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Introduction: Body Mass Index z-score (BMI z-score) is widely promoted by WHO as indicator of child obesity in many developing countries, but to what extent its measurement correlates with child fatness in underprivileged settings was less investigated.

Objectives: This study aimed to assess the accuracy of BMI z-score compared to % body fat measured using reference method in detecting excess of body fat among Senegalese public school children.

Method / Design: The study was conducted on a sample of 155 children (75 boys, 80 girls), 8-11 years old randomly selected in elementary public schools of Dakar, Senegal. Weight and height were measured, BMI z-score height-for-age z-score calculated using WHO AnthroPlus. Body composition (fat free mass, fat mass, %BF) was measured by deuterium dilution. Sensitivity and specificity of BMI z-score were assessed by testing its ability to correctly detecting overweight/obesity (BMI-z-score>+1) according to Freedman age and sex-specific %BF cut-off. Receiver Operating Characteristic (ROC) and areas under the curves (AUCs) were used to assess the diagnostic performance of BMI z-score to measure body fat excess in children.

Results: The prevalence of overweight/obesity was 8.4% using %BF and 4.5% using BMI z-score (P=0.745). Thinness affected 30.1%, while 2.3% were stunted. Fat free mass was higher (23.8±3.4 kg vs. 21.2±3.4; P<0.001), and body fat lower (4.1±3.2 kg vs. 5.4±3.2; P<0.05) in boys compared to girls. BMI z-score was strongly correlated to %BF (r=0.625; p 0.001). The specificity of BMI z-score to diagnose child overweight/obesity was high (100%), but the sensitivity was relatively low (53%). As indicated by AUC, BMI performed well in detecting excess body fat (AUC=0,913) and showed better performance in boys (0,978) than in girls (0,861).

Conclusions: BMI z-score is a reliable indicator of child adiposity, but its low sensitivity may underestimate the extent of obesity among Senegalese school-aged children, particularly in girls.

Keywords: (maximum 5): Keywords: BMI, adiposity, school-aged children, Senegal

149/816. A modelling approach to estimate the impact of sodium reduction in soups on cardiovascular health in the Netherlands

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Introduction: Reducing sodium intakes is a public health priority as it could reduce hypertension which is a major modifiable risk factor for cardiovascular disease. However, significant sodium reduction is a challenge, requiring salt is reduced gradually over time to ensure the product remains appealing to consumers.

Objectives: To model the potential health impact of reducing sodium in soups in the Netherlands.

Method / Design: An average sodium reduction of 25% in soups was chosen as product reformulation that might be achievable over time when executed in smaller steps. Different steps were applied to estimate the potential health impact. First, the blood pressure lowering associated with sodium intake reduction was estimated. Second, the anticipated blood pressure reduction was translated into reduced cardiovascular disease-related incidence cases and mortality, which included cerebrovascular accident (CVA), acute myocardial infarction (AMI), angina pectoris, and congestive heart failure (HF). Finally, the potentially preventable Disability-Adjusted Life Years (DALYs) were calculated.

Results: An average sodium reduction of 25% in soups might potentially reduce incidence and mortality cases of CVA, AMI, angina, and HF by respectively approximately 0.5%, 0.3%, and 0.2% per year. This could reduce the related burden of disease by approximately 800 DALYs.

Conclusions: The modelling approach described here can be used to provide insight into the potential impact of product reformulation on burden of disease. The modelling shows that a substantial sodium reduction in soups could potentially have a small impact on public health. When executed in more product groups/categories and countries the impact could add up to become more meaningful.

Keywords: (maximum 5): sodium reduction; product reformulation; health impact; modelling

149/819. Cereal based products designed for people with metabolic disorders.

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Introduction: Current global trends in food formulation are oriented towards biologically active food components with health benefits. Food design and the development of these products are challenge for research sector and food industry.

Objectives: The aim of this work was to create functional cereal based products for people with metabolic disorders, i.e. coeliac disease and hyperlipoproteinemia, and to potentially increase the range of functional products on the market.

