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Bu-Miin Huang et al., J Nutr Food Sci 2018, Volume:8
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Cordycepin induced unfolded protein response-dependent cell death with drug resistance phenomenon in MA-10 mouse testicular cancer cells

Bu-Miin Huang[1], **Bo-Syong Pan**[2] and **Ming-Min Chang**[1]
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Testicular cancer is the most commonly diagnosed cancer in men at 15-35 years of age, and radical orchidectomy combined with chemotherapy is the typical treatment. However, drugs resistance and side effects that impact quality of life for patients with testicular cancer has not seen marked improvement in recent decades. In the present study, we characterized the pharmacological exacerbation of the unfolded protein response (UPR), which is an effective approach to kill testicular cancer cells. The UPR is executed via distinct signaling cascades whereby endoplasmic reticulum (ER) during stress is complemented by an apoptotic response if the defect cannot be resolved. To characterize the ability of cordycepin (3'-deoxyadenosine), a major bioactive component in Cordyceps sinensis with anti-tumor ability, inducing ER stress in testicular tumor cells, we have engineered a clustering analysis of mRNA expression profiles and the immunoblotting examination after cordycepin-treated MA-10 cells. Cordycepin effectively induced cell cycle arrest in MA-10 cells, and regulated FoxO/P15/P27/CDK4 signaling pathways. As well, cordycepin induced PERK/eIF2α/ATF3/CHOP (apoptotic) and the IRE1/XBP1 (adaptive) UPR pathways. Interestingly, cordycepin-treated MA-10 cells were collected from attachment and suspension portions and then re-cultured for 72 hours, and AKT, LC3 I/II and MAPK signaling pathways were highly induced in attachment cells, illustrating the drug-resistance to cordycepin by activating AKT and MAPK pathways in MA-10 cells. In summary, PERK/eIF2α/ATF3/CHOP signaling is required for pro-apoptotic UPR in MA-10 cell death following cordycepin treatment, suggesting a potential therapeutic application in treating testicular cancer. However, activation of AKT and MAPK pathways could possibly result in drug-resistance to cordycepin in MA-10 cells.

Biography

Bu-Miin Huang is the full time Professor at the National Cheng Kung University under the discipline Anatomy, Histology, Cell Biology, Neuroanatomy. His major interest has been focused on the *in-vitro* and *in-vivo* regulation of steroidogenesis in male and female reproductive systems by different factors such as Chinese herbs, neuropeptides, drugs and environmental toxicants.

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The apple polyphenol phloretin inhibits breast cancer cell migration and proliferation via inhibition of signals by type 2 glucose transporter

Yuan-Soon Ho
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Glucose transporters (GLUTs) are required for glucose uptake in malignant cancer cells and are ideal targets for cancer therapy. To determine whether the inhibition of GLUTs could be used in TNBC cell therapy, the apple polyphenol phloretin (Ph) was used as a specific antagonist of GLUT2 protein function in human TNBC cells. Interestingly, we found that Ph (10-150μM, for 24h) inhibited cell growth and arrested the cell cycle in MDA-MB-231 cells in a p53 mutant-dependent manner, which was confirmed by pre-treatment of the cells with a p53-specific dominant-negative expression vector. Furthermore, the anti-tumorigenic effect of Ph (10, 50mg/kg or DMSO twice a week for six weeks) was demonstrated in vivo using BALB/c nude mice bearing MDA-MB-231 tumor xenografts. In conclusion, inhibition of GLUT2 by the apple polyphenol Ph could potentially suppress TNBC tumor cell growth and metastasis.

Biography

Yuan-Soon Ho is a professor of Graduate Institute of Medical Sciences. He Chairman, professor School Medical Technology, Taipei Medical University, He is having research interests in the field of Molecular Biology, Cell Biology, Apoptosis, Tumors, Cancer Cells, Food Science, Kinase, Food Biochemistry, Functional Food, Agricultural and Food Safety Economics.

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Diet adjustment in later life: A grounded theory study of eating behaviours amongst the ageing population of Limerick

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The ageing of the population going forward will embody one of the most momentous demographic and social developments encountered by Irish society. Falling fertility rates and ever-increasing life expectancy will see the number of older people aged 60 or more almost double, with those over the age of 75 expected to almost triple by the year 2050. Older individuals are the fastest growing segment of the world's population, yet they are often overlooked by the food industry, with most food products targeted at those aged 21 to 49. Disruptions in diet and eating behaviors are common among older adults however, little is known about the processes underlying these disruptions. The central goal for assisting individuals to age well is promoting a healthy and nutritious diet however, "Eating behavior is the result of a complex interaction of physical, psychosocial, cultural and environmental factors that impact food choices and dietary practices", and addressing the barriers of access to food is extremely important to ensure adequate food consumption in older adults, (Brownie and Coutts, 2014, p. 182). Conversely, the extent to which food shopping can constitute a manageable part of older people's daily/weekly routines is strongly influenced by their economic means and health status. The aim of this study was to identify potentials barriers and motivators for food intake in the ageing population. Qualitative methods based on a constructivist grounded theory approach, guided by a critical realist worldview were used. A mixture of intensive interviews and unstructured non-participant observations were chosen to reach the research objectives, as they fit grounded theory methodology. The sample criteria included those over the age of 65, living independent lives, and who were responsible for most of their shopping/cooking needs. A substantive theory of why and how older adults eating behaviors change in later life was developed.

Biography

Sharon O Flaherty is currently completing her MA in research at Limerick Institute of Technology (LIT) in Ireland. Sharon recently graduated with a BA honours degree in Applied Social Science in Social Care Work at LIT. She received the Social Care Ireland award for academic excellence across her course. Sharon has won two awards for research presentations on her undergraduate thesis titled 'Exploring food insecurity among single parent families in Ireland'. She is currently working as a Tutor at Limerick Institute of Technology. She is from Co Clare, where she currently resides with her husband and two children.

