidant and anti-inflammatory phytotherapy indoor supplement. The diet totally excluded cow's milk, soy products, white flour of wheat origin and GMO food. The diet was calculated, based on WFO values, to cover the daily needs for all the other essential nutrients, and provided, daily, adequate amounts of probiotics (200 g organic Greek goat yogurt) and essential fatty acids. The ratio was calculated to cover maintenance energy requirements and had over 30% protein content. Within a period of six months all oral drugs given were gradually ceased, and replaced by 1 metformin 850 mg daily, whilst c-peptide was elevated to normal levels (1 ng/ml) and HbA1c drop to 5.2%. One year later the subject is free to eat everything (but Holstein cow products and white flour of wheat origin) with blood sugar readings being within normal values. Additionally the subject gained 8 kg weight within a year.

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Pilot nutritional study in mature professional women in Madrid, Spain

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The aim of the study was to examine the nutrient intake in urban native Spanish mature women and its relationship with analytical variables. Participants were 23 volunteer females. The mean age of the participants was 46.5±5.6 years (58-41). The survey was carried out in 2015. A nutritional study has been realized on the quality of the diet in a pilot sample of 23 women in Madrid (40-58 years) by means of questionnaires of frequency of consumption of three days. Likewise, the ingestion of nutrients and the index of healthy nourishment (IAS) were determined using the program of nutrition DIAL©. Anthropometric measurement was performed, we used a Tanita TBF 300 GS to measure the body fat. Blood and urine samples were also taken. Data were analyzed using SPSS 21. Studied women consumed Mediterranean diet, and all were under diet. BMI (kg/m^2) was 26.8±4.1 and percent of body fat was 36±3.3 representative of obesity. The average energy intake was 1807.26±451.43 kcal, with total protein percent Energy (E) intake was 16.7% and total fat %E was 41.4± 6.3 (12.9±2.83 SFA, 18.5±3.89 MUFA and 5.2±3.33 PUFA as %E) and 5.02±6.77 %E of alcohol. Low trans fatty acid levels was reported to be 0.09 g/day and not really high dietetic cholesterol intake was observed (303.8 mg/day). Finally, the diet quality was good. Average daily intakes of dietary fiber, calcium, vitamin A, vitamin D, vitamin C and vitamin E, folic acid, selenium and sodium were 19.98 g, 755.64 mg, 1004.23 mg, 9.05 µg, 140.96 mg, 8.45 mg, 281.18 µg, 90.58 µg, and 2193.19 mg. The vitamin E (mg)/PUFA (g) was 0.70 and vitamin B6 (mg)/protein (g) was 0.03. Our results advise a decrease in total protein, fat and SFA, in contrast, energy intake and consumption of dietetic fiber, folic acid and calcium should be increased in the study population. The diet quality was acceptable. It can be concluded that in the pilot study we observed a dietary imbalance in women. From these results we may highlight that the intake of fat, carbohydrates and fiber does not meet the established recommendations for Spain. Same applies also to folate as well as to calcium and iron. We found low vitamin D 25 (OH) serum levels in all women below 30 ng/mL, further research is necessary to better understand the optimal vitamin D concentration for promoting health in mature women. Further research can be used for comparing the results with other populations. The unfavorable lifestyle of the great majority on mature women may have implications during the elderly. Age and profession oriented nutrition intervention programs should be promoted to encourage healthy dietary habits in order to prevent nutrition associated diseases in a future. As well as promote physical activity to prevent future nutrition related health problems.

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Forest related primitive tribes: Indigenous foods nutritional status, bio accessibility and retention of nutrients using processing methods in India

