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Re-Evaluation of Individual and Combined Garlic and Flaxseed Diets on Hyperlipidemic Rats

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The aim of this study was to re-evaluate the effect of individual garlic and flaxseed and for the first time, we studied the effect of combined consumption of 10% of flaxseed and garlic, for 30 days on biochemical and histological factors of hyperlipidemic rats. The feeding trial was conducted on rats with high levels of serum cholesterol and triacylglycerol. Histological results showed a marked improvement of kidney tissues responding to garlic alone and a combined flaxseed and garlic diet but a slight histopathological change were noticed in flaxseed diet group. Garlic results showed no histopathological changes in aorta, kidneys and liver that may illustrate the healing effect of fresh garlic on tissues. Biochemical results indicated that the mean of blood total cholesterol, triacylglycerol were reduced, as the effect of fresh garlic (FGD), flaxseed (FD) and combined fresh garlic and flaxseed diet (FFGD) but HDL-C was increased in fresh garlic diet only. Best results were obtained from flaxseed diets that reduced cholesterol levels markedly to 115% over negative control group. Slight reduction of serum levels of LDL-C has noticed in flaxseed (FD) and fresh garlic diets (FGD). These results may support the Mediterranean diet consumption that is rich in fresh food such as fresh garlic and seeds that may protect from heart disease. *(Pakistan Journal of Nutrition 8 (1): 1-8, 2009;* ***doi:*** *10.3923/pjn.2009.1.8)*

Quality Comparison of Probiotic and Natural Yogurt

Istikhar Hussain, Attiq-ur-Rahman and Nigel Atkinson

The study was conducted to evaluate and compare the quality of probiotic and natural yogurt. Several samples of probiotic and natural yogurt were bought from supermarkets in Middlesborough (UK) and analyzed for physico-chemical, microbiological and organoleptic properties. Physico-chemical analysis showed that probiotic yogurts have more pH, fat and solid not fat (SNF) contents compared to natural yogurt. While natural yogurts have higher Total Titrable Acidities (TTA) and total solids contents, compared to probiotic yogurts. Organoleptically, probiotic yogurt was found more acceptable compared to natural yogurt. However, the fat contents of natural yogurt are lower and that might affect the overall acceptability of the yogurt. Similarly, an increase in the TA of the natural yogurt might affect the quality of the product. Microbiological

analysis found no significant variation in total viable count between probiotic and natural yogurt. *(Pakistan Journal of Nutrition 8 (1): 9-12, 2009; **doi**: 10.3923/pjn.2009.9.12)*

Biochemical Compounds and Nutritional Roles of the Foods Explained in the Qur'an

G.R. Asadi karam, Z. Salem, S. Nakhlestanei, M. Sirati Sabet, M. Mahmoodi, A. Rezaee and H.R. Alavi

Moslems believe that Islam is the most perfect religion and Qur'an the most perfect book that explains all human needs with the best style and there isn't any defect in Islam and Qur'an. The Holy Qur'an says; let man consider his food. Therefore we have decided to investigate the nutritional roles of those foods stated in Qur'an and their biochemical compounds. Almost all diet that is known as complete food today, mentioned in Qur'an and their advantages explained occasionally. A number of verses justified some differences that there were in divine religions about food consumption and a few explained advantages and disadvantages of certain nutrients and drinks such as wine. However according to our knowledge about nutritional roles of food in Qur'an it could be concluded their importance in health and prevention of disorders. Nevertheless, Islam has stressed on health and ordered to save it as a deposit, so the foods mentioned in Qur'an might have a lot of advantages, for example the best oil that has protective role in atherosclerosis is olive oil that is contain of a lot of ω9 fatty acids, researchers say today, olive is mentioned several times in Holy Qur'an. It is more possible that many unknown advantages in olive and other Qur'an's nutrients exist that will be revealed in future. Therefore Moslem scientists have an important duty to reveal a part of these unknowns. *(Pakistan Journal of Nutrition 8 (1): 13-19, 2009; **doi**: 10.3923/pjn.2009.13.19)*

Microbiological and Nutritional Quality of Hawked Kunun (A Sorghum Based Non-Alcoholic Beverage) Widely Consumed in Nigeria

N.A. Amusa and O.A. Odunbaku

The microbiological and nutritional quality of freshly processed and hawked kunun drinks in South Western Nigeria was investigated at Ibadan, Nigeria. The microbes found associated with both the hawked and the laboratory prepared kunun samples are *Lactobacillus plantarum*, *Bacillus sutilis*, *B. cereus*,

Streptococus feaceaum, S. lactis, Staphylococcus aureus, Micrococcus acidiophilis, Escherishai coli, Pseudomonas aureginosa, Saccharomysces cerevisiae, Candida mycoderma, Aspergillus niger, Penicillium oxalicum and *Fusarium oxysporum.* However, the freshly processed kunun drinks harbored no coliform bacteria. The crude protein content of the hawked kunun drinks was found higher than that of the laboratory processed kunun samples, while the P^H of the Kunun zaki drinks were highest in the laboratory processed samples. However, there were no significant differences between the carbohydrates contents of the laboratory processed kunun drinks sample and that of the hawked kunun drinks. *(Pakistan Journal of Nutrition 8 (1): 20-25, 2009;* ***doi:*** *10.3923/pjn.2009.20.25)*

Studies on Nutritional Values of Some Wild Edible Plants from Iran and India

Ali Aberoumand and S.S. Deokule

The most important nutrients present in plants are: carbohydrates, such as the starch and free sugars, oils, proteins, minerals, ascorbic acid and the antioxidant phenols. The Plants *Alocacia indica Sch.,Asparagus officinalis DC., Chlorophytum comosum Linn., Cordia myxa Roxb., Eulophia ochreata Lindl., Momordica dioicia Roxb., Portulaca oleracia Linn.* and *Solanum indicum Linn.* are widely wild in many regions of Iran and India. These are consumed as fruits and vegetables. Therefore, to analyze the nutritional values in them, these plants are selected. Association of the Official Analytical Chemists Methods and Folin-Ciocalteau micro method are used for nutritional analysis of the plants. Results indicated that *Portulaca oleracia Linn.* and *Asparagus officinalis DC* have high amounts of proteins, fats and calorie values. Therefore, these plants are recommended for consumers as vegetables in their diet. The most of the Iranian and Indian people are using these plants in their daily diet. *(Pakistan Journal of Nutrition 8 (1): 26-31, 2009;* ***doi:*** *10.3923/pjn.2009.26.31)*

Nutritional and Antinutritional Components of *Pennisetum purpureum* (Schumach)

C.C. Okaraonye and J.C. Ikewuchi

The matrices of young shoots of *Pennisetum purpureum* (Schumach) were subjected to proximate and phytochemical analyses. The proximate profile

included moisture (89.00%), total ash (2.00% WW and 18.18% DW), crude protein (2.97% WW and 27.00% DW), crude fat (1.63% WW and 14.82% DW), total carbohydrate (3.40% WW and 30.91% DW) and total metabolizable energy value (34.48 kcal 100 g^{-1} WW and 313.45 kcal 100 g^{-1} DW). The phytochemical screening revealed the presence of alkaloids, cyanogenic glycosides, flavonoids, oxalates, phytates, saponins and tannins. The anti-nutrients composition included tannins (28.640%), cyanogenic glycosides (2.830%), oxalates (0.159%), phytates (0.006%) and saponins (0.850%). This result suggests relative safety for consumption and the possibility of improving the nutritional quality of *Pennisetum purpureum* through dehydration. *(Pakistan Journal of Nutrition 8 (1): 32-34, 2009;* ***doi:*** *10.3923/pjn.2009.32.34)*

Nutritional Potential of *Oryctes rhinoceros* larva

C.C. Okaraonye and J.C. Ikewuchi

The proximate and mineral profiles of the larva of *Oryctes rhinoceros* were investigated. The fatty acid profile of the larval oil and the amino acid profile of the larval protein were also determined and from the latter, the protein score was evaluated. A high protein content (42.29% wet weight) rich in the essential amino acids (with histidine, methionine and phenylalanine being predominant) with a protein score of 72.97% and valine as the limiting amino acid was observed. The larval oil had a high proportion (60.34%) of unsaturated fatty acids, including the essential fatty acid linoleic acid. A high ash content (12.70% wet weight) containing a high proportion of manganese and iron (3.80 mg 100 g^{-1} and 10.70 mg 100 g^{-1}, respectively) was observed. The other mineral elements, calcium, magnesium, potassium, sodium, copper and phosphorus were only present in small concentrations (0.20-0.99 mg 100 g^{-1}). The larva could form a base for new food/feed products of considerable nutritive value, especially in view of its high protein content. *(Pakistan Journal of Nutrition 8 (1): 35-38, 2009;* ***doi:*** *10.3923/pjn.2009.35.38)*

Utilization of Low-Grade Cassava Meal (Gari) in the Diets of Egg Type Chicks (0-8 Weeks)

Vantsawa Philip Anthony

An experiment was conducted to evaluate the utilization of low-grade cassava meal (gari) in the diets of egg type chicks (0-8 weeks). The proximate analysis of

gari showed that it has 2.5% crude protein, 0.3% ether extract and 3.5% crude fibre. One hundred and ninety two days old egg type chicks having equal weight were randomly allocated to six dietary treatments with two replicates and 16 birds per each replicate. The six dietary treatments composed of rations in which graded levels of gari replaced maize up to 100% in treatment six. The results showed a significant decrease ($p<0.05$) in feed consumption as the level of gari increased in the diets, while weight of birds and weight gain were significantly lower ($p<0.05$) for those with higher levels of gari. The feed to gain ratio and percent mortality did not show any significant difference ($p>0.05$). There was a decrease in cost (N)* Kg gain in weight as the level of gari increased in the diet with a savings of N65.44 k for the last treatment. It is therefore economical to use gari as a substitute for maize in the diet of egg type chicks. *(Pakistan Journal of Nutrition 8 (1): 39-41, 2009; **doi:** 10.3923/pjn.2009.39.41)*