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Improvement of cardio-metabolic after 8 weeks of weight loss intervention

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Introduction: Lifestyle interventions can prevent the deterioration of impaired glucose tolerance to manifest type 2 diabetes, and also prevent cardiovascular diseases, as it showed many studies (the Finnish Diabetes Prevention Study, Diabetes Prevention Program (DPP), the China Da Qing Diabetes Prevention Study, etc.) Therefore, the aim of our study was to compare the effect of intensified life style intervention on cardiometabolic parameters.

Methods: It is ongoing randomized interventional clinical study (NCT02325804) focused on reduction of body weight/fat. Intervention: hypocaloric diet (30% restriction of calories) and physical activity 150minutes/week. Before and after 8 weeks of intervention, all patients underwent complete medical examination (measurement of physical fitness, resting metabolic rate (RMR), body composition analysis, oral glucose tolerance test, parameters of lipid metabolism, and other cardiometabolic risk factors.

Results: So far, 39 patients finished the intervention. The average reduction of body weight was 6, 8+4, 9kg (0-15kg; p=0.0006), accompanied with significant reduction of body fat percentage (p≤0.0001), amount of fat mass (p=0.03), waist circumference (p=0.02). Amount of lean mass and RMR remained unchanged. Her rate (p=0.02), systolic and diastolic blood pressure was reduced (p=0.01 p=0.02 resp.) as well as insulin sensitivity were improved. Lipid parameters also changed cholesterol, LDL decreased (p=0.05, p=0.04 resp.), while triglycerides showed tendency to decrease (p=0.055). Liver function improved, alanine aminotrasnferase (ALT) were reduced (p=0.01). Physical fitness significantly improved (as measure VO2 max (p=0.02).

Conclusion: Results of our study are in line of previous results about beneficial effect of intensive life style changes on reduction of cardiometabolic risk factors and improvement of liver function.

Biography

B Bajer is graduated at Comenius University, Medical Faculty - General Medicine, gained MD title in 2013. He is the owner of Center of Nutrition and Sport (from 2013), where he devotes to diagnostics of physical and psychological state of clients (bioimpedance on Biospace Inbody 230, caliperometry, antropometry, blood measurements etc.). He is PhD student working for Slovak Academy of Science, Biomedical Center - Experimental Endocrinology with thesis - impact of dietotherapy and physical activity on cardiometabolic risk factors. At the moment, he is in his final year of study. His occupation is nutrition and sport endocrinology. He is part of new medical multidisciplinary medical team of Bariatric Surgery in Trnava Hospital (from 2016). He acts as a Lecturer of Physiology and Pathophysiology for students of General Medicine on Slovak Health University in Bratislava and Dietology for Private Health School in Trnava for physioterapists and clinical nurses. As a seminary Teacher, he acts for wide spectrum of people from pharmacists to mentally, socially and physically handiceped kids, in Slovakia and Czech republic. He is the Head Nutrition Expert for Beiersdorf /Nivea CZ and SK (externally).

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Nutrition literacy: A mediator of healthy-eating behavior based on the social ecological framework

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Nutrition literacy (NL) is derived from health literacy, and which is used to elaborate individuals' health literacy regarding eating behavior. However, the link between NL and healthy-eating behavior was still unknown based on available evidence. The social ecological framework has been used widely to investigate the influencing factors of healthy-eating behavior. In this study, we expected to explore the role of NL between influencing factors and healthy-eating behavior among college students based on social ecological framework. A cross-sectional and questionnaire-survey study comprising college students in Taiwan was conducted. Convenience sampling was used to select six schools: one national and one private university in each of the three regions: North, Central, and South Taiwan. Four-hundred twelve valid questionnaires were collected (effective response rate=85.8%). The questionnaire used in this study was divided into four parts: self-rated NL, influencing factors of healthy-eating behavior, healthy-eating behavior, and demographic characteristics. Descriptive statistics, an independent samples t-test, a hierarchical multiple regressions and a mediation analysis were performed for data analyses. The results showed that college students' mean NL score was 4.32 (SD=0.78, range=1-6). In the social ecological framework, NL significantly predicted healthy-eating behavior (ΔR^2=0.054, ΔF=32.54, $p<0.001$), controlling for background, individual, interpersonal, environmental, and social-system factors. Among the 13 predictors across the four levels predicted the healthy-eating behavior of college students, there were seven factors that were affected by the mediating effect of NL: social support from family (48.3%), healthy food proximity (43.1%) and exposure to healthy-eating advocacy (42.4%), healthy eating attitude (41.4%), social support from peers (31.0%), healthy food preference (27.3%), and healthy-eating self-efficacy (25.9%). This study suggests a prominent idea to improve NL and healthy-eating behavior at the same time. When improving the healthy-eating behavior of college students in the future, it is beneficial to develop the comprehensive intervention considering NL and multiple factors.

Biography

Li-Ling Liao has earned her PhD degree in Department of Health Promotion and Health Education, National Taiwan Normal University in 2007. She holds the position of an Associate Professor in the Department of Health Management at I-Shou University in Taiwan since 2016. Her current major areas of research are health literacy of children and adolescent. She has been the PI of college students' nutrition literacy program sponsored by the Taiwan Ministry of Technology in Taiwan since 2015. Her recent publications focus specifically on the role of nutrition literacy on college students' healthy eating behavior. She has also been the Co-PI of national health-promoting school program held by the Ministry of Education in Taiwan since 2006. She has guided many schools in Taiwan in implementation of the health-promoting school projects sponsored by the local and central governments of Taiwan.

