
Corrigendum

PS4-53 Strengthening micronutrient nutrition surveillance

THE NEW WHO/CDC INDICATOR ECATALOGUE AS A REPOSITORY OF INDICATORS TO MONITOR AND EVALUATE MICRONUTRIENT INTERVENTIONS

JP. Peña-Rosas¹, ME. Del Socorro Jefferds², LM. De-Regil³

¹Department of Nutrition for Health and Development, Geneva, Switzerland

²Department of Nutrition for Health and Development World Health Organization, Geneva, Switzerland

³International Micronutrient Malnutrition Prevention and Control Program (IMMPaCt), Division of Nutrition, Physical Activity, and Obesity, Centers for Disease Control and Prevention, Atlanta, USA

Monitoring programme performance is necessary to effectively implement programmes and achieve public health goals, but in practice it does not occur frequently due to a lack of technical, financial, and human resources and awareness of potential indicators. For a given project, programme managers and agencies generally develop indicators independently or refer to internal documents during the indicator development phase, which results in considerable variation in the indicators used and their definitions, which limits their comparability across programmes and over time. Another key barrier includes the lack of a resource that compiles potential indicators with standard definitions that can be consulted when designing monitoring and evaluation systems.

The WHO/CDC Indicator eCatalogue for micronutrient interventions intends to be a dynamic, user-friendly and non-comprehensive web resource for those actively engaged in providing technical assistance in monitoring, evaluation, and surveillance of public health programmes implementing micronutrient interventions. It provides potential indicators with standard definitions that can be selected, downloaded, and adapted to a local programme context. The eCatalogue initially includes key programme indicators (inputs, activities, outputs and outcomes) related to vitamin A supplementation, salt iodina-

tion, wheat flour fortification, and point-of-use fortification of foods with micronutrient powders. Users can search for indicators through four different options and download the selected ones.

The eCatalogue does not provide guidance for designing or implementing a monitoring or evaluation system in public health, although some indicators may include useful references for that purpose. Furthermore, the eCatalogue does not specify “core” programme indicators for a given intervention or make recommendations on the use of any particular indicator. Most of the information for processes indicators comes from practice-based evidence and their validity, reliability, feasibility or utility in the field still needs to be better documented.

PO0701

BINGE DRINKING AND MALNUTRITION: CONSEQUENCES

RM. Rua, F. Nogales, ML. Ojeda, ML. Murillo, O. Carreras
Department of Physiology, University of Seville,
Spain

Background and objectives: Until now, only chronic alcohol consumption has been associated with malnutrition. With the present oral Binge Drinking Model developed in our Lab, we will analyze if acute oral alcohol consumption is also related to malnourished, and therefore with exogenous antioxidant intake and their serum balance. Specifically, we will study in these treated rats, the balance of Selenium (Se), an essential mineral which is part of the endogenous antioxidant enzyme: Glutathione Peroxidase (GPx).

Methods: Control and binge alcohol treated adolescent rats were studied, measuring solid diet, selenium diet, alcohol and caloric intake, body weight, and Se levels and GPx activity in serum. Serum Se levels were measured by graphite-furnace atomic absorption spectrometry, and GPx activity by spectrophotometry.

Results: Acute alcoholic treatment triggered a decrease of solid diet, Se and caloric intake, associated with a lower body weight and a decrease in serum Se levels and GPx activity.

Conclusions: With this easy experiment, we have demonstrated that not only chronic alcohol consumption is related to malnutrition, but also an acute one. This is especially interesting as this kind of alcohol abuse is the one favorite for the ado-

lescents, and in this period of life, nutrients are essential for a good development, such is the case of a correct Se level, which acts as an antioxidant in the fight against oxidative damage generated by alcohol consumption. This study implies that binge drinking decreased antioxidant defenses, promoting oxidative damage caused by alcohol.

Key words: Oral binge drinking model, malnutrition, selenium, glutathione peroxidase, adolescents.