Method / Design: The systematic approach to a problem of studying and creating functional food has been conducted. Selected functional components of plant origin with confirmed biological activity on tested animals were characterized and used for the new product formulations. Safe and sensory acceptable products were tested on patients with defined metabolic disorder. Technological process optimization was also performed.

Results: The following functional ingredients were used for the products development: wholegrain buckwheat flour (50%) for wholegrain buckwheat bread; herbal blend (2%) in cookies with herbal blend for metabolism enhancement, soy bran (30%) for fat-reduced gluten-free cookies; wholegrain buckwheat flour (20%) for buckwheat-enriched wholegrain wheat pasta; berry pomace (30%) for gluten-free cookies with blueberry pomace.

Conclusions: Cookies, bread and pasta containing functional ingredients are formulated, characterized and they are sensory acceptable. It has to be acknowledged that this work is a part of the Project (TR-31029) supported by the Ministry of Science and Technological Development, Republic of Serbia.

Keywords: (maximum 5): Bakery product; Gluten-free product; hyperlipoproteinemia; Buckwheat; Berry pomace

149/821. Characterization and health benefits of buckwheat-enriched wheat bread

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Introduction: Functional added value products are created to achieve health benefits in humans. Wholegrain buckwheat flour contains rutin and other phenolic compounds known as potent antioxidants. These compounds also possess special medicinal properties such as antihypertensive and antihypercholesterolemic effects.

Objectives: The aim of this work was to 1. to produce the buckwheat-enriched wheat bread with the highest level of substitution, 2. to compare its quality with the wheat bread, and 3. to test its antihyperlipidemic efficiency.

Method / Design: Buckwheat-enriched wheat bread was produced by substitution of wheat flour with wholegrain buckwheat flour at the level of 50% in a wheat bread formulation. Two types of bread were characterized by nutritional quality, antioxidant profile, and sensory properties. Antihyperlipidemic efficiency of the buckwheat-enriched

wheat bread was tested in normal weight patients on statin therapy over one-month dietetic intervention.

Results: The nutritional quality and antioxidant capacity of buckwheat-enriched wheat bread was significantly improved in comparison with the wheat bread (2.22 times higher total dietary fibre and 4.29 times higher total phenolics content).

Consumers gave advantage (71.88%) to the buckwheat-enriched wheat bread. Significant decrease in total cholesterol and LDL-cholesterol, as well as the ratio of LDL/HDL cholesterol was obtained by its consumption in statin treated patients.

Conclusions: The buckwheat-enriched wheat bread is added value product with antihyperlipidemic efficiency in normal weight patients on statin therapy.

It has to be acknowledged that this work is a part of the Project (TR-31029) supported by the Ministry of Education, Science and Technological Development, Republic of Serbia.

Keywords: (maximum 5): Buckwheat-enriched wheat bread; Wheat bread; Quality; Sensory properties; Antihyperlipidemic effect

149/824. Nutritional knowledge differences between Austrian school types - baseline results from the EDDY Project

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Introduction: Fostering nutritional knowledge through nutritional training increases the health competence of children and adolescents. Currently there is limited data available in Austria. Therefore it is necessary to find and evaluate concepts for school-based interventions and their impact on children's health competence.

Objectives: The EDDY project is a two-year randomized-controlled intervention study in 11 to 14 year old Viennese pupils. The aim is to increase the participant's health competence with age-appropriate training in nutrition and sports. One objective is to measure the effect of the nutritional education on the basis of a basic nutritional knowledge quiz.

Method / Design: The sample includes 147 Viennese pupils from four comparable schools – two middle schools (Neue Mittelschule) and two high schools (Gymnasium). Based on a quiz, the nutritional knowledge will be surveyed before and after the nutritional education as well as at the 6 and 12 months follow-up. The quiz consists of 12 questions.

Results: Baseline results show a significant difference ($p < 0,001$) in nutritional knowledge between the two school types. Out of 12 right answers the average nutritional knowledge score of high school pupils was 7,47 ($\pm 1,41$ SD) and of middle school pupils was 5,55 ($\pm 2,04$ SD).