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Influence of gluten free diet on rat liver cytochromes P450

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Celiac disease is being diagnosed in an increasing number of people. Celiatics need a gluten free diet, which may lack sufficient protein, fibre and minerals. The seeds of plants called pseudocereals (buckwheat and quinoa) help to mitigate this deficiency in a diet. This study evaluates the influence of buckwheat or quinoa on the metabolism of chosen drugs. Drugs are at first metabolized by cytochromes P450 (CYP) and therefore we determined CYP expression and activity of Wistar albino rats. Rats (51 days old) were fed a diet with 20% of buckwheat seeds (buckwheat) or 20% of quinoa seeds (quinoa). Rats were allowed to chow and tap water ad libitum. After 89 days, rats were anesthetized and exsanguinated. Livers were taken for further analyses. Microsomal fractions were prepared and used for the study of CYP activity and protein expression was evaluated by Western blotting technique. In this study specific substrates were used for individual human CYP that correspond to rat CYP enzymes (1A1, 2E1, 2C11, 2C11/3A, 2D1/2, 2A1/3A, 2B1, 2C6, 1A2) to determine the influence of buckwheat or quinoa on CYP enzymes. The results of protein expression were within ±25% expression of control group with the exception of 1A2 (buckwheat) by 47% and 2C11 (quinoa) by 65%. Activity of rat CYP 2B1 was increased by 37% (buckwheat) and combined activity of 2C11 and subfamily 3A was increased by 23% (quinoa). Activity was lowered in rat CYP 2D1/2, 2B1 (quinoa) and 2C6 (buckwheat) by 29%, 27% and 30% respectively. Based on the results of CYP protein expressions and activities it can be proposed that having the buckwheat and quinoa seeds daily will not significantly affect the metabolism of simultaneously administered drugs and their consumptions will probably not result in drug interactions.

Biography

Jiří Prokop has completed his Master's degree from Faculty of Science, Palacký University Olomouc, Czech Republic. He is currently pursuing his PhD (Medicinal Chemistry and Clinical Biochemistry Program) at the Faculty of Medicine and Dentistry of Palacký University Olomouc. He has actively attended four conferences (one international). His research interests are Enzymology, Pharmacology, Toxicology, Protein Expression and Oxidative stress.

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Integration of duck – paddy farming for supporting food consumption in Minahasa Regency

Artise H S Salendu, F S G Oley, Tilly F D Lumy, Lidya S Kalangi and **J O Rawis**
Sam Ratulangi University, Indonesia

Duck farming in research area developed integrated with paddy plant. The problem is how far the ducks in supporting food consumption in Minahasa Regency not yet known. This research has been conducted with the aim to know the potential of duck-paddy farming development seen from available resources and how far the consumption of duck meat in Minahasa Regency. This research was conducted by using survey method. The research material is duck farming integrated with paddy crop. The location of the research is determined by purposive sampling that is the location that conducts the development of duck-paddy integration that is Remboken District. Respondents are farmers and households who consume duck meat. Duck farming in Remboken District is generally traditional. Ducks are released or shepherded to paddy fields. The results showed that the farmer's livestock was the lowest total of 50 ducks and the most was 500 ducks. The type of duck that is kept in District of Remboken is a kind of Javanese ducks. In addition to rice waste, snail species ("renga") is one of the preferred feed types by ducks. For farmers, this type of feed is considered very good and suitable for laying ducks for high egg production. Ducks are sold around research sites, especially for duck meat restaurant entrepreneurs in the Minahasa Regency. The people of Minahasa Regency tend to consume duck meat because it has a good taste. The cuisine of duck meat is in accordance with the tastes of the people in the research area. Based on the result of the research, it can be concluded that duck livestock business integrated with rice plant gives benefit for farmer with R/C ratio is bigger one and consumption of duck meat tends to increase.

Biography

Artise H S Salendu is graduated from the Faculty of Animal Husbandry of Sam Ratulangi University, Manado, (Ir). In 1990 he is the Master in Faculty of Post Graduate IPB Bogor (MS). In 2012, he did his Doctorate at Faculty of Agriculture University of Brawijaya Malang (DR). He is the Professor with the expertise of Livestock Economics. Since 1975, until now he is working as a Lecturer at the Faculty of Animal Husbandry of Sam Ratulangi University of Manado. He has experience of professional organizations namely: Board of Indonesian Agricultural Economy Association (PERHEPI) Komda Manado Period 2012-2015, Member of the Association of Food Plant Scientists Indonesia, since 2013 and Association of Livestock Economy Social Scientists Indonesia (PERSEPSI), as Chairman of Komda Manado, since 2017.

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Slimming teas, are they therapeutic or noxious?

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Marmara University, Turkey

Slimming teas (diet teas) are becoming more popular with increasing social media popularity among people aiming to lose weight effortlessly. These products are widely used because they are believed to be harmless, especially among women who encounter these teas on the internet on a regular basis. These kind of weight-loss teas are mostly mixed form of cassia (*Cinnamomum cassia*), nettle leaves (*Urtica sp.*), rosehip (*Rosa canina*), green tea (*Camellia sinensis*), rosemary (*Rosmarinus officinalis*), mate plant (*Ilex paraguariensis*), fennel seed (*Foeniculum vulgare*). Although they provide psychological relaxation and acceleration of the digestive system through herbal extracts, these teas may cause numerous adverse effects especially when used persistently. The purpose of selling these products is to provide the effect of laxatives, diuretics and enhance the perspiration in user. However, chronic use of laxatives and diuretics may cause the development of cardiac and muscle toxicity, depending on the dehydration and electrolyte dissipation. In addition, the people who already have the heart or muscle disorders can suffer exacerbation. Based on the clinical studies, the continuous use of laxatives will cause stomach and intestinal motility corruption, bradycardia, heart block, "torsades de pointes" syndrome (due to potassium deficiency), suppression of the heart's contractile force, chronic diarrhoea, abdominal pains and even hypertension, which can lead to deadly heart diseases. All these findings proposed that plants used in these mixtures may cause a number of adverse effects. For this reason, people should be made aware of several types of slimming teas ingredients and their possible adverse effects. Moreover, these products should be distributed with prescription and should be used under the control of health care professionals such as doctors, dieticians and pharmacists. Additionally, these types of products (slimming or detox teas) should be considered as conventional drugs so that its sale can be regulated by official health minister. This way, the health of individuals can be protected with more care. Online purchase of unregulated items needs to be avoided; in case they are purchased the user should avoid its consumption.

Biography

Yunus Emre Bakirhan has completed his MSc from London Metropolitan University in Human Nutrition programme. He is currently pursuing his PhD on Nutrition and Dietetics at Marmara University.