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The present study is under taken for the evaluation of nutritional information from indigenous foods consumed by forest-related primitive tribal groups (FRPT) and nutrient retention using cooking methods. Food consumption and its safety in tribal communities are still not well understood. Tribal population in India constitutes second largest country in the world, next to Africa with 8.6% of Indian population. Among the tribal groups, few tribes were considered as FRPT and depend on nature for 90% of their food supply. The economy of these tribes is closely associated with the ecological factors and their habitats. The incidence of poverty in tribal areas is around 64%. Among tribal population, health problems vary widely, however, all health indicators fall below the population living in plain areas. The reasons may have literacy, personnel hygiene and poverty so on. The average daily consumption of all the foods (g/CU/day) by these tribes is lower than the recommended levels. Indigenous foods are main source followed by cereals and rice formed the bulk of the diet in their life. The intake of nutrients by these tribes was marginally lower when compared to other tribes in India. But prevalence of under nutrition among preschool children was lower (37.13%) than that reported for the other tribes (40.66%). The chronic energy deficiency (CED) among adults was about 41%. A recent study carried out by NNMB on tribes reported steady increase in the prevalence of diet related chronic diseases like overweight and obesity, hypertension and diabetes mellitus, etc. The present results were shown that protein and vitamin content were higher than normal food. Maximum retention of nutrients like carotenoids and minerals were observed in microwave cooking followed by sautéing methods. Bio accessibility of carotenoids was noticed more than the commonly consumed foods. This may be due to high content of dietary fiber in indigenous foods. This study will help to monitor the above tribe nutritional and health aspects. Since high morbidity was noticed in tribal population, the effective measure can be taken to improve the nutrition status, sanitation and personal hygiene in this tribal group.

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Elucidating the origin of production of milk powder commercially distributed on the Chinese market using multi element stable isotope technique

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The economically motivated adulteration of milk powder in the Chinese market has increasingly become a major public concern. The study was done to ascertain the feasibility of utilizing $\delta^{2}H$, $\delta^{18}O$ and $\delta^{15}N$ stable isotope technique in elucidating the authenticity and origin of milk products on the Chinese market. Milk powder from North America, Oceania and China were analyzed. An elemental analyzer was connected to an isotope ratio mass spectrometer operated in the continuous flow mode was utilized. Statistical analysis was performed using descriptive statistics and one-way ANOVA. The study revealed that both $\delta^{2}H$ and $\delta^{18}O$ had a wide range of mean values: 13.86 to 22.25‰ and -82.86 to -28.5‰, respectively. There was a significant difference in the $\delta^{2}H$ and $\delta^{18}O$ composition of the milk samples of ($P<0.05$; $F=20880$) and ($P<0.05$; $F=1399.0$), respectively. Both the $\delta^{2}H$ and $\delta^{18}O$ isotopic technique could provide a clear distinction between all the specific regions-of-origins that were evaluated except between the northern part of China (mean=21.63) and New Zealand (mean=21.62), $\delta^{18}O$ isotopic could not discriminate. The feasibility of $\delta^{2}H$ and $\delta^{18}O$ is mainly based on the distinct isotopic signatures of water in different geographic localities. The range of the mean $\delta^{15}N$ values of the samples was very close, 3.06 to 5.61%. The nitrogen stable isotope could not provide a clear distinction for most of the milk products because $\delta^{15}N$ of an animal reflects that of the diet. Hence in cases of similar diet, it cannot provide a distinction between the animals using this technique.

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Patterns, problems, and influences in feeding of formula-fed infants in Makati City, Philippines

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A prospective descriptive study involving 156 participants practicing formula-feeding was done at Cembo Health Center, Makati City, Philippines. Information on maternal, infant demographic data, feeding history and current feeding history were obtained through an investigator-conducted interview. Of the 156 respondents, 44% were from the 20-30 years old age group, in which there was significantly higher percentage of mothers practicing exclusively formula feeding than mixed feeding. There were 141 mothers with previous breastfeeding experience and only 30% of them continued breastfeeding and mixed-fed their infants. Fifty-seven mothers had infants given breast milk substitutes or supplements at birth. The most frequently reported reasons for stopping breastfeeding were insufficient milk production (58.3%) and the need to return to work or school (25.0%). Top two maternal influences for milk formula choice were recommendations from their doctor (36.5%) and from a relative or friend (30.8%). Only 21.1% of the respondents had infants who encountered problems, wherein the most common was constipation (45.5%). Ninety-three mothers reported changing their infant's milk formula and 77% of them did not consult a doctor prior to change. Formula changes usually occur two or three times, commonly before 12 months of age. In summary, the most common maternal reason for breastfeeding cessation is insufficient milk production. Constipation is the most prominent feeding problem among formula-fed infants, and is also the most frequent reason for formula switch. Milk formula changes commonly occurred before the first year of life and often without physician guidance.

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Improved interpersonal counseling (IC) by health workers and supply chain enhances the utilization of iron folic acid supplements (IFAS) among pregnant mothers in selected districts of Bangladesh: A case study

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Objectives: Anemia is found in 49.6% of pregnant women in Bangladesh, BDHS 2011. Micronutrient Initiative and the Government implemented an improved IC program to increase IFA consumption among pregnant women in two intervention areas (Satkhira, Narsingdi).