Impact of Helminth Parasitism on Fish Haematology of Anchar Lake, Kashmir

Abdul Wahid Shah, Muni Parveen, Sajad Hussain Mir, S.G. Sarwar and A.R. Yousuf

The present investigation carried out seasonally from March 2004 to February 2006 is an attempt to study the impact of helminth parasitism on fish haematology of Anchar Lake, Kashmir. The fish fauna viz., *Schizothorax* spp. and *Cyprinus* spp. inhabiting the lake carried cestode, trematode and acanthocephala infestations either singly or mixed. The result showed a mean significant decrease from 9.39±0.18-7.39±0.14 g% in *Cyprinus* spp. and 10.57±0.23-7.62±0.13 g% in *Schizothorax* spp. for haemoglobin. Further, a decrease from 2.07±0.03-1.66±0.05 ($\times 10^6$ mm^3) in *Cyprinus* spp. and 2.32±0.02-1.69±0.04 ($\times 10^6$ mm^3) in *Schizothorax* spp. for RBC count in summer season was observed. However, a significant increase in WBC count was observed with a mean increase from 1.58±0.16-3.93±0.33 ($\times 10^4$/mm^3) in *Cyprinus* spp. and 1.56±0.10-2.76±0.27 ($\times 10^4$ mm^3) in *Schizothorax* spp. in summer season. Furthermore, a well marked increase in eosinophils was observed in all the helminth-infected fish fauna. The haematological manifestation of the infected fish are suggestive of *anaemia* and the *eosinophilia* may be believed to be associated with defensive and immunological responses of the fish. *(Pakistan Journal of Nutrition 8 (1): 42-45, 2009; **doi:** 10.3923/pjn.2009.42.45)*

Effect of Replacement of Groundnut Cake with Decorticated Sunflower Cake on the Performance of Sudanese Desert Lambs

Yagoub, M. Yagoub and Talha, E.E. Abbas

Twelve Sudanese desert lambs of age less than one year and of average weight 18.5 Kg were utilized for this study. These lambs were divided into three groups of the equal number and initial weight to study the effect of replacing Groundnut meal by decorticated Sunflower meal on the performance of Sudanese desert lambs. The study was conducted at Small Ruminant Research pens, Faculty of Agricultural Technology and Fish Sciences, Al-Neelain University, Jabel Awlia, Sudan. Three iso-nitrogenous and iso-caloric diets were formulated. These diets contained 0.00%, 50% and 100% Sunflower meal instead of Groundnut meal respectively. These diets were randomly assigned to the experimental groups. Feeding was on *ad libitum* base for 35 days from 2 April to 14 May, 2007. Replacement of groundnut meal with decorticated sunflower meal had no significant effect on the final body weight, weight gain and feed conversion efficiency. But this replacement induced significant ($p < 0.05$) effect on feed intake. *(Pakistan Journal of Nutrition 8 (1): 46-48, 2009;* ***doi:*** *10.3923/pjn.2009.46.48)*

The Proximate and Effect of Salt Applications on Some Functional Properties of Quinoa (*Chenopodium quinoa)* Flour

H.N. Ogungbenle, A.A. Oshodi and M.O. Oladimeji

The proximate and the effect of salt applications on the functional properties of quinoa flour were investigated. The salts used were, NaCl, Na_2SO_4, KCl, K_2SO_4 and CH_3COONa. The average proximate compositions were as follows: 13.50±0 0.05% Crude protein, 11.20±0.03% moisture, 6.30±0.03% fat, 9.50±0.02% fibre, 1.20±0.02% ash and 58.3±0.04% carbohydrate. The least gelation concentration of 16% w/v in deionized water was fairly improved to between 10% -14% w/v in the presence of all the salts applied. The foaming capacity of 9% in deionized water was greatly improved to between 20.5-35% depending on the type and level of salts used. The water holding capacity decreased at low salt levels when compared with absence of salt and increased with increase in salt levels while the emulsion capacity decreased with increase in salt levels. *(Pakistan Journal of Nutrition 8 (1): 49-52, 2009;* ***doi:*** *10.3923/pjn.2009.49.52)*

Association Between Socioeconomic Factors and Obesity in Iran

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The present study was conducted to determine the relationship between socio-economic factors and obesity within a population from Iran. Male and female subjects (n=4977) aged 15-65 years, were recruited from the Great Khorasan province of Iran using a cluster-stratified sampling method. Demographic and socioeconomic data were collected by questionnaire. Of the study population, 29.1% were overweight and 13.8% were obese. Being overweight and obese was significantly more prevalent among women than men and urban- compared to rural-dwellers. A high prevalence of overweight and obesity was seen among individuals who were divorced or widowed and among housewives, or individuals with poor education. Urbanization, age, illiteracy, female gender and divorced, or widowed status were significant predictors of obesity ($p<0.001$). The association of obesity with urban-dwelling which is consistent with previous reports was also found to be the most important determinant of obesity. The prevalence of obesity in urban residents of Iran is high, particularly among poorly educated women. A community-based approach using multiple strategies including appropriate education will be required to address this problem. *(Pakistan Journal of Nutrition 8 (1): 53-56, 2009; **doi:** 10.3923/pjn.2009.53.56)*

Estimation of Cholesterol Level in Different Brands of Vegetable Oils

J. Okpuzor, V.I. Okochi, H.A. Ogbunugafor, S. Ogbonnia, T. Fagbayi and C. Obidiegwu

An analysis of twenty one assorted brands of vegetable oils in Lagos Metropolis Nigeria, reveals varying levels of cholesterol content. Cholesterol was found to be present in most of the oil brands sampled using three standard methods. Cholesterol was detected in seventeen of the vegetable oil brands with concentration of less than 1 mg/ml while seven of the oil brands had cholesterol concentrations ranging between 1-4 mg/ml. Low iodine values were obtained in four of the vegetable oil brands and three of them had high acid values. High

performance liquid chromatography (HPLC) confirmed the presence of cholesterol at varying concentrations in all the oil brands and gave the lowest detectable cholesterol values in all the oil brands. The Laser brand made from rapeseed had the highest cholesterol concentration of 3.2 mg/ml while Grand brand made from groundnuts had the least concentration (0.12 mg/ml) of cholesterol using HPLC analysis. Leibermann-Burchard method showed that Gino brand from palm kernel had the least concentration of cholesterol (3.86 mg/ml ±0.032) and the highest concentration of 3.996 mg/ml ±0.0404 was obtained in Sesame seed oil brand. This report is important in view of health implications of cholesterol in our diets. Consequently, we have been able to show that there is no cholesterol free oil in the market as shown on the vegetable oil brand labels. Therefore, companies producing and marketing vegetable oils are enjoined to desist from misleading the public by labeling their products as "cholesterol free". They should indicate the amount of cholesterol present in the vegetable oil, no matter how small the quantity may be. *(Pakistan Journal of Nutrition 8 (1): 57-62, 2009; **doi:** 10.3923/pjn.2009.57.62)*

Different Salts Effects on the Germination of *Hordeum vulgare* and *Hordeum bulbosum*

A. Tavili and M. Biniaz

The germination responses of *Hordeum ulgare* seeds to saline stress caused by different salt types was studied. For this, 25 seeds of mentioned species were placed on filter paper in Petri dishes containing distilled water (control), 60, 120, 180, 240, 300, 360 and 420 mM. saline solution of NaCl, $CaCl_2$ an KCl. The results indicated that saline levels effects were significant ($P < 0.05$) for seed germination percentage, seed germination velocity, mean time to germination, length of the stem and radicle and seed vigour. Seed germination decreased significantly by increasing salinity levels. Also, the results showed that *H. vulgare* is more tolerant than *H. vulgare* against salinity in germination stage. *(Pakistan Journal of Nutrition 8 (1): 63-68, 2009; **doi:** 10.3923/pjn.2009.63.68)*

Energy, Fluids Intake and Beverages Consumption Pattern among Lactating Women in Tabriz, Iran

Reza Mahdavi, Leila Nikniaz and Seyedrafie Arefhosseini

In current study, we determined daily mean intake of energy and fluids and also beverages consumption pattern in lactating mothers and the possible effects of

some maternal factors on infants' weight. Information on food and fluid intake was collected from 182 mothers. Weight and height of mothers and infants were measured and the body mass index (BMI) and weight for age Z-score (WAZ) were calculated. The mean energy and total fluid intake were compared by recommended values. Furthermore, the possible effects of some maternal factors on infants' weight were evaluated. The mean daily energy intake (2390±405 kcal) was lower than the mean calculated energy values (2458±258 kcal) and RDA (2733 kcal). Daily mean fluid intake (3050±540 ml) was approximately similar to the recommended values. Also a significant association between the WAZ of children and maternal BMI ($B = 0.36$, $p<0.001$) and weight ($B = 0.15$, $p<0.042$) persisted. With regards to the effect of maternal nutritional status on weight of infants, appropriate nutritional educations and interventions are suggested for lactating women. *(Pakistan Journal of Nutrition 8 (1): 69-73, 2009;* ***doi:*** *10.3923/pjn.2009.69.73)*

Some Physical and Mechanical Properties of Khinjuk

K. Heidarbeigi, H. Ahmadi, K. Kheiralipour and A. Tabatabaeefar

Khinjuk is oiling crop; therefore, physical and engineering properties are necessitate to determine for processing and equipment design. In this study, some raw material characteristics were determined for Khinjuk, in order to collect information about identifying some physical and mechanical properties of them. The average grain length, width and thickness were 5.49, 5.09 and 4.08 mm, respectively. The geometric mean diameter, thousand grain kernel and aspect ratio were 5.02 mm, 87.15g and 0.95, respectively. True density, bulk density and porosity were 1.01 kg m^{-3}, 0.55 kg m^{-3} and 45%, respectively while the static coefficient of friction varied from 0.45 on plywood surface to 0.56 on galvanized iron. The angle of repose for static and emptying were 48.33 and 23.74° degree, respectively. Whereas the failure force and elongation were 42.49 N and 1.35 mm respectively. *(Pakistan Journal of Nutrition 8 (1): 74-77, 2009;* ***doi:*** *10.3923/pjn.2009.74.77)*

