

## CO1: TOTAL AND FREE SUGAR ESTIMATED INTAKE AND MAIN DIETARY SOURCES IN THE PORTUGUESE POPULATION: THE NATIONAL FOOD, NUTRITION AND PHYSICAL ACTIVITY SURVEY (IAN-AF 2015-2016)

Ana Rita Marinho<sup>1,2</sup>; Liliane Lobato<sup>2</sup>; Daniela Correia<sup>2</sup>; Milton Severo<sup>1,2</sup>; Andreia Oliveira<sup>1,2</sup>; Elisabete Ramos<sup>1,2</sup>; Duarte Torres<sup>2,3</sup>; Carla Lopes<sup>1,2</sup>

<sup>1</sup> Faculty of Medicine of University of Porto

<sup>2</sup> EPIUnit - Institute of Public Health of University of Porto

<sup>3</sup> Faculty of Nutrition and Food Sciences of University of Porto

**INTRODUCTION:** Guidelines recommend to limit free sugars (FS) intake. The estimation of the population intake and main dietary sources, using a consistent methodological approach, is useful for a better health planning.

**OBJECTIVES:** To assess, in the Portuguese Population, total and FS intake, main dietary sources, adherence to recommendations and their associations with socioeconomic and health related data.

**METHODOLOGY:** A representative sample (3 months-84 years) recruited for the IAN-AF 2015-2016 was studied (n=5811). Usual sugars intake was estimated by two food-diaries (children<10 years) and by two 24-hour recall (for other age groups). Sugars estimation was performed at ingredient level considering raw edible portions. FS were classified using the WHO definition (added mono and disaccharides+sugars naturally present in honey, syrups, fruit juices and fruit juices concentrates). Estimates were appropriately weighted and standardized to age and sex. Associations were estimated through linear regression models.

**RESULTS:** The mean daily intake of total sugar was 84.3 g, contributing 18.5% to total energy (TE) and FS was 35.8 g (7.5%TE). Age groups of 5-9 and 10-17 years showed the highest contribution of FS (%TE). Adherence to recommendations (FS<10%TE) were lower in children 5-9 years (44.8%) and higher in the elderly (91.3%). The main contributors to FS intake in children were yogurt (18.6%) and sweets (16.5%), whereas in adolescents was soft drinks (24.5%). In adults (45-65 years) and the elderly, sugar added to food/drinks represented the major dietary source of FS (30%), followed by sweets (14.0%). After adjusting for sex, age, education level and energy, FS intake was negatively associated with a higher education level ( $\beta=-2.0$ ;95%CI:-6.4;-2.0), practice of leisure physical activity ( $\beta=-7.0$ ;95%CI:-10.0;-6.9) and self-reported chronic disease ( $\beta=-1.6$ ;95%CI:-3.5;-0.0). Unemployed individuals ( $\beta=1.4$ ;95%CI:-19.6;-12.7) and worst health perception ( $\beta=3.8$ ;95%CI:0.8;5.6) was positively associated with FS.

**CONCLUSIONS:** FS intake was higher among children and adolescents. Main dietary sources differ by age group. Worst socioeconomic and health status was associated with higher FS intake.

## CO2. ASSOCIATION OF VITAMIN D WITH BLOOD PRESSURE IN YOUNG ADULTS

Vanda Craveiro<sup>1</sup>; Maria Cabral<sup>1</sup>; Joana Araújo<sup>1</sup>; Elisabete Ramos<sup>1,2</sup>

<sup>1</sup> EPIUnit - Instituto de Saúde Pública da Universidade do Porto

<sup>2</sup> Departamento de Ciências da Saúde Pública e Forenses e Educação Médica da Faculdade de Medicina da Universidade do Porto

**INTRODUCTION:** Vitamin D influences the renin-angiotensin system, essential in regulating the blood pressure.

**OBJECTIVES:** To evaluate the association of both serum 25-hydroxyvitamin D [25(OH)D] and vitamin D intake levels with blood pressure in young adults.

**METHODOLOGY:** Vitamin D intake was assessed by a food frequency questionnaire for 1707 individuals evaluated at 21 years of age, as part of the population-based cohort EPITeen. For a subsample of 543 participants, serum 25(OH)D was determined by chemiluminescence immunoassay. After 10 minutes of rest, three blood pressure measurements were performed, separately by at least 5 minutes, using a digital sphygmomanometer. The average of the two closest measurements was used in this analysis. The association of both serum 25(OH)D and vitamin D intake with blood pressure was estimated by linear regression models [regression coefficients ( $\beta$ ), 95% confidence intervals (95%CI)]. Both models were adjusted for sex, body mass index, leisure-time physical activity and education, and, additionally, the serum 25(OH)D model was adjusted for season, and the vitamin D intake model for energy intake.