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Attitudes of pharmacy and nutrition students towards team-based care after first exposure to interprofessional education in Qatar

Al Abdi T, Wilby K, Hassan A, Brown A, Paravattil B and **Khalifa S**
Qatar University, Qatar

Little is known regarding attitudes of healthcare professional students towards team-based care in the Middle East. As modernization of health systems is rapidly occurring across the Gulf Cooperation Council countries, it is important for students to engage in interprofessional education (IPE) activities. The objective of this study was to assess pre-clinical students' attitudes towards interprofessional healthcare teams after completion of their first IPE activity. A previously validated questionnaire was distributed to 25 pharmacy and 17 nutrition students at Qatar University after participation in an IPE event. Questions were related to quality of team based care and physician centricity. Results showed high agreement regarding high quality care provided by teams yet students were unsure of the value of team-based care when considering required time for implementation. Results provided baseline data for future.

Biography

Al Abdi T has completed her Post-Graduate studies in 2006 from Leeds Metropolitan University in UK and is a qualified state registered Dietitian with the Academy of Nutrition and Dietetics and the British Dietetic Association. She has been the Lecturer and Clinical Coordinator of the supervised practice program at the Human Nutrition Department in College of Health Sciences at Qatar University since 2010. Her research interest is in clinical dietetics and practice in the Middle East as well as promoting the role of dietitians in Qatar.

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High dietary diversity is associated with child obesity in Iranian school children: An evaluation of dietary diversity score

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Objective: The prevalence of overweight and obesity in Iranian children has increased considerably in the last decades. Obesity in children is a major concern. Higher variety score of die may cause obesity are overweight among urban school children. The objective of this study was to measure dietary diversity score and obesity in child from Iran.

Methods: The present study examined Dietary Diversity Score (DDS) and weight status by calculating Body Mass Index (BMI) and the World Health Organization's (WHO) anthropometric indices of weight-for-age (WA) and weight-for-height. A cross-sectional study was performed on 2234 Iranian aged 6-9 years, attending primary schools residing in urban area from low and middle-income categories. Dietary diversity scores were assessed based on frequency of consumption of individual food items categorized into 11 individual food groups.

Results: Overweight children showed the highest mean score for cereals (F=2.209, P=0.005), vegetables (F=5.234, P=0.001), non-vegetarian foods (F=12.3920, P=0.000), mixed dishes (F=9.899, P=0.000), beverages (F=9.654, P=0.000), sweets and sugar (F=5.122, P=0.002) and fats (F=10.263, P=0.000). Mean scores for vegetables, sweets, beverages and fat consumption increased with increasing weight. High scores for pulses and legumes consumption were observed in obese children. Scores for vegetable consumption were higher among overweight children.

Conclusion: Overweight and obese school children had high diversity scores in their diet.

Biography

Hooshmand Sahar is an Academician and Researcher in the field of Epidemiological Child Nutrition. She had a practice career graduating from SNDT Women's University of Mumbai, India. She has published and presented several papers in some congress and journals. She has written three educational nutrition books. She has participated as Lecturer at Department of Food Science and Nutrition in Iran and as Trainer in Family education courses conducted by education and training organization. She is honored to get awards for child nutrition and dietary diversity papers by University of Hohenheim, Germany (2012) and International nutrition foundation (INF), USA (2013).

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Dietary and lifestyle habits, intestinal microflora and equol producer phenotype in postmenopausal Japanese women

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Statement of the Problem: Equol is an active metabolite produced from isoflavones. It was found to be beneficial against climacteric symptoms, arteriosclerosis and reduced bone mass in postmenopausal women. There are individual variations in producing equol from isoflavones, due to different dietary habits, host gut microflora and genetic variants. Few studies have examined the relationships of dietary habits and nature of gut microflora to equol producer phenotype. This study aimed to identify these associations in healthy postmenopausal Japanese women.

Methodology & Theoretical Orientation: Fifty eight participants (aged 48 – 69 years) were recruited from healthy postmenopausal Japanese women who visited Sendai Medical Center in January 2018. Dietary habits were assessed by a brief self-administered diet history questionnaire. From the fecal samples, bacterial 16S rRNA genes were extracted and analyzed using the next generation sequencer. Urinary equol was measured by using immunochromatographic strip test. Participants were defined as equol producers with a urinary equol level higher than 1.0 μM.

Findings: There were 13 (22%) equol producers (EQP) and 45 (78%) equol non-producers (EQNP). Compared to EQNP, EQP had significantly higher microflora diversity. Equol producers were positively associated with frequency of intake of refined grains, colorful vegetables, fermented soy, seaweeds, and mushrooms, but negatively associated with frequency of meat intake. High intake of root vegetables, fruits, probiotics such as yogurt, mushrooms had positive effect on microbial diversity, whereas, high intake of coffee and smoking habit had negative effect. Equol producing bacteria were present in 96% (43) of EQNP and significantly higher in those with regular physical activity.

Conclusion & Significance: Equol producing bacteria were present in almost all participants, however, only a few are equol producers. Diversity of gut microflora had positive effect on equol producing ability. High microbial diversity can be achieved by certain dietary and lifestyle habits.

Biography

Dr. Remi Yoshikata is the board-certified specialist of obstetrics and gynecology. She has also worked in both clinical and academic areas as well as involved in medical education. Her research interests are focused on Women's Health and Climacteric Medicine. So she is frequently invited to speak to both professional and lay audiences on these topics. She has voiced on new perspectives of comprehensive women's health care through daily clinical practice and academic seminars. She not only has hold posts in the Women's Health and Climacteric Medicine Society but also published a few books and many articles on women's health.