Moisture Content Modeling of Sliced Kiwifruit (cv. *Hayward*) During Drying

Ali Mohammadi, Shahin Rafiee, Alireza Keyhani and Zahra Emam-Djomeh

Drying behavior of kiwifruit slice was studied at 40, 50, 60, 70 and 80ºC and at a constant air velocity of 1.5 m/s for constant sample thickness of 4 mm in a thin

layer dryer. Sample weight, temperature and drying air velocity were measured during drying and drying curves were obtained for each experimental data. The curves were fitted to twelve different semi-theoretical and/or empirical thin-layer drying models to estimate a suitable model for drying of kiwifruit. Coefficients were evaluated by non-linear regression analysis. The models were compared based on their coefficient of determination (EF), root mean square error (RMSE) and reduced chi-square (x^2). Midilli model had the highest value of EF (0.999319), the lowest RMSE (0.032536) and x^2 (0.001119). The Midilli model was found to satisfactorily describe the drying behavior of kiwifruit. *(Pakistan Journal of Nutrition 8 (1): 78-82, 2009; **doi:** 10.3923/pjn.2009.78.82)*

Phytochemicals Investigation on a Tropical Plant, *Syzygium cumini* from Kattuppalayam, Erode District, Tamil Nadu, South India

A. Kumar, R. Ilavarasan, T. Jayachandran, M. Decaraman, P. Aravindhan, N. Padmanabhan and M.R.V. Krishnan

The developing countries mostly rely on traditional medicines. This traditional medicine involves the use of different plant extracts or the bioactive constituents. This type of study provides the health application at affordable cost. This study such as ethnomedicine keenly represents one of the best avenues in searching new economic plants for medicine. In keeping this view in mind the present investigation is carried out in *Syzygium cumini* seed of Kattuppalayam, Erode District, Tamil Nadu, South India. The results suggest that the phytochemical properties of the seed for curing various ailments. *(Pakistan Journal of Nutrition 8 (1): 83-85, 2009; **doi:** 10.3923/pjn.2009.83.85)*

The Effect of Hypercholesterolemia on Serum Vascular Endothelial Growth Factor and Nitrite Concentrations in Early Stage of Atherosclerosis in Rabbits

Shaghayegh Haghjooyjavanmard, Mehdi Nematbakhsh and Masoud Soleimani

Vascular Endothelial Growth Factor (VEGF) and Nitric Oxide (NO) play an important role for maintaining endothelial integrity. The purpose is to investigate the VEGF alteration during early atherosclerosis lesion formation in an animal model of hypercholesterolemia. We also measured nitrite to observe the relationship

between VEGF and endothelial NO production. 20 white male rabbits randomly assigned in 2 groups (1% high-cholesterol diet, HC group, n = 14, or standard diet, control, n = 6) for 4 weeks. The serum levels of VEGF and nitrite (NO metabolite) were determined. Fatty streaks were measured in rabbit's aortas. The results indicated that the serum level of VEGF concentration was significantly higher in hypercholesterolemic rabbits and negatively correlated with fatty streak lesions ($r = -0.89$, $p<0.05$). The serum level of nitrite was significantly higher in HC group than the control ($p<0.05$). There was a significant negative correlation between serum level of nitrite and VEGF ($r = -0.55$, $p<0.05$). It is concluded that, the increased VEGF in early atherosclerosis may be regarded as a safeguarding response to endothelial injury, which is responsible for maintaining endothelial integrity. *(Pakistan Journal of Nutrition 8 (1): 86-89, 2009; **doi:** 10.3923/pjn.2009.86.89)*

The Effect of Moisture Content on Physical Properties of Wheat

M. Karimi, K. Kheiralipour, A. Tabatabaeefar, G.M. Khoubakht, M. Naderi and K. Heidarbeigi

Physical properties often required for designing the equipments for planting, harvesting and postharvesting operations of seeds. Several physical properties of three popular wheat varieties (Shiraz, Karoun and Shiroudy) were determined and compared for moisture content in 8, 12 and 18% w.b in 2007 in University of Tehran. The average length, width and thickness were 6.75, 3.26 and 2.77 mm at a moisture content of 8% w.b., respectively. studies on rewetted wheat seeds showed that the thousand-kernel weight increased from 18.38 to 22.43g. The geometric and equivalent mean diameter, surface area, sphericity and aspect ratio at a moisture content of 8% w.b were 3.93, 3.94 mm, 48.68 mm^2, 0.58, 0.48, respectively. The porosity increased from 0.43 to 0.45 %. Whereas the bulk density decreased from 0.72 to 0.66kg m^{-3} and the true density from 1.25 to 1.19 kg m^{-3}, with an increasing in the moisture content range of 8B18% w.b. The static and dynamic angle of repose varied from 37.28 to 47.33 and 29.89 to 36.5°. The mean of static friction coefficient of three wheat varieties increased the linearly against surfaces of three structural materials, namely, compressed plastic (0.43 - 0.53), galvanized iron (0.33 - 0.53) and plywood (0.35 - 0.41) as the moisture content increased from 8 to 18% w.b. *(Pakistan Journal of Nutrition 8 (1): 90-95, 2009; **doi:** 10.3923/pjn.2009.90.95)*

Energy and Fluid Intake among University Female Students During and after Holy Ramadan Month

Reza Mahdavi, Sima Balaghi, Seyed Jamal Ghaem Maghmi, Elnaz Faramarzi, Farideh Shiri and Negar Koshki Zadeh

Insufficient daily fluid and energy intake during holy Ramadan may have adverse effects on humans' health. In previous studies the importance of energy, macro and micro nutrients intake were emphasized whilst the importance of fluids intake were overlooked, so in this study, daily fluid, energy ,fiber and Ca intake of female students during Ramadan and after Ramadan were investigated and compared. In this descriptive study, 60 volunteer female students who lived on campus were recruited. Information on food and fluids intake was collected by using a three day food and fluid intake weighed record method in Ramadan and after Ramadan. This study was conducted in School of Public Health and Nutrition of Tabriz University of Medical Sciences in, 2005. In comparison with Ramadan, daily energy intake and the percentage of energy from fat sources increased significantly after Ramadan. (1400±571 vs. 1629±589kcal and 23% vs 32%). The average daily intake of fluids during Ramadan was higher than that of after Ramadan (2392±800 vs 1685±802ml). However the mean daily intake of fluid both during and after Ramadan was lower than the recommended values. The most consumed beverages during Ramadan were tea, water, soft drinks, milk and others whilst after Ramadan were tea, water, milk and soft drinks and others, respectively. Adequate energy and fluid intake, particularly milk and water in students during holy Ramadan are strongly recommended. *(Pakistan Journal of Nutrition 8 (1): 96-99, 2009; **doi**: 10.3923/pjn.2009.96.99)*

The Effect of the Submersion Length's in Virgin Coconut Oil on the Shelf Life of Chicken Meat under Room Temperature Storage

Salam N. Aritonang, Elsa Martineli and Risanti Eltiana

The research of the length submersion effect of chicken meat in Virgin Coconut Oil (VCO) on the shelf life of chicken meat under room temperature storage was done by using 4 kg breast meat of 6 weeks old broiler. The design of experiment was a completely randomized design where the treatment were 4 different submersion period of chicken meat in virgin coconut oil for 0 h (A), 1 h (B), 2 h (C) and 3 h (D) with five replication. The variables observed were content of moisture and protein, bacteria colony count and the shelf life of chicken meat. The result of this

research indicated that submersion length's of the chicken meat in VCO has significantly decreased moisture content and bacteria colony count and increased the protein content and the shelf life of chicken meat. It showed that submersion of the chicken for 2 h in VCO has significantly improved the shelf life of the chicken meat (15 h) under room temperature. *(Pakistan Journal of Nutrition 8 (1): 100-102, 2009;* ***doi:*** *10.3923/pjn.2009.100.102)*

Amino Acid Composition of *Dioscorea dumetorum* Varieties

Y. Alozie, M.I. Akpanabiatu, E.U. Eyong, I.B. Umoh and G. Alozie

The crude protein contents and amino acid compositions of two varieties of *Dioscorea dumetorum* (edible and wild) were determined. The crude protein (g/l00g) of the wild variety (11.37) was significantly higher ($P<0.05$) than the edible variety (7.0). The amino acid profiles showed both varieties to be limiting in lysine, methionine and cystine. The wild variety had tryptophan (0.60g/100g total aa), phenylalanine (3.01g/100g total aa), threonine (2.93g/100g total aa) and valine (3.6g/100g total aa) in substantial amounts when compared to the reference FAO pattern. Aspartic acid (4.47-9.28/100g total aa) was the most abundant amino acid in both varieties with the highest amount recorded for the wild variety. The chemical scores of the essential amino acids were tryptophan (60.0), threonine (43.5), valine (39.6), methionine (28.0) isoleucine (34.5), leucine (32.0), tyrosine and phenylalanine (39.0) and lysine (20.72) for the edible and tryptophan (117.0), threonine (73.25), valine (72.0), methionine (54.0) isoleucine (64.75), leucine (65.71), tyrosine and phenylalanine (83.67) and lysine (44.18) for the for the wild variety. This results being the first amino acid profiles recorded for this yam suggests that the wild *D. dumetorum* is richer in amino acid content than the edible variety and is likely to be of more benefit in human and animal nutrition. *(Pakistan Journal of Nutrition 8 (2): 103-105, 2009;* ***doi:*** *10.3923/pjn.2009.103.105)*

Evaluation of the Nutritive Value of Quality Protein Maize on the Growth Performance and Carcass Characteristics of Weaner Rabbits

J.J. Omage, O.C.P. Agubosi, G.S. Bawa and P.A. Onimisi

Quality protein maize (QPM) was used to substitute normal maize variety in intensive rabbit study in attempt to reduce the cost of production. Thirty-six weaner rabbits with age ranging between 6-8 weeks and weighing between 225-