**RESULTS:** Mean (standard-deviation) for serum 25(OH)D was 55.12 (27.61) nmol/L and for vitamin D intake was 4.78 (2.38)  $\mu$ g/day. After adjustment, no significant association was found between serum 25(OH)D and systolic blood pressure (SBP) ( $\beta= 0.000$ ; 95%CI: -0.028, 0.027) and diastolic blood pressure (DBP) ( $\beta= -0.006$ ; 95%CI: -0.027, 0.015). Regarding vitamin D intake, a significant positive association was found only for DBP ( $\beta= 0.173$ ; 95%CI: 0.014, 0.332 for DBP;  $\beta= 0.161$ ; 95%CI: -0.044, 0.366 for SBP).

**CONCLUSIONS:** No association was found between serum 25(OH)D, the biomarker of the vitamin D status, with values of SBP and DBP, but a positive effect was observed for vitamin D intake. The very low intake of vitamin D and the possibility of unmeasured confounding may explain the inconsistency of the results.

## CO3. TACKLING N-3 PUFA DEFICIENCY IN WESTERN DIET: DEEPER INSIGHT INTO CANNED CHUB MACKEREL (*SCOMBER JAPONICUS*) AND SARDINES (*SARDINA PILCHARDUS*) THROUGH BIOACCESSIBILITY

Thaís Garcia<sup>1</sup>; Carlos Cardoso<sup>2,3</sup>; Cláudia Afonso<sup>2,3</sup>; Ana Bispo<sup>2,3</sup>; Carolina Bonfanti<sup>1</sup>; Suzana Tanni<sup>1</sup>; Narcisa Bandarra<sup>2,3</sup>

<sup>1</sup> Faculty of Medicine (FMB), Universidade Estadual Paulista (UNESP), Campus de Botucatu

<sup>2</sup> Division of Aquaculture and Upgrading (DivAV), Portuguese Institute for the Sea and Atmosphere (IPMA, IP)

<sup>3</sup> CIIMAR, Interdisciplinary Centre of Marine and Environmental Research of University of Porto

**INTRODUCTION:** It is well known that Western diet lacks enough n-3 polyunsaturated fatty acids (PUFA), such as eicosapentaenoic (EPA) and docosahexaenoic (DHA) FAs, for a healthy diet. This has led to fish consumption recommendations by FAO/WHO and other health promotion organizations. Canned fish represents an economically inexpensive way of addressing this problem, but there are doubts concerning the fraction of n-3 PUFA that is rendered available for absorption by the organism, given the harsh thermal treatment applied to canned products. The canning process may lead to protein denaturation, which may affect lipid bioaccessibility.

**OBJECTIVES:** Accordingly, the lipid composition and bioaccessibility in canned sardine (*Sardina pilchardus*) and chub mackerel (*Scomber japonicus*) were studied.

**METHODOLOGY:** Bioaccessibility was evaluated through the application of an in vitro model of the human digestion.

**RESULTS AND CONCLUSIONS:** Canned mackerel contained more monounsaturated FA (MUFA), whereas canned sardine was richer in saturated FA (SFA) and PUFA. The proportion of n-3 PUFA and n-6 PUFA was also different, yielding an n-3/n-6 ratio of  $1.42 \pm 0.01$  and  $4.90 \pm 0.02$  in canned mackerel and canned sardine,

respectively. Triacylglycerols (TAGs) were absent from the bioaccessible fraction in both canned fish products and different bioaccessibility levels were determined for each FA. In particular, while total fat bioaccessibility was in the 60-64% range, the bioaccessibility of DHA was below 55 %. Bioaccessibility depended on canned fish product species. Indeed, total fat, EPA, DHA, and n-3 PUFA bioaccessibility levels were higher in canned sardine than in canned mackerel. Based on bioaccessibility, a consumption of 278 g of canned mackerel or 47 g of canned sardine every day would be required to reach the recommended daily intake of EPA and DHA. Therefore, canned sardine can be considered an effective excellent source of n-3 PUFA, being canned mackerel also a good source.