Methods: Interventions included strengthening IFAS supply chain through accurate forecasting IFA needs, tracking stock and coverage, streamlining monitoring, building functionary capacities, and promoting behavior change by improving health workers' IC skills with pregnant women during home and other contacts. IFA consumption and women's receiving IC exposure were measured through cross sectional surveys at baseline (200 women/district) and ~two years of intervention (300 women/district, 1200 total) in both intervention and comparison districts (Mymensingh and Jessore).

Results: At end line, 587 of 600 women in intervention districts consumed any IFAS in most recent pregnancy; 94% of consumers (555/ 587) received IC. Women's consumption of 90+ IFA increased from 36% to 84%, an increase of 48 percentage points; logistic regression analysis found that those exposed to improved IC by health workers were 5 times more likely to consume 90+ IFAS ($p<0.001$). In comparison districts, 560 of 600 women consumed IFA; 85% of consumers (476/ 560) received IC; consumption of 90+ IFAS increased from 46% to 52%, an increase of 6 percentage points; regression analysis found no significant effect of standard IC on IFAS consumption.

Conclusions: Improved IC played a significant role in increasing adequate utilization of IFAS among pregnant women in the intervention areas. Findings suggest that Bangladesh's IFAS scale-up could focus more on training to improve IC skills to increase IFAS consumption.

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Organic chromium forms modifies the expression of orexin and its related receptors and glucose transporters in heat stressed hens

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High ambient temperature reduces the metabolic rates and alters post-absorptive metabolism, regardless of the decreased feed intake. Recent studies reported that orexins/hypocretins regulate energy intake and expenditure, glucose and lipid metabolism by modulating hepatic gluconeogenesis, leading to generation of the blood glucose oscillation. We previously found that organic chromium forms reduces environmental stress factors, regulates glucose metabolism in poultry reared under high ambient temperature. However, the regulation of orexin system by heat stress and Cr supplementation itself remains unclear. Here, we investigated the effects of heat stress and organic chromium forms on the hepatic expression of orexin (ORX) and its related receptors (ORXR1/2) and glucose transporters (GLUTs) in laying hens. The expression of ovary GLUTs was also studied. We found that heat stress significantly down-regulated ORX, ORXR1/2 and GLUT-2 in the liver and GLUT-1 and GLUT-4 in the ovary cells of laying hens. However, chromium form (CrPic and CrHis) supplementation increased hepatic ORX, ORXR1/2 and GLUT-2and ovary GLUT-1 and GLUT-4 in laying hens ($P<0.05$). In conclusion, the present data indicated that hepatic orexin system and GLUTs could be a molecular signature in the heat stress response, and CrPic and CrHis supplementation may alleviate negative effects of heat stress by regulation of orexin system and glucose transporters.

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Dietary total antioxidant capacity and incidence of chronic kidney disease in subjects with dysglycemia: Tehran lipid and glucose study

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Background & Aim: Dysglycemia increases the likelihood of chronic kidney disease (CKD) via oxidative stress. The antioxidant-rich diet may attenuate effects of hyperglycemia on oxidative stress. We aimed to investigate the association of dietary total antioxidant capacity (TAC) with incidence of CKD in subjects with dysglycemia.

Material & Method: We followed-up 1179 subjects with dysglycemia from the Tehran lipid and glucose study (TLGS) for 3 years, who were initially free of CKD. Dietary intake of TAC, vitamin C, vitamin E, and ß-carotene was assessed through a food-frequency questionnaire at the baseline. Dietary TAC was estimated using the oxygen radical absorbance capacity method. Estimated glomerular filtration rate (eGFR) was calculated, using the modification of diet in renal disease study equation and CKD was defined as eGFR <60mL/min/1.73m2. Odds ratios (ORs) using multivariable logistic regression were reported for the association of incident CKD with dietary TAC.

Results: A total of 197 (16.7%) cases of incident CKD were recorded after 3 years of follow-up. After adjustment for age, sex, smoking, physical activity, body mass index, hypertension, and total energy intake, the top tertile of dietary TAC compared to the bottom was associated with 39% (95% confidence interval (CI): 0.61 0.40-0.93) lower risk of incident CKD (P for trend=0.025). Furthermore, the highest tertile of vitamin C intake compared to the lowest, risk of incident CKD was decreased (OR: 0.60; 95% CI: 0.38-0.93, *P* trend: 0.023). Intake of vitamin E and ß-carotene were not significantly associated with incident CKD risk.