300g were assigned to six treatment groups in a completely randomized design; six rabbits per treatment were individually caged and fed. The ration involved a percent replacement of normal maize with Quality protein maize at 0, 25, 50, 75, 100 % levels of inclusion across the treatments. The control diet involves a 0% level of QPM supplemented with synthetic lysine. Water and feed was provided *ad-libitum* throughout the study period of 56 days. Feed intake, water consumption, weight gain and mortality were recorded. Results showed no significant difference ($P > 0.05$) in total feed intake, weight gain, feed efficiency, water consumption, mortality rate, feed cost/kg weight gain. However, there was significant difference ($P < 0.001$) in feed cost/kg feed across the treatments. Carcass characteristics showed significant difference ($P < 0.05$) with no established trends in live weight, length of small and large intestines, liver, legs and tail. There was no significant difference ($P > 0.05$) in carcass weight, dressing percentage, heart, shoulder, loin, thigh, lungs, kidneys, spleen and head. The results indicated that feeding QPM to rabbits without lysine supplementation could sustain rabbits without affecting their performance, health and reduced cost of production. *(Pakistan Journal of Nutrition 8 (2): 106-111, 2009;* ***doi:*** *10.3923/pjn.2009.106.111)*

Replacement Value of Normal Maize with Quality Protein Maize (*Obatampa)* in Broiler Diets

P.A. Onimisi, J.J. Omage, I.I. Dafwang and G.S. Bawa

Three hundred and sixty days old Ross Broiler Chicks were used in a completely randomized design feeding trial to evaluate the benefits of replacing Normal Maize (NM) with Quality Protein Maize (QPM) (*Obatampa* variety) in Broiler diets. There were 6 treatments of 3 replicates each and each replicate had 20 chicks. Six diets were formulated in which the NM in diet was replaced by QPM at 0, 25, 50, 75 and 100% representing T1, T2, T3, T4 AND T5, respectively while T6 was normal maize base diet balanced for lysine. The appropriate diets were fed to the birds for 4 weeks in the starter phase and 4 weeks in the finisher phase. At the starter phase, there was gradual numerical increase in weight gain as QPM increased in the diet. T5 was significantly better than T1-T4 but T6 was the overall best performance. Feed consumption was similar for T1-T5 but significantly higher for T6. Feed/gain ratio improved as QPM increased in the diet ($p<0.05$). Dressing % and weights of organs expressed as % of live weight and body parts expressed as % of dressed weight were not different statistically ($p>0.05$). *(Pakistan Journal of Nutrition 8 (2): 112-115, 2009;* ***doi:*** *10.3923/pjn.2009.112.115)*

Effect of Oilseed Diets on Plasma Lipid Profile in Albino Rats

Ajayi, Olubunmi Bolanle and Ajayi, David Dais

The effect of fermented melon seed oil *(Citrullus lanatus)* (Ogiri) and palm kernel oil on the plasma lipid profile of female albino rats were investigated. Rats were randomly assigned into three groups and fed diet composed with fermented melon seed oil, palm kernel oil and control diet for seven weeks. After the feeding trial, plasma total cholesterol, low density lipoprotein cholesterol were significantly higher ($p<0.05$) than control in palm kernel oil diet while there was no significant difference in high density lipoprotein cholesterol. In contrast, the total cholesterol and high density lipoprotein cholesterol were significantly higher ($p<0.5$) than control while the low density lipoprotein cholesterol was significantly lower ($p<0.05$) in the fermented melon seed oil diet. The Ogiri oil diet had significantly reduced LDL/HDL ratio compared with the control while the palm kernel oil diet had a higher LDL/HDL ratio. The result implies that fermented melon seed oil (Ogiri oil) appears to have hypolipidemic effect while dietary intake of palm kernel oil could pose a risk for coronary artery disease on long term basis. *(Pakistan Journal of Nutrition 8 (2): 116-118, 2009;* ***doi:*** *10.3923/pjn.2009.116.118)*

Determination of Chemical Composition of *Senna-siamea* (Cassia Leaves)

Y.R. Alli Smith

The study on the chemical composition of the leaves of one of the most popularly known tropical plants, *Senna siamea (*Cassia leaves) has been carried out by analyzing samples of the plant leaves collected from Ado-Ekiti in Ekiti State for chemical composition. The proximate, elemental, phytochemicals and toxicant composition of the leaves of *senna siamea* were determined by analyzing samples of identified leaves using recommended method of analysis. The result of the analysis shows that the percentage crude protein, crude fibre, moisture content, ash content, carbohydrate and crude fat of the leaves are 4.01%, 12.36%, 46.01%, 17.93%, 7.67% and 12.02% respectively. The result of the mineral composition in PPM (Part per million) shows that iron, magnesium, manganese, potassium, calcium, sodium, copper, phosphorus and lead are 112.00, 876.00, 35.10, 812.00, 932.00, 612.00, 0.84 and 0.34 respectively while cadmium and vanadium was not detected in the leaves. The photochemical analysis shows that the leaves contain anthraquinones, alkaloids, phylobatannins and saponin and the

toxicant composition shows the presence of tannin, oxalate and phytate. The minerals present in leaves shows that the leaves are good sources of essential nutrients but the presence of the toxicants shows that these leaves should be properly processed before consuming them. *(Pakistan Journal of Nutrition 8 (2): 119-121, 2009; **doi:** 10.3923/pjn.2009.119.121)*

Clinical Manifestation of Onchocerciasis in Ise-Orun Local Government, Ekiti State, Nigeria

S.O. Adewole and S.K. Ayeni

Survey of Onchocerciasis syndrome in Ise - Orun local Government Area of Ekiti State was carried out. Village in Ise - Orun Local Government Area of Ekiti State, Nigeria are at risk of Onchocerciasis parademic of the 4,100 subjects examined, 2008 representing 51.3% of 95% CI 0.49 - 0.53 were found to be suffering from Onchocerciasis infections. The highest infection rate of 50.4% at 95% CI 0.43 - 0.63 was recorded in Temidire and least percentage of 46.7% at 95% CI 0.3 - 0.64 was found in Aba Ada. The people of 56 years of age accounted for the highest prevalence of 50.3% at 95% CI 0.49 - 0.59 and least was found in 25 - 35 age cohort representing 43.3% at 95% CI 0.34 - 0.52 of the 2008 subjects infected, 29.1%, 50.9%, 4.5% and 15.5% were observed to be suffering from leopard skin, craw - craw, partial blindness and nodules respectively. The prevalence of Onchocerciasis infection was 48.9% in male, while female has the same 48.9% but with differences in the number of individual infected with onchocerciasis. Also, there was a significant difference ($P < 0.05$) between male and female susceptibility to onchocerciasis infection. The prevalence of onchocerciasis infection varied from village to village. *(Pakistan Journal of Nutrition 8 (2): 122-124, 2009; **doi:** 10.3923/pjn.2009.122.124)*

The Effect of *Phyllantus emblica* Linn on Type - II Diabetes, Triglycerides and Liver-Specific Enzyme

Shamim A. Qureshi, Warda Asad and Viqar Sultana

The effect of aqueous fruit extract of *Phyllanthus emblica* Linn was studied on type-II diabetes, triglycerides (TG) and liver-specific enzyme, alanine transaminase (ALT). Our study showed that aqueous fruit extract, in a dose of 200mg/kg body weight, significantly decreased the blood glucose level after its intra-peritoneal administration in alloxan-induced diabetic rats ($p<0.05$). Almost similar decreased

in glucose level was also observed by chlorpropamide, a known antidiabetic drug in a dose of 84 mg/kg. The aqueous extract also induced hypotriglyceridemia by decreasing TG levels at 0, 1, 2 and 4 hours in diabetic rats ($p<0.05$). In addition, the extract was also found to improve liver function by normalizing the activity of liver-specific enzyme alanine transaminase (ALT). *(Pakistan Journal of Nutrition 8 (2): 125-128, 2009; **doi:** 10.3923/pjn.2009.125.128)*

Production and Characterization of Juice from Mucilage of Cocoa Beans and its Transformation into Marmalade

K.Y.B. Anvoh, A. Zoro Bi and D. Gnakri

More than 550,000m^3 of juice from mucilage of cocoa beans are produced and abandoned in farms each year. This cloudy substance is composed of 85.3% of moisture. Production and transformation into marmalade were made. High performance liquid chromatography was used to identify reducing sugars and organic acids and gas liquid chromatography was used for minerals identification. Physical parameters were also determined. The results of analyses showed that the pH of the juice from cocoa beans was 3.14 and its glucose content was very high with around 214.2±6.2g/L. The total soluble solids were 16.17°Brix. The crude proteins and ascorbic acid contents of this natural syrup were evaluated at 7.2±0.21g/L and 18.3±7.5mg/L, respectively. Analyses also revealed that potassium and calcium contents of the cocoa beans syrup were 950±16.32mg/L and 171.5±34.1mg/L, respectively. Other minerals like sodium, magnesium and phosphorus are lower. This juice was high in citric acid at 9.1±0.6mg/L, malic acid at 3.6±0.5mg/L and acetic acid at 2.28±0.7mg/L. It was lower in fumaric acid, oxalic and lactic acid. Marmalade was produced with cocoa bean juice with additional sugar and cocoa placenta (11.5%) to the mucilage (44.72%). The output of the manufacture was 46.2%. Cellulose and fat contents were 5.36±0.43% and 5.23±0.15%, respectively. Total soluble solids were 67.14° Brix. Sensory evaluation was conducted on 1-5 point hedonic scale. The results of sensory rating were statically analyzed with student t-test. Analyses did not show any significant difference ($p = 0.5$) in taste, color and consistency compared with a commercial apricot marmalade. Appearance and acceptability were found significantly different ($p = 0.5$). On a 1-5 rating scale, the acceptability of cocoa marmalade (3.56±0.7) was fairly lower than that of commercial marmalade (3.96±0.5). Considering the output of manufacture, more than 239.2 tons of marmalade are expected to be produced each year. *(Pakistan Journal of Nutrition 8 (2): 129-133, 2009; **doi:** 10.3923/pjn.2009.129.133)*

Solubility of Solar Dried Jameed

Jihad M. Quasem, Ayman Suliman Mazahreh, Ibrahim Abdullah Afaneh and Amer Al Omari