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Relationship between dietary practices and type 2 diabetes mellitus among adult patients in a semi-arid Kitui county, Kenya

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Diabetes is a serious metabolic disorder whose prevalence in adults has been increasing in the last decade and it is estimated that by 2030, the number of cases will almost double. Diet and lifestyle modifications are considered the cornerstone for the treatment and management of type 2 diabetes (T2DM). Despite this, there is minimum literature assessing the dietary practices and glycemic control in an arid region context in Kenya. A total of 138 T2DM patients were selected using systematic sampling in the outpatient diabetes clinic and a questionnaire on socio-economic and dietary practices administered. The study was carried out in April and May 2017. There were more female (60.1%) than male (39.9%) in this study with majority being unemployed (36.2%). Twenty five percent (25%) of the respondents did not meet the RDA for energy while 41.3% of the respondents met their iron requirement. Forty seven percent (47.6%) had elevated HbA1c. Most of the respondents took three meals per day while DDS was 4.3±1.7. There was a significant relationship (r=0.56; P value=0.014) between DDS and glycemic control. There are suboptimal dietary practices leading to poor glycemic control among T2DM patients attending diabetic clinic at Kitui District Hospital.

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The effect of Indonesian fermented rice bran on blood glucose levels in rat high fat high fructose

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Statement of the Problem: Hyperglycemia known to be factors of in many diseases. Actually, this condition can overcome by changing eating habits. Diets that directly target its pathogenesis pathway can be used as supporting therapy. Following that, Indonesia has been known as a country that produce lots of rice, thus the production of its rice bran is abundant. Unfortunately, rice bran has not been widely utilized and is more often used as a waste product for fodder. The micro components in rice bran cannot be absorbed either by the intestine. With fermentation, the fiber bonds in rice bran can be broken, so it will increase its absorption in the body. The fermentation process can also increase levels of organic compounds that function as hypoglycemic agents. Thus, the study aims to determine the effect of fermented Indonesian rice bran on body weight and blood glucose levels in rat with high-fat high-fructose diet.

Methodology: Twenty-four Sprague dawley males rats were induced with high-fat high-fructose diet for two weeks and standard diet for the following four weeks. The animals were randomized and grouped into four groups, namely normal control, negative control, treatment with 10% rice bran and treatment with 10% fermented rice bran.

Findings: At first, the high-fat high-fructose induced group experienced significant increases in blood glucose levels ($p<0.001$) while the normal control group did not change significantly ($p>0.05$). After two weeks treatment, the fermented rice bran group showed a significant decrease in blood glucose level ($p<0.001$) and after four weeks treatment, all treatment groups experienced significant decrease in blood glucose levels ($p<0.001$).

Conclusion & Significance: Indonesian fermented rice bran can significantly decrease blood glucose levels in rat with high-fat high-fructose diet. It is faster than other groups as two weeks treatment has shown its effect significantly.

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Behaviors and practices related to the diet and physical activities among school children in a rural district, Sri Lanka

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Non-Communicable Diseases (NCDs) can be known as the biggest cause of pre mature deaths worldwide. It is revealed that the children's nutrition is primarily driven by the unhealthy food environment which promotes energy dense foods as well as discouraging the physical activities. It is widely recognized that there is a strong relationship between malnutrition and risk of obesity. Aim of this study was to determine the behavior and practices related to the diet and physical activities in school students in a rural district in Sri Lanka. This cross sectional study was employed among 603 students who were selected through the multi-stage stratified cluster sampling technique. The Global School Health Questionnaire (GSHS) was implemented to collect information related to the behavior and practices on diet and physical activities among school students. Height and weight was measured using standard protocol and BMI was calculated. Statistical Package for the Social Sciences (SPSS) 20.0 version was used to analyze data. There were 51.6% females in the sample. Majority of students (35.5%) represented the age group 15 years old. Mean BMI was 18.15 kgm^{-2} (±3.28 SD) and it was observed that 65.7% of them were underweight while 8.0% were overweight. Results suggested that 72% students bought foods from the school canteen and 36.2% consumed junk foods. Study revealed that only 21.6% students engaged with a sport in the school. Majority of students of the study were underweight. Most of the students consumed unhealthy foods and consumption of healthy foods found to be very low. Majority of students of the study weren't physically active.

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Pea protein ascorbic acid microcapsules are more effective than acorbic acid-free in the attenuation of oxidative stress biomarkers after simulated soccer game exercise protocol among young professional players

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Statement of the Problem: Soccer players reach high intensity effort during competitive games and deleterious body symptoms can occur as consequence of oxidative stress (OS). Depending on metabolic adaptation body hormesis can be delayed, compromising performance. Rapid recovery is relevant during competitive season, when games occur at small intervals. Nutritional interventions with ascorbic acid (AA) were proposed aiming attenuation of OS blood biomarkers, however, literature is controversial as concerns its effectiveness. This might be due to the saturation mechanism of absorption site and we proposed that microencapsulation is an alternative to improve bioavailability. Our aim was to evaluate the effect of pea protein isolate (PPI) microencapsulated AA administered immediately after a simulated game exercise protocol over OS biomarkers.

Methodology & Theoretical Orientation: A duble-blind crossover placebo controlled study was undertaken with 10 young players from a Brazilian elite sport club. Players were submitted to three nutritional treatments: PPI/AA; AA-free and placebo (P); AA doses were 1g. Blood parameters (catalase CAT, AA, total antioxidant capacity TAC, hydroperoxide HP, malondialdehyde MDH and creatine quinase CK) were monitored over time-course analysis up to 60 min after exercise.

Findings: PPI/AA had earlier decreasing effect than AA-free ($p<0.05$) on HP levels (20min vs 40mins), while MDH was not attenuated by any AA treatment. Enhancement in TAC was significantly higher ($p<0.05$) in PPI/AA than in AA-free (845.54 ± 56.66 vs 766.53 ± 64.44 μmol.AAeq-1). CAT had no variation. Absorption kinetics of AA from PPI/AA had typical profile of sustained release system, promoted by microencapsulation. All AA-free parameters were not statistically different from P, except for AA blood concentration.

Conclusion & Significance: Exercise protocol induced a rise on oxidative molecules and PPI/AA microcapsules were more effective than AA-free on their attenuation. Further analyses regarding player's physical performance will furnish more information about microcapsules functionality on body recovery.

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Complex approach to cardiovascular risk profile with a food supplement

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Background: Cardiovascular diseases continue to be a challenge and burden to societies. Beneficial modifying of the cardiometabolic profile has major impact for long-term success. Our previous open-label pilot study showed a complex positive influence of a new innovative food supplement Reg'Activ Cholesterol (RAC) on cardiometabolic parameters (CMP).