PO0893

THE EFFECT OF AGE ON RESTRICTIONS IN FOOD CONSUMPTION IN A REPRESENTATIVE SAMPLE OF POLISH GIRLS AGED 13-21 YEARS. THE GEB-HEALTH PROJECT

J. Czarnocinska¹, J. Kowalkowska², E. Babicz-Zielinska^{3,4}, M. Jezewska-Zychowicz⁵, L. Wadolowska²

¹Department of Human Nutrition and Hygiene, Poznan University of Life Sciences, Poland

²Department of Human Nutrition, University of Warmia and Mazury in Olsztyn, Poland

³Department of Trade and Services, Gdynia Maritime University, Poland

Background: The aim of this study was to analyse the effect of age on the application of dietary restrictions by girls.

Methods: Analyses were conducted on 1107 girls from a cohort of girls aged 13-21 years representative of the national population. A total of 2104 individuals were randomly selected from the PESEL data base. Interviews were conducted with 52.6% initial group. Using a standardised interview (Yes/No responses) information was collected according to the declarations on the applied restrictions in the consumption of 10 food groups.

Results: A total of 31% girls from the cohort, irrespective of their age, applied some forms of restrictions in food consumption. Among those girls (n=338) 91% applied restrictions concerning the amount of consumed food, 74% food with high fat contents, 37% meat and processed meat products, 19% dairy products, while 4% raw fruit, and these restrictions were not dependent on the age of respondents. With age (age groups: 13-15 years, 16-18 years, 19-21 years) the number of girls applying restrictions in the consumption of sugar and sweets was growing, from 71%, 79% to 86%, respectively (p<0.05), fats from 61%, 69% to 77%, respectively (p<0.05), bread, groats, pasta and potatoes from 24%, 41% to 50%, respectively (p<0.001), while the number of girls limiting the consumption of raw vegetables was decreasing (12%, 8% and 3%, p<0.05).

Conclusions: The application of restrictions in food consumption was declared by approx. 30% Polish girls aged 13-21

years. With age the number of girls limiting consumption of sugar and sweets, fats and starchy foods was increasing, while the number of girls applying restrictions in the consumption of raw vegetables was decreasing, which suggests a higher quality diet of older girls in comparison to younger girls.

Key words: Age, dietary restrictions, food intake, girls.

Acknowledgements: The study was financed within the framework of project no. N N404 068540.

PO0973

THE RELATIONSHIP BETWEEN BREAST MILK TAG COMPOSITION AND MOTHER'S WEIGHT AND DIET

K. Linderborg¹, J. Mäkelä², M. Kalpio¹, H. Niinikoski³, H. Kallio¹, H. Lagström²

¹Department of Biochemistry and Food Chemistry, University of Turku, Finland

²Turku Institute for Child and Youth Research, University of Turku, Finland

³Department of Pediatrics, University of Turku, Finland

Background and objectives: Although the triacylglycerol (TAG) structure in human milk is known to affect the infant's lipid metabolism, the structure of TAGs in the vegetable based infant formulas is different from the corresponding structure in human milk. Little is known of the variation in TAG structure between different mothers, especially in relation to mother's weight or diet. We studied the differences in breast milk triacylglycerol composition and structure between overweight and normal weight women with a known food frequency pattern.

Methods: Samples were collected from lactating women (n = 40) at infant's age of 3 months. The diet of the mother was studied with Index of Diet Quality at third trimester of pregnancy and with food frequency questionnaire on sampling day. Four groups were compared: normal weight women with recommended or non-recommended diet and overweight women with recommended or non-recommended diet. The TAG composition and structure of the milk was analyzed with different tandem mass spectrometric methods.

Results: Although we have previously shown that overweight women's breast milk contains higher amount of saturated fatty acids and lower amount of n-3 fatty acids and compared to normal weight women's breast milk the TAG structure did not differ between the four studied groups. The most prevalent TAG in the milk consisted of two oleic acid residues and one palmitic acid residue, with the palmitic acid in the middle (sn-2) position in the TAG molecule.

Conclusions: The structure of human milk TAGs seems to be under strict biological control with little variation caused by mothers' of different weight or diet. Thus, stronger emphasis should be laid into mimicking the TAG structure of infant formulas closer to that of human milk.