Jameed is a fermented dried dairy product in the form of stone hard balls or other shapes produced by straining the heated buttermilk on cloth mesh bags, salting the formed paste by kneading, shaping and drying in the sun. This product is reconstitute after disintegration to be used in the preparation of Mansaf, the national dish in Jordan, which is basically lamb meat cooked in Jameed sauce (Sharab, Mareece) and served on cooked rice. This study aimed at improving the solubility of jameed and the colloidal stability of it is dispersion for this purpose a wettability and a syneresis test of dispersion were developed for the measurement of jameed solubility. Treating butter milk at 55°C for 3 min had the best result regarding jameed paste yield and solubility, along with enhancement of jameed paste texture compared with the other heat treatment. The addition of Carrageenan (0.15%), to the Jameed paste resulted in improvement of solar dried Jameed with significant result for Carrageenan treatment as evaluated by wettability and syneresis test. Whipping of the paste to which carrageenan was used, added an additional improvement to the solubility of Jameed and stability of its dispersion. *(Pakistan Journal of Nutrition 8 (2): 134-138, 2009; **doi**: 10.3923/pjn.2009.134.138)*

A Survey on Antibody Levels among Individuals at Risk of Brucellosis in Khorasan Razavi Province, Iran

Seyed Mohammad Javad Parizadeh, Mohsen Seyednozadi, Majid Reza Erfanian and Mohsen Azimi Nezhad

Brucellosis is being reported with exceeding frequency in Iran. Serum antibodies in high-risk and general populations help to determine cut-off points and could be used as simple and fast diagnostic tests in involved areas. We have conducted the serum agglutination test, Combs' Wright and 2-mercaptoethanol titer determination on 908 healthy people. The analysis of our data shown that 275 out of healthy subjects, 30.3% were serum agglutination test and Combs' Wright test positive that 12% of them had titer more than 1:80 and 82.2% had titer less than 1:80. 56.3% of them were 2 mercaptoethanol titer positive. Basic and medium titers in whole of population were between 1:20-1:40. There are no high titers of these antibodies in endemic areas of Iran. *(Pakistan Journal of Nutrition 8 (2): 139-144, 2009; **doi**: 10.3923/pjn.2009.139.144)*

Effect of Storage Period on Chemical Composition and Sensory Characteristics of Vacuum Packaged White Soft Cheese

Mohamed Osman Mohamed Abdalla and Sohair Nusr Mohamed

The effect of storage period on chemical composition and sensory characteristics of white soft cheese was studied. Cheese was made from pasteurized cow milk, cooked and vacuum packaged. Chemical composition and sensory characteristics were determined at 0, 15, 30 and 45 day intervals. Results showed that fat, protein and total solids content decreased with the advancement of storage period, while ash content and titratable acidity increased throughout storage period. Formal Ripening Index and Shilovish Ripening Index increased as storage period progressed. Sensory evaluation indicated that colour and body of cheese did not significantly change during storage period, while flavour, taste, saltiness and overall acceptability gradually improved throughout the storage period. *(Pakistan Journal of Nutrition 8 (2): 145-147, 2009; **doi:** 10.3923/pjn.2009.145.147)*

The Effects of Cola Acuminata on Arterial Blood Pressure

E.N.S. Igbinovia, A.C. Ugwu, A.O. Nwaopara, H.O. Otamere and W.A. Adisa

Caffeine has been proven to be vasoactive and augments the release of calcium from sarcoplasmic reticulum. Interestingly, caffeine is the most active principle of Cola acuminata-commonly consumed in Nigeria. This study is designed to determine its effects on blood pressure using 20 Sprague dawley rats with an average weight of 150g. The animals were subdivided into 2 groups of 10 rats each (control and test groups). The control rats were fed with rat chow while the test groups were fed with salt diet that was prepared by adding 7.7g of salt to 92.3g of normal rats chow in order to achieve hypertension. Substance extraction was by chloroform extraction. With the extract, different levels of the substance concentration were prepared and subsequently infused in sequence to the test rats. The results showed that diastolic blood pressure was more responsive to changes in concentration of Cola acuminata extract with a significant concentration dependent increase in the arterial blood pressure of both the normotensive and hypertensive rats. Considering the fact that Cola acuminata consumption is part of our culture and the fact that some become addicted, it is our opinion therefore, that the need for efforts towards identifying the cardiovascular implications of caffeine containing consumables, can never be over emphasized. *(Pakistan Journal of Nutrition 8 (2): 148-150, 2009; **doi:** 10.3923/pjn.2009.148.150)*

Studies of *Irvingia gabonensis* Seed Kernels: Oil Technological Applications

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Irvingia gabonensis seed kernels of two Congo Brazzaville localities (Ouesso and Sibiti) were analyzed for their main chemical composition. Studies were also conducted on properties of oil extracted from *Irvingia gabonensis* seed kernels and margarines. The following values were obtained for two seed kernels cultivars respectively: protein (8.33-8.71%), oil (34.28-73.82%), ash (2.06-3.8%) and carbohydrate (15.71-55%). Gas-liquid chromatography revealed that the major fatty acid was, C12:0 (36.6-39.37%), C14:0 (50.92-53.71%) and C16:0 (4.97-5.23%) in oil extracted from *Irvingia gabonensis* and in the margarines, there is C12:0 (13.7-14.5%), C14:0 (18.46-18.54%), C16:0 (18.81-19.3%) and C18:1n-9 (36.35%), the unsaturated fatty acids such as C16:1 (0.33-0.385%), C18:3n-3 (0.62-0.64%) and C22:1n-9 (0.35-0.38%) are present. The margarines thus manufactured can tolerate temperatures of crackling because their linolenic acid content is lower than 2%. The differential thermal analysis shows the existence of two processes; crystallization and fusion. Crystallization in oil is done between 2 and 2.5°C and between -3.88 and 5.13°C in the margarine on the other hand fusion is carried out at high temperatures between 30 and 40°C. The addition of thin oils to *Irvingia gabonensis* oil during the margarine manufacture causes: increase in the unsaturated fatty acid content which results in the displacement of the peaks into the low melting point. The small percentages in lauric acid indicate that these greasy substances can be stored for a long time without fearing deterioration due to oxidizing rancidity. The margarine based on *Irvingia gabonensis* oil is an alternative to the Trans fatty acids obtained during hydrogenation and other reactions used in margarinery. *(Pakistan Journal of Nutrition 8 (2): 151-157, 2009; **doi:** 10.3923/pjn.2009.151.157)*

Chemical Composition of Ice Cream Produced in Khartoum State, Sudan

El Owni, O.A.O. and Zeinab, K.O. Khater

The objective of this study was to examine the effect of chemical composition on the quality of ice cream. The study was conducted during the period from

September, 2003 to March, 2004, in the Laboratory of Dairy Production, Faculty of Animal Production University of Khartoum. Hundred samples were examined from ice cream machines and a modern factory. The results revealed a highly significant differences ($p < 0.001$) in all chemical components except protein and Sucrose. The results showed non significant differences ($p > 0.05$) in all chemical components due to flavor except total solids. There was non significant differences ($p > 0.05$) between machines and factory ice cream with respect to type of flavor in all chemical components except total solids. *(Pakistan Journal of Nutrition 8 (2): 158-160, 2009; **doi:** 10.3923/pjn.2009.158.160)*

Hypocholesteremic and Antioxidant Effects of Garlic (*Allium sativum L.*) Extract in Rats Fed High Cholesterol Diet

Khalid S. Al-Numair

The present study is designed to evaluate the effect of garlic extract on lipid profiles and oxidative stress in male albino rats fed a high cholesterol diet (HCD). A group of 24 male albino rats each weighing 125±5.0g, was divided into four groups. Group I was used as negative control and fed on standard diet and orally administered 1 ml distilled water. Group II was used as positive control and fed on high cholesterol diet and orally administered 1ml distilled water. Groups III and IV were fed on high cholesterol diet and orally administered garlic extract (0.2 and 0.4g/kg body weight/day, respectively). Garlic extract significantly increased ($p < 0.05$) plasma HDL-Cholesterol and decreased plasma TC, LDL-Cholesterol and TG as well as liver TC and TG as compared with positive control (group II). No significant difference was observed in plasma LDL-Cholesterol, HDL-Cholesterol as well as plasma and liver TG between the rats ingested with high or low dose of garlic extracts. However, there was a significant ($p < 0.05$) decrease in plasma and liver TC in rats ingested with a high dose of garlic extract (Group IV) as compared to low dose ingestion. Garlic extract significantly increased ($p < 0.05$) total antioxidant capacity, SOD and GSH-Px activities as compared to negative or positive control (group I and group II, respectively). No significant difference was observed in total antioxidant capacity, SOD and GSH-Px activities between the rats ingested with high or low dose of garlic extract. There was a significant decrease ($p < 0.05$) in plasma malondialdehyde in rats ingested with a high or low dose of garlic extract as compared to negative or positive control rats. *(Pakistan Journal of Nutrition 8 (2): 161-166, 2009; **doi:** 10.3923/pjn.2009.161.166)*

Effect of Gamma Irradiation on the Nutritional Quality of Maize Cultivars (*Zea mays*) and Sorghum (*Sorghum bicolor*) Grains

Amro B. Hassan, Gammaa A.M. Osman, Mohamed. A.H. Rushdi, Mohamed M. Eltayeb and E.E. Diab

To investigate the effect of gamma irradiation on the nutritional quality of maize and sorghum grains, packs were exposed to doses of 0 and 2 kGy in a 60 Co package irradiator. Irradiated and non-irradiated samples were stored at refrigeration temperatures. Proximate composition, minerals content, minerals bio-availability, tannins content, phytic acid content, protein fractions and *in vitro* protein digestibility were evaluated. The results indicated that gamma irradiation caused no effect on proximate composition, minerals content and minerals bioavailability. For protein fractions, in both maize cultivars no significant differences were observed in all fractions, except in prolamins and glutelins of Maize 75. While for sorghum significant increase in globulins, prolamins and glutelins was observed. While, gamma irradiation reduced the phytic acid and tannins contents significantly. The *in vitro* protein digestibility of maize cultivars was increased significantly, while the digestibility of sorghum was reduced. *(Pakistan Journal of Nutrition 8 (2): 167-171, 2009;* ***doi:*** *10.3923/pjn.2009.167.171)*

Comparative Study of Artemia and Liqui-Fry in the Rearing of *Clarias gariepinus* Fry

J.O. Oyero, T.E. Awolu and S.O.E. Sadiku

Clarias gariepinus fry with initial total length and mean total weight of 7.00 mm and 0.18 g respectively and initial condition factor of 0.052 were stocked in six glass aquaria measuring 60×30×30 cm each. There were two treatments with three replicates each. Treatment one (T1) (Artemia fed fry) and treatment two (T2) (liquid-fry fed fry). Each aquarium was stocked with 50 fry and reared for 42 days. The water quality parameters (Temperature, pH and Dissolved Oxygen) were monitored. At the end of the experiment, the final mean total length for T1 and T2 were 38.67 mm and 25.00 mm respectively while the final mean total weight were 35.25 and 0.63 for T1 and T2 respectively. The statistical analysis of the results showed that there were significant differences ($p<0.05$) in the mean total weight and survival rate of T1 and T2 fry. Also, there was no significant difference ($p>0.05$) in the mean total length of the two treatments. The Specific Growth Rates (SGR) were 12.56 day^{-1} and 2.98 day^{-1} for T1 and T2 respectively.