Objective: The objective of this studies were to test the effect of RAC to CMP in clinically asymptomatic volunteers with borderline-high values of glycosylated hemoglobin (HbA1c%), b) sustainability of the RAC effect on CMP implementing two time-points –4 weeks and 8 weeks (the guidelines of EFSA).

Design: A randomized double-blind placebo-controlled clinical trial (ISRCTN55339917)

Results: The level of total cholesterol (Chol), LDL-chol and oxLDL and HbA1c% decreased significantly and HDL-chol increased significantly only in the study group after 4 and 8 weeks of consumption RAC containing LFME-3. The level of homocysteine (Hcy) also decreased significantly after 8 weeks.

Conclusions: RAC has shown a complex positive effect on cardiovascular risk profile. Still investigations are needed to evaluate its long-term effects on clinical outcomes.

References: In 4 weeks, the lipid profile was positively modified with RAC. The effect stayed at 8 weeks timepoint and by then also the HbA1c% had dropped.

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Electromembrane extraction combined with capillary electrophoresis for the determination of organophosphorus in wastewater and food samples

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Electromembrane extraction (EME) is a sample preparation technique in pharmaceutical, chemical, clinical and environmental analysis. This technique uses electromigration across artificial liquid membranes for selective extraction of analytes and sample enrichment from complex matrices. This method has many advantages such as simplicity, rapid, low-cost, low LOD, high preconcentration factor and high recovery. In the present work, simultaneous preconcentration and determination of Organophosphorus such as Glyphosate (GLP), Malathion (MAT), Ethion (ETH), Dimethoate (DMT) were studied using EME as a suitable extraction method, followed with capillary electrophoresis (CE) using ultraviolet (UV) detection as separation technique. The Organophosphorus were extracted from 4 ml sample solutions, through a supported liquid membrane (SLM) consisting 2-nitrophenyloctylether (NPOE) impregnated in the walls of a polypropylene hollow fiber, and into a 20μL acidic aqueous acceptor solution resent inside the lumen of the hollow fiber with a potential difference applied over the SLM. The variables of interest, such as chemical composition of the organic liquid membrane, stirring speed, extraction time and voltage, pH of donor and acceptor phases and salt effect in the EME process were investigated and optimized. Under optimal conditions NPOE as SLM, stirring rate of 1000rpm, 200V potential differences, 20min as the extraction time, acceptor phase HCl (pH 1.0) and donor phase HCl (pH 1.5). After the microextraction process, the extracts were analyzed by CE with optimum conditions phosphate running buffer (pH 2.0), applied voltage of 20kV and 25°C. Under the optimum conditions, limits of detection (LOD) and quantification (LOQ) for GLP and MAT and ETH and DMT were 2.31-2.68-2.48-2-91 and 7.72-8.91-8.43-7.95ng/mL^{-1} respectively. Preconcentration factor and RSD for five replicates of each organophosphorus were calculated to be 200 and 4.06-3.93-4.32-3.65 respectively.

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Effects of symbiotic supplementation on metabolic parameters and apelin in women with polycystic ovary syndrome: a randomized, double-blind, placebo-controlled trial

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Polycystic ovary syndrome (PCOS) is one of the most common causes of infertility in women of reproductive age. Insulin resistance is a main pathophysiologic feature in these patients. According to some studies, the intake of probiotic bacteria may improve glucose homeostasis. The aim of this study was to investigate the effect of symbiotic on metabolic parameters and apelin in PCOS patients. This randomized, double-blind, placebo-controlled trial was conducted on 88 PCOS women aged 19–37 years old. The participants were randomly assigned to two groups receiving (1) symbiotic supplement (n=44) and (2) placebo (n=44) for 12 weeks. Fasting blood samples were taken at baseline and after 12 weeks. The two groups showed no difference in Fasting Blood Sugar (FBS) (adjusted mean difference: 0.60, 95% CI: -3.80 to 5.00, P=0.727), plasma glucose fasting 2-h (PGF-2h) (adjusted mean difference: 2.09, 95% CI: -9.96 to 14.15, P=0.134), Hemoglobin A1c (HbA1c) (adjusted mean difference: 0.06, 95% CI: -0.09 to 0.22, P=0.959), Homeostatic Model Assessment-Insulin Resistance (HOMA-IR) (adjusted mean difference: 0.02, 95% CI: -0.99 to 1.03, P=0.837), Quantitative Insulin Sensitivity Check Index (QUICKI) (adjusted mean difference: -0.02, 95% CI: -0.33 to 0.29, P=0.940), and C-Reactive Protein (CRP) (adjusted mean difference: 0.24, 95% CI: -1.61 to 2.08, P=0.141) by the end of the intervention. A significant difference was observed in the mean apelin-36 before and after the intervention between symbiotic and placebo groups (adjusted mean difference: -4.05, 95% CI: -7.15 to -0.96, P=0.004). A 12-week symbiotic supplementation has no significant beneficial effects on HOMA-IR and CRP in PCOS patients while the level of apelin-36 significantly decreased.

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Identification of a microRNAs triad for monitoring ketogenic diet program

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In this pilot trial, we evaluated in obese subjects the effect of a 6-weeks biphasic ketogenic diet (KD) program on biochemical parameters, body composition and plasma miRs profile. The biphasic KD program for 6 weeks' period ameliorate both biochemical and anthropometric parameters in obese and overweight subjects (36: 18 females and 18 males, same age segment) re-collocating them into stage 0 from stage 1 of Edmonton Obesity Staging System (EOSS) parameters which consider both, blood biochemical and anthropometric data. We point out a significant decrease of insulin (more than one subject, about 1/3, not knowing before, was insulin resistant) and triglyceride levels as well as of weight and BMI. Either waistline, hip circumference decreased (express in centimeters) decreased of 8-10 inches that is a great result even not significant in p-value. Systemic integrity parameters such as ALT, AST and eGFR, and the most hormonal axis (i.e. thyroid) are unaffected with slight effect of TSH and not statistically significant, decrease. Add to that we recorded no give up subjects, due to a support on food specifically designed but on a high personalization of the diet. Besides that, the screening of miRnome (799 miRs directly detected) point out a triad of microRNAs (miRs) that strongly affected by the diet and here proposed as biomolecular/biochemical tools to monitor very low carbohydrate nutritional regimens. Among all the miRs screened, we identified a triad of miRs, namely hsa-let-7b-5p, hsa-miR-143-3p and hsa-miR-504-5p that have strong validation targets already known that could be used to monitor this nutritional intervention in order to have a tool that reflects, indirectly the regulatory biochemical mechanisms and either cell signaling to the orchestration of metabolic and signaling pathways. The overall outcome of miRNA shows an improvement on overall health status (improving fat and glucose metabolism, improving immune system, improving bone health.