Key words: Breast milk, Triacylglycerol, Fatty acids, Nutrition

PO1168

KNOWLEDGE AND USE OF FOOD LABEL INFORMATION AMONG URBAN CONSUMERS IN INDIA

T. Vemula¹, M. Gavavararapu², V. Merdu³, L. Avula⁴

¹Food & Drug Toxicology Research Centre, National Institute of Nutrition, Hyderabad, India

²Extension & Training Division, National Institute of Nutrition, Hyderabad, India

³Division of Bio-Statistics, National Institute of Nutrition, Hyderabad, India

⁴Division of Community Studies, National Institute of Nutrition, Hyderabad, India

Background and objectives: Overweight, obesity and associated diseases are on the rise in India. To discourage consumption of unhealthy foods, Indian food regulations made nutrition labeling mandatory since 2009. A study was conducted with an objective to assess knowledge, perceptions and use of food labels among consumers.

Methods: A cross-sectional study was conducted in two metro-cities of India using both quantitative and qualitative methods. Intercept interviews (n=1832) were conducted at super-market sites by administering structured questionnaires on a stratified random sample of adolescent (10-19 years), adult (20-59 years) and elderly (60 years) consumers. This quantitative information was triangulated with qualitative data from 21 Focus Group Discussions (FGDs).

Results: About 45% of consumers across the age groups buy packed foods once in a week and 12% buy every day. Taste, quality, convenience and ease-of-use were reported to be reasons for buying packed foods. Although 90% of the consumers across the age groups check food labels, majority (81%) of them look only for manufacturing date, expiration/best-before date. Only 1/3rd of the consumers check nutrition information and list of ingredients. Nutrient information on labels was not often checked because most of them felt they either lacked nutrition knowledge or found information too technical to understand. About 60% of the respondents check quality symbols. It was observed that the significantly ($p < 0.001$) higher number of respondents with higher education were checking quality symbols and nutrition information in all categories of the prepackaged foods. Women and girls concerned about 'fat' and 'sugar' intake were checking nutrition facts.

Conclusion: The intent of promoting choice of healthy foods through use of food labels is not being completely met. Majority find nutrition information complicated to comprehend; there is perhaps a need to take up educational activities and/or experiment newer forms of nutrition labeling.

Key Words: Food-label, consumer-survey, nutrition

PO2722

INCREASED ANTIOXIDANT POTENTIAL OF RYE FLOUR BY ENZYMATIC HYDROLYSIS.

F. Lima, J. Macedo, J. Pallone, G. Macedi

Department Of Food Science, Of Food Engineering, University Of Campinas, Campinas, Brazil

Background and objectives: The consumption of processed grains and vegetables not only improve nutrient utilization, but also act as potential nutraceutical and therapeutic foods for human health. Cereal based foods generally comprise a significant part of daily diets throughout the world. Rye products are particularly known for its high level of dietary fiber and bioactive compounds such as phenolic compounds, phytosterols, minerals, vitamins and tocotrienols. The treatment with tannase enzyme in rye is an alternative to the release of bioactive compounds, such as phenolics, which have antioxidant activity towards oxidative stress in the body. Tannase is an enzyme that hydrolyzes the tannins of grains, increasing the antioxidant activity and the release of gallic acid. In this context, the present study aimed to evaluate the relationship between phenolic compounds released by the action of tannase and antioxidant activity in rye.

Methods: The crude extract of tannase was produced using the *Paecilomyces variotti* in solid-state fermentation. The rye grain was milled in laboratory mill and the enzymatic reaction was performed in a shaken water bath at 40°C and 200 rpm for 2 hours. After that, the flour was frozen, freeze dried and stored at -18°C. The phenolic compounds were determined as gallic acid equivalents (GAE) using the Folin Ciocalteu method. The antioxidant activity was evaluated by scavenging of DPPH radical, the results were expressed as μM of trolox equivalents.

Results: Rye treated with tannase showed an increase in antioxidant activity by 89% and total phenols by 20% compared to the control (without enzyme).

Conclusions: Rye is used as an ingredient in breads, fermented and distilled beverages. The results indicated that the enzymatic treatment is an alternative for improving nutritional value of this grain as an ingredient.

Key words: Antioxidant activity, Phenolic Acids, DPPH, tannase, rye.