The final condition factors were 0.061 and 0.004 for T1 and T2 respectively. Based on these findings it was concluded that fry fed on Artemia diet had better growth and survival rates. *(Pakistan Journal of Nutrition 8 (2): 176-180, 2009; **doi:** 10.3923/pjn.2009.176.180)*

Effect of Naturally Contaminated Feed with Aflatoxins on Performance of Laying Hens and the Carryover of Aflatoxin B_1 Residues in Table Eggs

Salwa A. Aly and W. Anwer

The aim of this study was to evaluate the effect of naturally contaminated feed with aflatoxin on performance of laying hens fed for 60 days and the carryover of AFB_1 residues in eggs as well as the stability of AFB_1 in naturally contaminated eggs to boiling process. Forty, 30 weeks old, White Leghorn laying hens were randomly assigned into four experimental groups and after 2 weeks were given naturally contaminated feed containing zero (control), 25, 50 and 100 μg aflatoxin/kg feed. Twenty eggs per treatment were collected on days (1-7); 10; 20, 30, 40, 50 and 60 and submitted to aflatoxin B_1 analysis using ELISA. Average egg production and egg weight were not affected by aflatoxin ($P>0.05$), while a significant decrease in feed intake ($p<0.05$) was appeared in the 2 groups fed on 50 and 100 aflatoxin ug/kg feed. Residues of aflatoxin B_1 were detected in eggs at levels that ranged from 0.02 to 0.09 with a mean value of 0.04, 0.05 and 0.07 μg/kg respectively. Aflatoxin B_1 was almost stable in naturally contaminated egg for up to 20 minutes of boiling, so avoiding aflatoxin B_1 transmission into egg appears to be the only practical way to ensure their safety for human consumption. Conclusively, the excretion of aflatoxin B_1 residues in hens' eggs might occur at relatively low concentrations under conditions of long term exposure of laying hens to low level of aflatoxin in naturally contaminated feed with reduction in feed intake started at 50 μg/kg. *(Pakistan Journal of Nutrition 8 (2): 181-186, 2009; **doi:** 10.3923/pjn.2009.181.186)*

Comparison of Growth Rate of Male Buffalo Calves under Open Grazing and Stall Feeding System

M. Afzal, M. Anwar, M.A. Mirza and S.M.H. Andrabi

This study was conducted to compare the effect of open grazing system and feeding green fodder at the stall (cut and carry system) on the growth of male buffalo calves. Twelve male buffalo calves (of Nili Ravi breed) were

either grazed (n = 5) on natural pasture or were offered seasonal green fodder ad lib in the manger (n = 7). The calves were kept on these treatments for 9 months. Live body weight of the calves was recorded at the start of trial and then fortnightly. The overall weight gain per day over nine months of feeding period did not differ significantly between open grazing (0.415±0.028kg) and stall fed groups (0.433±0.056kg) (P > 0.05). It is concluded that grazing on natural pasture may result in growth of male buffalo calves comparable to that after feeding them cultivated green fodder at the manger. *(Pakistan Journal of Nutrition 8 (2): 187-188, 2009;* ***doi:*** *10.3923/pjn.2009.187.188)*

Effect of Modified Whey Protein Concentrates on Instrumental Texture Analysis of Frozen Dough

Ali Asghar, Faqir Muhammad Anjum, Jonathan C. Allen, Ghulam Rasool and Munir A. Sheikh

Modified whey protein concentrate (mWPC) is an important functional ingredient having wide range of application in food products. Important functional properties of the whey protein are hydrophilic, swelling and water retention capacity and its ability to absorb and bind water is useful in connection with frozen doughs which are mixed, formed and then held in frozen storage for some length of time before being thawed, proofed and baked. Major objective was to determine the effect of modified whey protein concentrates on instrumental texture profile analysis (TPA) of frozen doughs made from flour with different protein contents. Three commercial wheat flours of protein contents 9.2, 12.7 and 14.2% were studied for making frozen dough. Flours with 9.2 and 14.2% protein contents were fortified with 5% mWPC while 12.7% protein contents flour with 2.5% mWPC. Doughs were prepared by mixing all the ingredients in the dough mixer and after resting divided into different pieces and stored in the walk in freezer at -4°F. The values of texture profile analysis of the frozen doughs after thawing for hardness, cohesiveness, gumminess, adhesiveness and springiness were determined with LFRA Texture Analyzer. TPA of dough samples was performed on fresh i.e. zero day and then after 15, 30 and 60 days to study the effect of storage and mWPC treatments on TPA parameters of frozen dough. Values of instrumental texture parameters of frozen dough were affected significantly by the addition of mWPC treatments and a significant decrease in the values of hardness, cohesiveness, gumminess and springiness were observed with its addition in dough samples. Results also represent significant effect of different storage periods on TPA parameters of frozen dough showing upward trends in the values of hardness and

gumminess while decreasing values of cohesiveness, adhesiveness and springiness were recorded with the increasing storage periods. *(Pakistan Journal of Nutrition 8 (2): 189-193, 2009; **doi**: 10.3923/pjn.2009.189.193)*

Proximate Analysis and Physico-Chemical Properties of Groundnut (*Arachis hypogaea* L.)

V.N. Atasie, T.F. Akinhanmi and C.C. Ojiodu

Proximate, physico-chemical and elemental analysis of groundnut were determined. The results showed that the groundnut oil contained 47.00% fat, 38.61% protein, 5.80% moisture, 1.81% carbohydrate, 3.70% crude fibre and 3.08% ash. Minerals (mg/100g) included: Na (42.00±0.71), K (705.11±0.86), Mg (3.98±0.04), Ca (2.28±1.94), Fe (6.97±1.62), Zn (3.20±0.11), P (10.55±0.68). The physico-chemical characteristics showed; saponification value, 193.20mgKOH/g, iodine value 38.71 (g/100g), acid value 5.99 (mgKOH/g), free fatty acid (mgKOH/g) 3.01 peroxide value 1.50 (meq/kg) and refractive index 1.449. The predominant fatty acid was found to be oleic acid (41.11%). The groundnut can thus be considered as a good source of protein with high nutritional value. *(Pakistan Journal of Nutrition 8 (2): 194-197, 2009; **doi**: 10.3923/pjn.2009.194.197)*

Body Composition, its Significance and Models for Assessment Amir Haider Shah and Rakhshanda Bilal

The term Body Composition is used to illustrate the different components that, when taken together, makes up a person's body weight. For analysis of body composition it is often suitable to think of the body as made of two components: fat and non-fat. The non-fat portion is called "fat free mass" or "lean body mass". However, body can be taken into different compartment models for body composition assessments. It depends upon the compartment of interest, availability of techniques, technical training of staff, condition of patient / subject and location where assessment will be done i.e., laboratory / clinic or field / remote site. Body Composition is a tool for diagnosis as it may be significantly altered in many disorders like Anorexia and obesity, Renal failure, Liver disorders: Ascites, Chronic obstructive pulmonary disease, Cancer and AIDS associated wasting, Burns and trauma, Congestive heart failure, Spinal cord injuries and Osteoporosis. This paper describes various models in use for body composition assessment and scope of their utility. *(Pakistan Journal of Nutrition 8 (2): 198-202, 2009; **doi**: 10.3923/pjn.2009.198.202)*

Dietary BCAAs Do Not Prevent Skeletal Muscle Atrophy in Rats Injected with Glucocorticoid

Masaru Ochiai and Tatsuhiro Matsuo

This study investigated the effects of the combination of a voluntary resistance exercise (climbing) and the feeding of a high protein snack rich in Branched-Chain Amino Acids (BCAAs) on skeletal muscle weights in rats injected with glucocorticoid as a model of age-related sarcopenia (Experiment 1). Moreover, we examined whether BCAAs in the diet and/or BCAAs in snacks prevent sarcopenia in sedentary rats (Experiment 2). Male Wistar rats were injected with prednisolon (2 mg kg^{-1}) every day. Rats in the exercise groups climbed voluntarily in the tower cage for 8 weeks. BCAAs were exchanged partly for casein in the experimental diets. Glucocorticoid injection decreased final body weight and muscle mass. The body weight gain did not differ among glucocorticoid-injected rats. Climbing exercise markedly prevented the loss of muscle mass, but the BCAA snack did not facilitate the effects of exercise (Experiment 1). In the sedentary rats, either BCAA in the diet or BCAA in the snack decreased mass and protein content of muscle (Experiment 2). These results suggest that resistance exercise is the most effective way to inhibit sarcopenia in rats. BCAAs did not depress muscle mass loss without resistance exercise. BCAAs should be used on the condition that all other essential amino acids are fully available in the diet. *(Asian Journal of Clinical Nutrition 1 (1): 1-11, 2009;* ***doi:*** *10.3923/ajcn.2009.1.11)*

Infant Feeding Practices and Nutritional Status of Children in North Western Nigeria