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The effect of low dietary carbohydrate advice on glycemic control in patients with type 2 diabetes

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Background: Type 2 diabetes is one of the most challenging medical disorders because of the demands it imposes on day to day life. Good glycemic control (GC), as judged by GbA1c, fasting serum plasma glucose (SPG) and random (SPG) levels. Diet plays a major role in the overall management of type 2 diabetes.

Purpose: The purpose of this study was to assess the effect of Dietary Advice (DA) on glycemic control in patients with type 2 diabetes and to determine long-term and short-term complication of diabetes by low dietary carbohydrate advice on metabolic control and quality of life in patient with type 2 diabetes.

Research Design & Methods: Randomized patients attending a diabetes education clinic at primary health care centers were included. The study targeted a total number of 99 cases (35 male – 64 female) of type 2 diabetes aged between 20–80 years. Depending on the treatment of oral hypoglycemic agent's subjects measured (SPG) for fasting and (SPG) for random, weight and height for body mass index (BMI) before and after intervention.

Outcomes: Medical outcome measures the change of glycemic control among the target group before and after the nutrition education.

Results & Conclusions: After the intervention period of 12 months, subjects have shown significant lower circulating levels of (SPG) for fasting which is 49%, levels of (SPG) for random which is 51.5% and a reduced body weight. DI positively modulates the GC without increasing the risk of hypoglycemia and enhances the quality of life in patient with type 2 diabetes.

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Assessment of protein nutritional status in human immunodeficiency virus infected outpatients

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Statement of the Problem: Protein-energy deficiency is observed in patients with Human Immunodeficiency Virus (HIV) infection more often than in the HIV negative individuals. This is accompanied by decrease in the function of T-lymphocytes and complement activation disorders which could lead to further HIV complications. Decrease in lean body mass (LBM) are common problems in HIV infected individuals indicating protein loss. Studies have also evaluated the hijacking of the ubiquitination pathway by HIV proteins which in turn affects protein metabolism. After the World Health Organisation's first technical consultation on Nutrient Requirements for People Living with HIV/AIDS in Geneva 2003, it was suggested that more data were needed to support an increase in the recommended daily allowance (RDA) of protein intake. To gain a better understanding on this issue we implemented a comprehensive approach to determine if the patients met their daily protein requirements.

Material & Methods: 45 outpatients diagnosed with HIV and 32 healthy volunteers aged between 24 and 40 were enrolled in the study. Protein consumptions intake by 24-hour dietary recall was determined. LBM and muscle mass were measured using bioelectrical impedance analysis. Selected biochemical parameters were evaluated (total protein and serum albumin). The protein oxidation rate was determined using indirect calorimetry and urine urea nitrogen test to assess protein metabolism.

Conclusion: The HIV group met RDA for protein dietary intake. Lean body and muscle mass were normal. However a protein metabolic state was observed. Individual adjustment of RDA for protein intake in the HIV group is necessary to compensate the degradation of proteins. Further investigation should be extended to HIV patients with opportunistic diseases during metabolic stress as well as in pediatric HIV infection.

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Physical Observation for Nutritional Deficiencies - Therapeutic Assessment of Sub-Clinical Symptoms and Organ Health

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Physical Observation for Nutritional Deficiencies: Learning how to observe physical features can help one determine nutritional deficiency patterns and health needs prior to disease occurring. This information is imperative in today's health care and in the "sub-clinical" patient, before disease progresses to outright symptoms and blood changes. Traditional doctors used physical observations of our body to confirm our health issues. They did not and could not rely on testing or blood work. Physical observations enable one to take the guess work out of nutritional deficiencies and organ health patterns. This class insures a measurement of patient evaluation as a critical tool in the medical toolbox. If pre-and post-nutritional evaluations and sound patient observations are added, the practitioner can confirm the findings while creating a recordable and even visual benchmark for patients to see the change and progress. This approach heightens the practitioner's ability to identify root causes, target priorities, and integrate patient interaction, while improving understanding, retention and compliance. Using functional assessments of the digestive system, thyroid, adrenals, and more, the health and direction of care becomes more obvious to see, treat, and monitor. While correlating specific observations and testing procedures, one can determine organ health, utilization of nutritional factors, and what direction is best for the client. We will look at the tongue, face, nails, reflex points, simple office testing procedures and holistic care to determine how to help our patients through physical observations for nutritional deficiencies.

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Effects of dairy products intake and some physical activities in body mass index and bone mineral density: A survey at Sohag University

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This study designed to determine the effects of dairy products (milk, yogurt and cheese) intake and some physical activities (walking, running and using elevators) on bone mineral density (BMD) and body mass index (BMI) which are used as indicators of Osteoporosis and Obesity respectively. BMI was calculated by dividing weight (kg) by the square of height (m^2) and classified as following: underweight (<18.5 BMI), normal weight (18.5-24.9 BMI), overweight (25-29.9 BMI) and Obese (>30 BMI) considered as Obesity degrees. BMD was measured for the right foot with a pDEXA densitometer with a dual-energy X-ray absorptiometry (DXA) and expressed as a T-score index then divided as following: normal (T≥1), osteopenia (T(-1)-(-2.5)) and Osteoporosis (T<-2.5). The correlation has been done according to Pearson Correlation Coefficient Formula. Results showed that the average of BMI, BMD and dairy products intake were 27.3±0.98, 0.79±0.76 and 62±0.43 respectively. Findings revealed that the most of respondents used to consume insufficient amounts of dairy products which led to high rate of osteoporosis (21%) and osteopenia (37%). Correlation value of physical activities was negative with BMI (-0.073) and it was positive with BMD (0.053). Findings conclude that dairy products consumptions and daily physical activities may enhance bone mineral density and prevent obesity.