PO2858**Enzymatic treatment in flour rye and the comparative study of antioxidant capacity ORAC, with and without EDTA**

F. Lima, J. Macedo, J. Pallone, G. Macedi

Department Of Food Science, Of Food Engineering, University Of Campinas, Campinas, Brazil

Background and objectives: Rye is a cereal rich in bioactive compounds, as the polyphenols, but contains anti-nutrients, such as tannins. The tannase hydrolyzes tannins and increases the release of phenolics compounds. In addition, there is an increase in the antioxidant activity of the cereal, resulting in a product with high nutritional value. The oxygen radical absorbance capacity (ORAC) is a method widely used in the scientific scope for determination of the antioxidant activity. The literature recommends, the use of a metal chelator, Ethylenediaminetetraacetic acid hydrate (EDTA), for avoid phenolics autoxidation by metal traces present in foods. The study evaluated the antioxidant capacity of rye hydrolyzed with tannase from *Paecilomyces variotti* obtained under solid state fermentation and the influence of EDTA in the ORAC method.

Methods: The rye grain was milled and the obtained flour was hydrolyzed with tannase at 40°C, 200 rpm for 2 hours. The ORAC assay was conducted for two tests: in the presence and absence of EDTA (80 µM). The results were expressed in µM Trolox equivalents per 100 g of rye.

Results: The tannase from *Paecilomyces variotti* was effective in increasing the antioxidant capacity of rye because the antioxidant activity of the sample treated doubled compared to control. Samples were compared by ORAC method, without and with EDTA. The increase in antioxidant activity was greater in all flour tested in the presence of EDTA. Increases in antioxidant activity of 45% and 10% were observed for the control and the treated flour, respectively, compared to the performed test without the chelating agent. This occurs because the EDTA is able to reduce metal and, therefore, to preserve the power of polyphenols and others antioxidants.

Conclusions: It is interesting adding EDTA as chelating of metals in rich in mineral sample to assess the true capacity of the antioxidant.

Key words: (3-5 key words): Antioxidant activity, ORAC, tannase, rye, EDTA

PO3001**Controlled release of 5-methyltetrahydrofolate encapsulated in mesoporous silica supports capped with "saccharides" under gastrointestinal stimulus**

E. Pérez-Esteve¹, JM. Barat¹, R. Martínez-Mañez^{2,3}

¹Grupo de Investigación e Innovación Alimentaria, Departamento de Tecnología de Alimentos, Universitat Politècnica de València, Valencia, Spain

²Centro de Reconocimiento Molecular y Desarrollo Tecnológico, Unidad Mixta Universitat Politècnica de València-Universitat de València, Valencia, Spain

³CIBER de Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN), Spain

Functionalized Mesoporous Silica Supports able to release bioactive molecules under digestive stimulus have been recently presented as an alternative to the direct supplementation due to their capability to prevent degradation of therapeutic compounds and control the delivery rate along the time. In this study the efficiency of mesoporous silica supports capped with saccharides for the encapsulation, protection and controlled release of 5-methyltetrahydrofolate (5-MTHF), the most biologically active form of the B-vitamin folic acid but also the most labile, has been studied in absence (simulated gastric fluid) and presence of pancreatin (simulated intestinal fluid). 5-MTHF content was determined by means of HPLC analysis. Results shown how mesoporous silica microparticles capped with starch derivatives were not only able to hinder the release of the vitamin in the absence of pancreatin, but also able of deliver progressively the vitamin along the time in presence of a simulated intestinal juice, offering a mechanism to protect the vitamin from the environment until its absorption across the intestine.

Key words: Mesoporous Silica Particles (MCM-41), 5-methyltetrahydrofolate, Controlled Release, Molecular Gates.

PO3142

IMPLEMENTATION OF BRC-GLOBAL STANDARD FOOD IN EXPORT ORIENTED FOOD PROCESSING UNITS

R. Teja

Acharya Nagarjuna University Guntur, India

Food safety is an analytical framework, where consumers are in perfected about the safety of products and is used to investigate the welfare effects of a public certification system. The BRC global standard was created to evaluate the companies which supply retailer branded foods. BRC global standard food was infact the 1st standard to be the approved by the GFSI (Global Food Safety Initiative) for recognizing the food safety standards. Various sectors of the food supply chain in different regions of the world have developed schemes to assure the supply chain and eventual consumers that their products are safe and BRC is one such certificate acknowledged internationally. The present study discusses about the Food Safety issue and emphasizes the need of international food safety standards and their implementation in the food processing units to ensure the maximum safety.