Anigo Kola Matthew, Ameh Danladi Amodu, Ibrahim Sani and S. Danbauchi Solomon

Studies on infant feeding practices and nutritional status of children in North Western Nigeria were carried out. More than 50% of caregivers were full-time housewives while about 39% do not have any form of education. Main source of drinking water was from unprotected sources like river/lake (24%), private well (23.0%) and public well (13.5%) while the predominant source of energy for cooking and main type of toilet in the households were wood (85.7%) and pit

latrines (67%) respectively. On the average, over 70% of mothers were still breastfeeding at the time of the survey and duration of breastfeeding was between 13-24 months (73.4%). Only 54.3% of mothers in North West practiced exclusive breastfeeding for the first six months but in addition to breastmilk over three-quarter of caregivers gave plain water while 50% of caregivers in Kaduna state ever bottlefed their child with infant formula mostly from the 6th month. Few caregivers (19%) that bottlefeeds always sterilizes them. Complementary foods were introduced to majority of the children much earlier at 3rd month (41.2%) than the 6th month recommended while some caregivers introduces complementary foods at 1-2 months (17.8%). This study revealed that on the average, 31.7% of the children sampled were severely stunted which was lower than the National average. More attention needs to be paid to the specific behaviours surrounding feeding and any constraints to childcare in North Western Nigeria. *(Asian Journal of Clinical Nutrition 1 (1): 12-22, 2009;* ***doi:*** *10.3923/ajcn.2009.12.22)*

Lipid Fractions and Fatty Acid Composition of Colostrums, Transitional and Mature She-Camel Milk During the First Month of Lactation

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Fatty acid composition, triglycerides, cholesterol and tocopherols were determined in colostrums, transitional and mature milk. With progress of lactation, triglycerides and percentage medium chain fatty acids increased whereas tocopherols, cholesterol and percentage long chain polyunsaturated fatty acids decreased. These changes reflect augmented *de novo* synthesis of fatty acids (12:0, 14:0, 16:0 and 18:0) in the mammary gland and a tendency of increasing fat globule size as milk matures. Transitional and mature milks but particularly colostrums, contained higher concentrations of components considered to be derived from the fat-globule membrane (cholesterol, tocopherols, percentage long-chain polyunsaturated fatty acids). On the same time, serum concentration of cholesterol, triglycerides, total lipids, high density lipoprotein-cholesterol, low density lipoprotein and very low density lipoprotein cholesterol were estimated and revealed a higher level in older camel. Differences from data are discussed in relation to analytical methods and possible consequences for lipid digestion, lipid absorption, growth and brain development. *(Asian Journal of Clinical Nutrition 1 (1): 23-30, 2009;* ***doi:*** *10.3923/ajcn.2009.23.30)*

Comparative Evaluation of the Nutritional Quality, Functional Properties and Amino Acid Profile of Co-Fermented Maize/Cowpea and Sorghum/Cowpea *Ogi* as Infant Complementary Food

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This study involved formulating nutritionally suitable complementary food mixtures with locally available raw materials. Maize or sorghum was mixed with cowpea, soaked at 25°C for 72 h, wet-milled and sieved. The sediment was sun dried, milled for analyses. Proximate, functional properties and amino acid were determined in co-fermented maize/cowpea and sorghum/cowpea. Sorghum/cowpea had higher water absorption capacity, (235%) than maize/cowpea (103%) sorghum/cowpea and a lower value of oil absorption capacity (47.9%) than, maize/cowpea of (67.6%). Oil absorption capacity of (14.7%) in sorghum/cowpea was higher than (9.6%) in maize/cowpea. The higher foaming capacity of maize/cowpea (40.0%) than that of sorghum/cowpea of 20.0% might be due to soluble proteins and higher emulsion capacity of maize/cowpea might make it a better flavour retainer and enhanced mouth-feel. Values of foaming stability, least gelation capacity and bulk density (loose and packed) were comparable. Sorghum/cowpea had higher contents of lysine, histidine, arginine, aspartic acid, threonine, serine, alanine, glutamic acid, proline, glycine, cystine, valine, isoleucine, leucine, tyrosine, phenylalanine, total amino acids, total sulphur amino acid, ratio of total essential amino acids/aromatic amino acids but lower values of methionine and total essential amino acids. Thus co-fermented sorghum/cowpea is of better protein quality than maize/cowpea.
(Asian Journal of Clinical Nutrition 1 (1): 31-39, 2009; ***doi:*** *10.3923/ajcn.2009.31.39)*

The Neuroprotective Potentials of Sour (*Hibiscus sabdariffa*, *Calyx*) and Green (*Camellia sinensis*) Teas on Some Pro-Oxidants Induced Oxidative Stress in Brain

Ganiyu Oboh

This study seeks to access the protective effect of sour tea (*Hibiscus sabdariffa*, *Calyx*) and green tea (*Camellia sinensis*) on some pro-oxidants [Fe (II), sodium nitroprusside, quinolinic acid] induced lipid peroxidation in rat's brain-*in vitro*. Aqueous extracts of both teas were prepared (1 g tea in 100 mL of hot water). Thereafter, the ability of the extracts to prevent 25 μM $FeSO_4$, 7 μM sodium nitroprusside and 1 mM quinolinic acid induced lipid peroxidation in isolated rat's brain tissues preparation was determined *in vitro*. Subsequently, the total phenol

content, reducing power, Fe (II) chelating and OH radical scavenging ability were determined. The results of the study revealed that both teas significantly ($p<0.05$) inhibited lipid peroxidation in basal and pro-oxidants induced lipid peroxidation in the rats brain homogenates in a dose dependent manner. Also, the teas had high total phenol content [sour (13.3 mg g^{-1}; green (24.5 mg g^{-1})], reducing power, Fe (II) chelating and OH radical scavenging ability (except sour tea). However, green tea had a significantly higher ($p<0.05$) ability to inhibits lipid peroxidation in both the basal and pro-oxidants induced lipid peroxidation in rat's brain homogenates *in vitro*. Therefore, it is very obvious from the study that both teas had high antioxidant and neuroprotective potentials, however, green tea had higher neuroprotective potentials, which may probably be due to its high total phenol content, reducing power, Fe^{2+} chelating ability, OH* and NO* scavenging ability, as well as inhibition of over-stimulation of NMDA receptor. *(Asian Journal of Clinical Nutrition 1 (1): 40-49, 2009; **doi**: 10.3923/ajcn.2009.40.49)*

Proximate Composition and Fatty Acids Profiles in Most Common Available Fish Species in Saudi Market

Manal S. Tawfik

Three highly consumed fish in Saudi market were evaluated for their proximate composition in the muscle and in the head and their fatty acids. The fish species were included Spanish mackerel, (*Scomberomorus maculates*), Grouper (*Epinephelus coioides*) and Yellow-spotted trevally (*Carangoides fulvoguttatus*) which respectively known as Kanad, Hammour and Hammam in Saudi market. The moisture, protein, total lipids and ash of the muscle tissue and head of the three fish species were found to be between 71.20 to 78.23, 16.19 to 20.20, 0.24 to 4.10 and 1.10 to 8.00%, respectively. The fatty acids composition in the muscle of fish species was evaluated. 16:0 and 18:0 were the main saturated fatty acids (SFA), 18:1 ω-9, 16:1 ω-7 the main monounsaturated fatty acids (MUFA), while 22:6 ω-3 (DHA), 20:5 ω-3 (EPA) were the main polyunsaturated fatty acids (PUFA). The ω3/ω6 ratio was between 2.05 to 7.39 and the EPA/DHA ratio was approximately 0.30. *(Asian Journal of Clinical Nutrition 1 (1): 50-57, 2009; **doi**: 10.3923/ajcn.2009.50.57)*

Left Ventricular Mass and Geometry in Obese Children

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This study was to evaluate the left ventricular mass index (LVMI) and geometry in obese children. Forty-nine obese children, median age of 9.7 (range 3.4-15.4 years), underwent echocardiography to assess LVMI and Relative Wall Thickness

(RWT). LV geometry was categorized as normal, concentric remodeling, eccentric hypertrophy and concentric hypertrophy. Mean weight was 61.8±22.0 kg, BMI 29.9±5.8 kg m^{-2}, LVMI 38.3±8.9 g $m^{-2.7}$ and percentage of actual weight to ideal body weight-for-height (IBW %) 172.4±28.3%. Twenty-one children had mild to moderate obesity (group 1) and 28 had severe obesity (group 2). Twenty-six children had normal LV geometry, 2 had concentric remodeling, 15 had eccentric hypertrophy and 6 had concentric hypertrophy. LVMI and abnormal geometry in group 2 were significantly greater than in group 1 (40.7±8.8 vs 35.1±8.1 g $m^{-2.7}$, 60.7 vs 28.6%, p = 0.03). Thirty-seven children (75.5%) had normotensive whereas 12 (24.5%) had systemic hypertension. The LVMI and abnormal geometry were not significantly different in both groups (37.6±9.7 vs 40.4±5.7 g $m^{-2.7}$, 40.5 vs 60.7%). Left ventricular mass and abnormal LV geometry were increased in obese children especially in severe obesity. These may increase cardiovascular risk in the future. Weight control to decrease the severity of obesity should be recommended. *(Asian Journal of Clinical Nutrition 1 (1): 58-64, 2009; **doi:** 10.3923/ajcn.2009.58.64)*