Conclusion: Our findings suggest diet high in TAC is associated with a lower risk of incident CKD among subjects with hyperglycemia after 3 years of follow-up.

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Nutrigenetics- effect of nutrients on genetics: A review

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Statement of the Problem: The term "epigenetics" comes from the Greek word epigenesis and was coined by the biologist Conrad Waddington in the late 1940s. Over the past decade, there has been mounting interest in the associations between epigenetic modifications and human conditions and diseases such as aging, cancer, cardiovascular disease and obesity. While many of these pathologies can be heavily influenced by heritable factors, environmental factors also play a role. Indeed, the impact of environmental factors (i.e., diet, smoking, physical activity and pollutants) on disease pathology is thought to be mediated, in part, by epigenetics. Epigenetic is defined as changes in gene expression that occur without a change in DNA sequence passed on through cell division. Epigenetic mechanisms play an important role in mediating between the nutrient inputs and the ensuing phenotypic changes throughout our entire life. Nutritional epigenetics, refers to the effect of nutrients on DNA (and hence on gene expression), which programs or reprograms biological networks with multigenerational consequences. Epigenetics became important in the field of nutrition as it try to fill fundamental gaps in the knowledge of nutrient-genetic interactions in health and disease.

Methodology & Theoretical Orientation: Full text articles in English were included which were electronically searched in PubMed, Science Direct and other databases using keywords epigenetics and nutrition. This review paper summarizes the epigenetic roles of nutrients in physiologic and pathologic processes.

Findings: Important nutrients and food components that have an impact on epigenetics are folate, choline, genistein, etc. Nutrients can dramatically affect DNA methylation, histone modifications in specific genes and gene expression.

Conclusion & Significance: Epigenetic heterogeneity among individuals is now established as a functionally-important mechanism responsible for individual phenotypic differences and looks likely to be a very fruitful area for research aimed at understanding inter-individual differences in responses to diet. Current knowledge in nutritional epigenetics is limited, and further studies are needed to expand the available resources and better understand the use of nutrients or bioactive food components for maintaining our health and preventing diseases through modifiable epigenetic mechanisms.

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Creating supportive environment through capacity building is an effective model to increase nutritional behavior

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Statement of the Problem: In Bangladesh nutrition indicators are showing very poor among children and reproductive age (15-49) women. Total 36% (BDHS 2014) children <2 years of age is stunted, 14% (BDHS 2014) are wasted and in Sunamganj 49.5% (BDHS 2011) are suffering anemia, on the other hand total 42% at reproductive age women (ever married) are anemic. Half of total adolescents are stunted, 43% are anemic and among them one third are forced to marry before her 18th birth anniversary. The situation is worst in rural areas in Bangladesh, especially in haor (water logged) areas. The reason behind above context are many, e.g. poverty, low literacy rate, ignorance, women status in family and society, early marriage, food intake behavior, density of child birth and lack of access to service and availability of services. The nutrition at the center project of CARE Bangladesh is implementing its project at the two sub-district of Sunamganj that is practically water logged for half of the year. The aim of the project is to improve anemia among reproductive age women and stunting and anemia among children <2 years of age. One of the key strategies is building capacity of service providers, key community people, community support group members and representatives from local government. As a result of providing training, orientation and continuing on the job training on Maternal Infant and young child Nutrition (MIYCN), a supportive environment is created. The skills personnel are now providing and delivery message through various channel among the targeted population, e.g. counseling at EPI center, satellite clinic, Community Clinic, while visits household level. Relevant days are observed with importance (World Breastfeeding day, World Health Day and Safe Motherhood Day, etc.), and Iron Folic Acid (IFA) campaign along with awareness creation on nutritional behavior among adolescents girls at school is going on.

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Food and nutrition education to consumers - is the message getting through, or not?

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The 21st century ordinary person is surrounded by technology that enables them to access information on nutrition and wellbeing at their fingertips. Even in areas where such technology is not readily available, such information is being conveyed the conventional way through the relevant health organizations and ministries. Yet the challenges of the double burden of malnutrition- under and over nutrition are on the increase. Is the nutrition education message getting through, or not? In this lecture, the author explores from her own perspective and experience, some of the reasons why these challenges exist, in spite of the readily available Nutrition Education.