PO3146

INCIDENCE OF INSTITUTIONAL FOOD SERVICE PRACTICE MANAGEMENT ERRORS IN THE KITCHEN OF A GENERAL HOSPITAL, CHUBU REGION, JAPAN

S. Maruyama¹, M. Ichie², T. Tsuruta²

¹College of Human Life and Environment, Kinjo Gakuin University, Nagoya, Aichi, Japan

²Nagoya Ekisaikai Hospital, Nagoya, Aichi, Japan

Background: Institutional food service practice is an important medium for therapeutic patient education in hospitals in Japan. Thus, institutional food service practice management errors are major issues. Such errors in the kitchen are caused by some professionals who are the members of the nutrition section, i.e. registered dietitians, dietitians, chefs, cooks and others.

Objective: To assess the incidence of institutional food service practice management errors in the kitchen of a general hospital, Chubu region, Japan. **Methods:** A cross-sectional study was conducted on incident reports based on institutional food service practice management errors from January 1 to December 31, 2011. Data was collected from incident reports of the kitchen using a structured format. Data was edited and coded. Descriptive statistics were computed to determine specific errors. Prior to the start of data collection, permission was obtained from hospital management to use it. Health professionals were replaced with codes to avoid individual identifiers. We assessed times, day of the week, work complex and practitioner condition.

Results: The prevalence of institutional food service practice management errors in the kitchen of this general hospital was 42 times in 365 days. Many errors occurred on Thursday and Friday. Commonly prescribed errors included serving a different menu or mixing contents of the menu. When practitioners were busy and got tired, many errors occurred.

Conclusions: Institutional food service practice management errors in the kitchen were common in this general hospital. An error-free system is required through continued therapeutic patient education.

Key words: Institutional food service, practice management errors

PO3417
A CASE STUDY ON THE CORRELATION OF KNOWLEDGE AND ATTITUDE TOWARDS HEALTHY SKIN CARE AMONG JUNIOR COLLEGE STUDENTS IN TAIWAN

SC. Su¹, WC. Sung², HC. Wang³

¹Hsia Institute of Technology, Department of Business Administration, New Taipei, Taiwan

²Universidad Empresarial de Costa Rica, School of Business and Administration, Costa Rica

³Cardinal Tien Junior College of Healthcare & Management, Department of Cosmetic and Applications and Management, New Taipei, Taiwan

The purpose of this study was to examine the current status and relationships of knowledge and attitude towards healthy skin care among junior college students in Taiwan. The main research instruments were a self-developed questionnaire of close-ended questions was available for participants, structured into three parts: demographic information, knowledge and attitude of healthy skin care. The knowledge of healthy skin care included 4 dimensions which are basic structure and functions of skin, concepts of skin care, nutrition and cosmetics. The conceptual framework and concepts were based on a literature review. The subjects were student aged between 17-20, selected via purposive sampling from thirteen classes in a junior college of health and management in New Taipei. The quasi-experimental method was adopted, and the valid sample comprised of 466 students. The survey results were analyzed by t-test, analysis of variance (ANOVA), analysis of covariance and through SPSS 17.0 statistical analysis software. We computed Cronbach's alpha to assess the reliability of the responses in our population (Cronbach's alpha >0.8). The results showed that an average score of 72% answered correctly about knowledge of healthy skin care. For all participants, knowledge of healthy skin care was influenced by students' field of study, genders, with part-time working experience or beautician license ($p=0.000$). When comparing the results between fields of study, students who major in cosmetic science had higher mean scores on knowledge than other fields. Moreover, regression analysis showed that students with higher knowledge performed with more positive attitude toward healthy skin care ($\beta = 1.376, p=0.000$). Our results emphasize knowledge toward healthy skin care is a good predictor of positive attitude in skin care and suggest that the importance of educational program for healthy skin care is an essential step in improving attitudes.

Keywords: dietary habits, health and beauty care, junior college students, questionnaire