Vitamin A: A Review

D.O. Edem

This study provides a comprehensive review on the fat-soluble micronutrient vitamin A, changes in its status among vulnerable groups of different populations and the results of experience with different strategies/interventions designed to improve its status. Vitamin A can be derived from animal sources (preformed in liver, milk, eggs, fatty fish) or plant sources (in fruits and vegetables as provitamin A). The vitamin is required for normal growth and development, playing a part in reproduction, differentiation of cellular epithelium, regulation of cell division, genetic regulation and enhancement of immune responses. Retinol (its basic molecule) is metabolised into a number of biologically active retinoid compounds, such as retinal (active element of visual pigment) and retinoic acid, an intracellular messenger that modulates cell differentiation. Uneven distribution of natural sources of vitamin A, low dietary intake of animal products, the traditional technological transformation/processing of foods, low absorption and limited bioconversion of carotenoids may impact negatively on vitamin A activity. Vitamin A deficiency (VAD), a major public health nutritional problem in many developing countries, results in a range of developmental and pathological states with consequences ranging from potentially blinding xerophthalmia to increased risks of infection and mortality. All alternatives employed towards eradicating VAD (nutrition education, dietary diversification, dietary supplementation and food

fortification) have provided a high return on investment in terms of disability-adjusted-life years gained. Key options for action, as well as important areas of research are being discussed. Control of VAD will lead to a substantial improvement in childhood survival and prevent the scandal of irreversible blindness. It is suggested that early introduction of children to abundant natural sources of vitamin A (like red palm oil-prepared meals) be encouraged. *(Asian Journal of Clinical Nutrition 1 (1): 65-82, 2009; **doi:** 10.3923/ajcn.2009.65.82)*

Effect of Benzoic Acid and Combination of Benzoic with Citric Acid as Food Additives on the Renal Function of Experimental Rats

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This study was aimed to investigate the effect of oral administration of benzoic acid and combination of benzoic with citric acid (1:1 v/v) on the renal functions of white American rats. Twenty one rats were divided in to seven groups (3 rats each). One group serves as a control. The rest of the 6 groups were differently treated (at rates of 100, 500 and 1250 mg kg^{-1} body weight were applied) with benzoic acid and benzoic plus citric acid. Compared to the control, significant ($p \leq 0.05$) gradual increase in the serum creatinine and urea nitrogen levels in the rats with increasing the dose of benzoic acid and benzoic with citric acid was observed. Results also revealed an insignificant difference in serum creatinine and urea nitrogen on administering benzoic acid or its combination with citric acid. Kidney changes in the rats received different doses of benzoic acid and combination of benzoic with citric acid was observed. *(Asian Journal of Clinical Nutrition 1 (2): 83-87, 2009; **doi:** 10.3923/ajcn.2009.83.87)*

Comprehensive Evaluation of Malnutrition Effect on Pain Threshold in Albino Rats

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This present study was aimed at exploring the effect of protein malnutrition and micronutrient deficiencies on pain threshold in the rat. Thirty adult male rats used were divided into five groups of six rats each, (1) normal diet ND, (2) low-protein diet LP, (3) low protein minerals and vitamin diet LPMV, (4) low protein and vitamin diet LPV and (5) low protein and mineral diet LPM. The normal diet fed rats served as the control group. Both the control and the experimental groups

were fed accordingly for a total period of six weeks. Hot plate and tail-flick (thermal) and formalin (chemical) tests were applied to assess the possible effect of protein and micronutrient deficiencies on the sensitivity of the rats to the stimuli at the end of the second, fourth and sixth week. Pain threshold was markedly reduced in the malnourished rats when compared to the control group fed with the standard diet. Latencies significantly decreased in the groups LP, LPMV, LPV and LPM over the 0-90 min observation period in hot plate test and 48-55°C for tail immersion test; $p<0.001$. Also, significant decrease in latencies was observed in LPMV, LPV and LPM when compared with the LP group; $p<0.05$. In Formalin test, LP, LPMV, LPV and LPM groups in both early and late phases showed a more prolonged time with paw licking when compared to the control group; $p<0.001$. Similarly, when LPV and LPM were compared with the LP group, a significant increase in the licking time was observed; $p<0.05$, with significant level of LPMV being the highest; $p<0.001$. These results demonstrate that both protein malnutrition and micronutrients (vitamins and minerals) deficiencies are capable of overt hypersensitivity to acute and chronic pain. *(Asian Journal of Clinical Nutrition 1 (2): 88-96, 2009;* ***doi:*** *10.3923/ajcn.2009.88.96)*

Deficient Intakes of Energy and Macronutrients in Pakistani Female Students Assessed by Composite Samples Method

Muhammad Muzaffar A.K. Khattak and M.N. Khan

The main purpose of the study was to compare the energy and macronutrients intakes by composite sample method. Duplicate food samples for seven days i.e., breakfast, lunch and dinner and whatever else ate during the week were analyzed for macronutrients consumption. Twenty female students were registered from the female hostel of the NWFP, Agricultural University Peshawar Pakistan. Age, weight, height and skin folds of the students were recorded on the day of the registration. From the anthropometry Basal Metabolic Index (BMI) was determined. The composite food samples were analyzed for protein, carbohydrates and fats. The energy values were determined by multiplying the daily eaten protein, carbohydrates and fats with 4, 4 and 9, respectively. The mean values of energy and macronutrients intakes were compared with the norms as appropriate. The energy and protein intakes were lower by -29.34% and protein intake was higher by 42.65% compared with American Dietetic Association (ADA). Similarly, compared to the WHO/FAO values the energy was lower -30.57 and protein was higher by 43.29, respectively. The energy contribution was higher from protein by 151% and lower from carbohydrates and fats by

-28.35 and 23.43%, respectively. This study suggests that students are having deficient or imbalance energy intakes from macronutrients and are at the risk of malnutrition. *(Asian Journal of Clinical Nutrition 1 (2): 97-101, 2009;* ***doi:*** *10.3923/ajcn.2009.97.101)*

Synergestic Effect of Squalene and Simvastatin on Fecal Cholesterol Excretion in Rats

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In the present study an attempt was made to study the synergetic effect of squalene and simvastatin on fecal cholesterol excretion. The rats were fed with 2% squalene and/or 20 mg simvastatin for 45 days. At the end of the experimental period the feces were collected and analyzed for total lipid and total cholesterol content. It was found that the dietary supplementation of squalene at 2% level significantly ($p<0.001$) increased the fecal cholesterol excretion in experimental rats. The combination of squalene and simvastatin was found to be more efficient than squalene alone. Thus the results of the present study indicate that a combination of squalene and simvastatin can be efficient in cholesterol lowering than the drugs alone. It suggests that squalene a prime HMG CoA reductase inhibitor can also be used as a prudent dietary addition for individuals using similar cholesterol lowering drugs. *(Asian Journal of Clinical Nutrition 1 (2): 102-106, 2009;* ***doi:*** *10.3923/ajcn.2009.102.106)*

Is Food Intake Associated with Pre-Adolescent Obesity? An Observational Study in Metromanila, Philippines

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There are reports of increasing prevalence of overweight and obesity in Asian children and adolescents. This has been linked to the increasing availability and affordability of fast foods in place of traditional diets. A well-powered sample of pre-adolescent children was randomly selected from public and private schools in Metromanila, Philippines. Their height and weight were measured using standard protocols. Body mass index was calculated and International Obesity Taskforce age-gender-specific classifications were applied to classify normal weight, overweight and obesity. Children completed a Filipino-validated version of the Health Behaviour in School Aged Children-Food Frequency Questionnaire for the previous week. Food group choices and frequency of intake were evaluated using a new weighted composite score. Prevalence of overweight and obesity in this

sample was higher than the Filipino national figures. More girls than boys were classified as having normal weight. There was no age influence on food group choices; however girls ate significantly more fruit and vegetables than boys. Normal weight children consumed significantly more milk and milk products than fatter children. This is the first known report on the association between food intake and obesity in Filipino pre-adolescents, measured using a Filipino-specific rule. Understanding the relationship between food choices and childhood fatness is an important step in combating Filipino childhood obesity. *(Asian Journal of Clinical Nutrition 1 (3): 107-119, 2009;* ***doi:*** *10.3923/ajcn.2009.107.119)*

Co-fermentation of Cassava/Cowpea/Carrot to Produce Infant Complementary Food of Improved Nutritive Quality

Mojisola A. Oyarekua

This study conducted co-fermentation of cassava 50%, cowpea 30% and carrot 20% w/w for the production of infant complementary food. Analyses on proximate, minerals, amino acids and β-carotenoid contents were carried out using standard methods. Cassava ogi had lower crude protein content than cassava/cowpea/carrot ogi. Leucine and lysine contents were comparable in both samples. Crude protein, total amino acids values increased. Cassava ogi had higher calcium, magnesium, potassium and sodium contents than cassava/cowpea/carrot ogi. The K/Na ratio was lower in both samples than recommended ratio of 0.60. Values of essential minerals in both samples met the requirement for 9-11 months. Methionine plus cystine, histidine and isoleucine values were higher in cassava/cowpea/carrot ogi than cassava ogi. The carotenoid value in co-fermented mixture was comparable to RDA from complementary food value for 11-23 months infant. Co-fermentation of cassava/cowpea/carrots gave values of improved nutritional quality than fermented cassava ogi. *(Asian Journal of Clinical Nutrition 1 (3): 120-130, 2009;* ***doi:*** *10.3923/ajcn.2009.120.130)*

Evaluation of Antioxidant and Antiulcer Potential of *Cucumis sativum* L. Seed Extract in Rats

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The study was aimed to investigate the antioxidant and anti-ulcer effect of methanolic extract of *Cucumis sativum* L. seeds. Extraction was done using

different solvents of increasing polarity (chloroform, ethyl acetate and methanol). The antioxidant activity of all the extracts was measured by DPPH method. The methanolic extract of *Cucumis sativum* L. (MECS) seeds showed maximum antioxidant potential. Hence, it was further evaluated for its *in vivo* anti-ulcer activity by Pyloric Ligation (PL) and Water Immersion Stress (WIS) induced ulcer models in rat. In PL model gastric volume, free and total acidity of MECS were measured at 150 and 300 mg kg^{-1} doses. The ulcerative index was measured in both the models at the same doses. The MECS showed maximum reduction of gastric acid volume, free and total acidity such as 41, 48 and 29% at 300 mg kg^{-1} dose, respectively. The ulcerative index inhibition in PL and WIS models was found to be 52.5 and 62.7%, respectively at higher dose. The results suggested that methanolic extract of *Cucumis sativum* L. seeds possessed significant antiulcer potential which could be due to its antioxidant activity. *(Asian Journal of Clinical Nutrition 1 (3): 131-138, 2009;* ***doi:*** *10.3923/ajcn.2009.131.138)*