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Formulation and sensory acceptability of flat bread from kocho with broad bean (*Vicia faba L*) and quality protein maize (*Zea mays*) flours

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Kocho, a nutritionally poor food product of *Ensete*, is prepared from bulk of starch obtained from mixture of decorticated leaf sheaths and grated corm of *Ensete*. It is used as staple food by many households in Southern Ethiopia. Therefore, this study intended to formulate flat bread from kocho blended with broad bean and quality protein maize (QPM) and evaluate its nutritive and sensory quality. Baseline study was conducted on consumption pattern. Samples were procured from markets of study area. Bread samples were prepared from blends of kocho, broad bean and QPM flours at different ratios: 50:35:15, 50:30:20, 50:25:25 and 50:20:30 respectively. Control bread was prepared from 100% kocho. Sensory evaluation and Proximate composition analysis was conducted at Hawassa University. Mineral and phytic acid contents were analyzed at Ethiopian Public Health Institute (EPHI) laboratory, Addis Ababa. It was found that crude protein content was increased from 1.72% in control bread to 11.35% in blending ratio of 50:35:15, the crude fat content from 0.83% in control bread to 3.06% in blending ratio of 50:20:30. Crude fiber from 4.32% in control to 10.11% in blending ratio of 50:35:15. Sensory attributes of all samples were acceptable. In conclusion, blending kocho with legumes could improve the nutritive value with acceptable sensory quality. This finding can be transferred to the community in the study area and can easily be adopted.

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Assessment of nutrition knowledge, and dietary behavior of post bariatric surgery patients in Rashid hospital outpatient clinic in Dubai, UAE

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Obesity is considered to be a disease, which stands alone by itself, and it is accompanied by many co-morbidities, and that is why many means to treat obesity comes into account and one of the most prevalent ways in UAE is by bariatric surgery. Despite the vast research assessing nutrition knowledge of patients of several health conditions, none of the papers assessed the nutrition knowledge of patients' post-bariatric surgeries, although this category of patients is very susceptible to malnutrition post-surgery. My aim in this study was to assess the general nutrition knowledge and the knowledge specific to the dietary protocol post-surgery, the medical and nutritional complications, and their awareness and understanding of dumping syndrome specifically, the clarity of information conveyed by the dietitians and its effect on their levels of compliance of the post-bariatric surgery dietary protocol and the follow up appointments with the dietitians, and finally a small part gave a glimpse of their quality of life post-surgery. The methods used to analyze the questionnaire was with the help of SPSS version 23.0. Descriptive statistics such as frequencies, proportions, means, and standard deviations were used. Statistical tests such as Chi-Square test of independence, and Pearson's correlation were used to test correlation. To test significant differences between values of quantitative variable the statistical test ANOVA or its equivalent non-parametric test named Kruskal-Wallis were used. Normality was tested using the Shapiro-Wilk test, while Levene's test was used to test the equality of variance. The results of this study showed a fairly good general nutrition knowledge of both groups, the questions assessing nutrition knowledge of the dietary protocol post-surgery were added up and given a score out of 14, in which it showed that only 19.4% of participants had very good knowledge, 66.2% had average knowledge, and 14.4% had poor knowledge. In addition, most patients didn't know what dumping syndrome is, and of those who knew what it is, 66.6% of them knew the food that promote its occurrence, and almost half of the participants who answered yes, they knew the symptoms of it. On the other hand, 79.5% of the patients followed up with a dietitian, and only 30.1% showed compliance to the dietitian's instructions, which was strongly related to patients finding the information conveyed vague and unclear as 71.2% considered it as aforementioned. However, the most experienced symptom post-bariatric surgeries were nausea, followed by dizziness, dehydration, and finally vomiting. As for the overall quality of life of participants the highest percentage 45.8% was given to participants who never felt agitated, fatigued and/or regretted their decision of getting operated, and as much as 83.1% found their daily activities to be more enjoyable. In conclusion, patients who undergo bariatric surgeries are a great area of improvement, now that we can spot some gaps in the health care provided.

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Evaluation of cookies from trifoliate yam flour and soy flour blends

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Statement of the Problem: The hike in price of wheat flour and its resultant effect on the economy of Nigeria has necessitated the acceptance of composite or alternative flours for bread, pastry and pasta. Trifoliate yam (*Dioscorea dumetorum*) an underutilized yam specie has been explored for processing into flour in order to increase the consumption of this highly nutritious yam specie which has been limited in use due to the hardening it experiences after harvesting. The nutritional composition of the baked products (like cookies) needs to be well considered especially when the target markets are children because of the high rate of malnutrition recorded among children in a country like Nigeria.

Materials & Methods: Trifoliate yam was used to produce flour, enriched with soybean (*Glycine max*) flour at three different substitution levels (10%, 20% and 30%) and processed into cookies. The cookies were analyzed for proximate composition, nutritional composition and sensory evaluation to determine its acceptability while the flour was analyzed for physico-chemical, functional and pasting properties.

Results: It showed that enrichment of trifoliate yam flour with soybean flour increased the protein content from 7.55% at 10% level of substitution to 12.82% at 30% level of substitution. There was also an increase in the fat content with increase in the substitution level. The overall acceptability showed that 20% substitution level had the highest score and there was no significant difference in the cookies made from the enriched flour at the different levels of substitution ($p<0.05$).

Conclusion & Significance: Enrichment of trifoliate yam flour with soy flour at levels of 10% to 30% resulted in a notable increase in the protein content, which is nutritionally advantageous where many cannot afford high proteinous foods because of its cost.

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