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Potential role of selected dry fruit extracts in inhibition of advanced glycation end-product formation mediated by their antioxidant potential

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Dietary guidelines emphasize the dynamic aspects of phytonutrients as they exert beneficial effects on human health particularly against several chronic ailments. Accumulation of advanced glycation end products (AGEs) in the body due to the non-enzymatic glycation of proteins and oxidation is associated with aging and diabetes mellitus. Current piece of research work was designed to focus on the antioxidant and anti-glycation properties of four selected dry fruits namely *Phoenix dactylifera, Vitis vinifera* L., *Cocos nucifera* and *Prunus armeniaca*, which are locally available and readily consumed in Faisalabad, Pakistan. In this context, optimization of solvent extraction (methanolic) for the isolation of bioactive molecules was carried out. The biological assays bared a considerable antioxidant potential of selected edible materials. *Phoenix dactylifera* followed by *Prunus armeniaca* and *Vitis vinifera* were proved to be superior for antioxidant potential with maximum reduction capacity and least IC_{50} as a result of inhibition of free radical scavenging by DPPH method. The selected food extracts also exhibited a considerable inhibition on glucose-induced advanced glycation end-products (AGE) in in vitro bovine serum albumin (BSA)-glucose system in a dose and time dependent manner. *Phoenix dactylifera*, *Vitis vinifera* and *Cocos nucifera* were particularly potent in inhibiting the early and intermediary glycation products at different incubation periods. As oxidation and glycation are relevant to diabetic complications, the results of current work promote the exploiting potential medicinal use of these selected foods enriched with phytoprotectants as a functional food for healthy and medicinal diet.

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Anti-cancer activities of Cheddar cheese: Cell cycle arrest and apoptosis induction

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Statement of the Problem: After cardiovascular diseases, cancer is the second leading cause of deaths, worldwide. The growing curiosity of diet and health relation has extended the necessity to exploit the nutritious, biologically active and sustainable food products. In this context, exploitation of bioactive peptide shares an exciting technological and scientific potential for their thriving applications. The pharmaceuticals, dietary supplements, functional and novel foods can be enriched with bioactive peptides for specific health benefits through nutrition. The present study was aimed to evaluate the potential role of water-soluble peptides (WSPs) extract derived from Cheddar cheeses with special reference to anti-cancer activities. Purposely, the WSPs fractions collected at different stages of cheese ripening were subjected to assess the cell viability, cell cycle arrest and apoptosis using lung (H1299) and colon (HCT-116) cancer cell lines. Cheese extracts of 120, 150 and 180 of ripening days showed marked anti-proliferation activity towards cancer cells in dose-dependent fashion. The extracts also caused significant changes in cell cycle distribution in comparison to the control cells. The substantial dose-dependent increase in the percentage of cells population in G0/G1 phase was observed in colon cells while WSPs extracts induced G2/M phase cell cycle arrest in lung cancer cell line at rate of 400 µg/mL and 500 µg/mL. Moreover, these extracts also induced extensive early and late apoptosis in all cancer cells. The promising health potential of Cheddar cheese can offer a perspective to reduce the risk of disorders associated with cancer.

However, clinical and animal studies are further required to confirm the bioavailability and proper functional/ physiological role in body.

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Regulation of NF-κB by dietary curcumin in ovarian cancer

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Ovarian cancer is the most lethal gynecological cancer with 30% 5-year survival rate. High mortality rate is attributed to lack of early diagnostic tests and effective curative therapeutic regimens. Curcumin, a polyphenolic compound found in turmeric products, has been shown to be associated with reduced cancer incidence in populations consume high turmeric in their diet. Nuclear factor kappa B (NF-κB) signaling is currently recognized as a useful strategy in cancer treatment and prevention. However, a direct link between curcumin intake and regulation of NF-κB in ovarian cancer is yet to be established. Here, we investigated the effect of daily dietary curcumin intake on the NF-κB pathway of spontaneous ovarian cancer in a hen model, the only non-human animal that spontaneously develops cancer with a high prevalence. At the end of 12 months, the analysis of the tumors revealed that NF-κB signaling were significantly inhibited by curcumin intake in a dose-dependent manner ($P<0.05$). In conclusion, the results of our study demonstrated for the first time that daily curcumin intake leads to a significant and dose-dependent inhibition of NF-κB signaling in the development of spontaneous ovarian cancer indicating a tremendous role of curcumin as a chemo preventive strategy against ovarian cancer.

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