## CO4. COEXISTENCE OF SARCOPENIA, FRAILITY, UNDERNUTRITION AND OBESITY IN A REPRESENTATIVE SAMPLE OF THE PORTUGUESE ELDERLY POPULATION

**Ana Rita Sousa-Santos<sup>1</sup>; Cláudia Afonso<sup>1</sup>; Nuno Borges<sup>1,2</sup>; Alejandro Santos<sup>1,3</sup>; Patrícia Padrão<sup>1,4</sup>; Pedro Moreira<sup>1,4,5</sup>; Teresa F Amaral<sup>1,6</sup>**

<sup>1</sup> Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto

<sup>2</sup> Centro de Investigação em Tecnologia e Serviços de Saúde

<sup>3</sup> I3S - Instituto de Investigação e Inovação em Saúde da Universidade do Porto

<sup>4</sup> EPIUnit - Instituto de Saúde Pública da Universidade do Porto

<sup>5</sup> CIAFEL - Centro de Investigação em Atividade Física, Saúde e Lazer da Universidade do Porto

<sup>6</sup> UISPA, LAETA-INEGI - Faculdade de Engenharia da Universidade do Porto

**INTRODUCTION:** There are relevant health conditions that do not fall into discrete disease categories and are important to evaluate individuals' nutrition status and predict poor health outcomes. Data regarding the coexistence of these conditions is lacking.

**OBJECTIVES:** The purpose of this work is to evaluate the coexistence of sarcopenia, frailty, undernutrition, and obesity in a nationwide sample of Portuguese older adults.

**METHODOLOGY:** 1,500 older adults with age  $\geq 65$  years, representative of Portuguese Population in terms of sex, age, education, and regional area were included within Nutrition UP 65 study. Sarcopenia was defined according to the European Working Group on Sarcopenia in Older People (EWGSOP), frailty was classified according to Fried et al., undernutrition status was evaluated by Mini Nutritional Assessment–Short Form (MNA-SF), and obesity was classified following World Health Organization (WHO) criteria. The association between individuals' characteristics and number of conditions identified was analysed through logistic regression analysis.

**RESULTS:** From the 1,500 individuals included, 628 (41.9%) had at least one condition and 314 (20.9%) were identified with two or more. The highest coexistence was observed between frailty and undernutrition or undernutrition risk ( $n=103$ , 6.9%) and frailty and obesity ( $n=152$ , 10.5%). Sarcopenic obesity was only identified in 12 (0.8%). Furthermore, in multivariate analyses, the presence of two or more conditions was directly associated with age  $>75$  years and poor or very poor self-perception of health status, and inversely associated with being men, having higher education, being married or in a common-law marriage, and presenting moderate alcohol consumption.

**CONCLUSIONS:** In this sample, more than 6 in 10 older adults presented at least one condition evaluated and two or more conditions were present in circa one-fifth. These conditions were identified in a high proportion of older adults namely among the oldest old. Nutrition strategies should be developed to target these individuals.

## CO5. SENSORY PREFERENCE AS A VALUABLE TOOL TO ESTABLISH SALT REDUCTION IN BREAD

**Célia Monteiro<sup>1</sup>; Zita Martins<sup>2</sup>; Olívia Pinho<sup>1,2</sup>; Carla Gonçalves<sup>1,3</sup>**

<sup>1</sup> Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto

<sup>2</sup> LAQU/REQUIMTE, Laboratório de Bromatologia e Hidrologia, Departamento de Ciências Químicas da Faculdade de Farmácia da Universidade do Porto

<sup>3</sup> Escola Superior de Tecnologia e Gestão do Instituto Politécnico de Viana do Castelo

**INTRODUCTION:** Bread is a staple food and one of the major contributors to dietary salt intake. Salt has impact on bread sensory properties as it acts as flavour modifier, and influences crust development and crumb structure. While reduction of salt content in bread is paramount, it may compromise bread organoleptic characteristics and sensory acceptance by consumers.

**OBJECTIVES:** The major goal of this study was to evaluate the impact of salt reduction on bread sensory evaluation, and select the reduction levels with best consumers' acceptance.

**METHODOLOGY:** Four types of bread formulations were tested: "D'água", "Carcaça", "Mistura", and "Regueifa", produced with different salt concentrations (0.0%, 0.8%, 1.0%, 1.1%, 1.3% and 1.4% of salt per wheat flour). A sensory panel composed by 8 members was trained for descriptive analysis according to the guidelines in the ISO 8586 (2012). Sensory acceptability tests were carried out, with 80 non-trained members. Statistical models for sensory preference evaluation were developed using External Preference Mapping. Statistical comparison was performed using as control bread with 1.4% of salt (legal value allowed).

**RESULTS:** Overall, salt reduction had limited impact on sensory evaluation. "Overall assessment" presented significant differences for "D'água" ( $p=0.005$ ), "Carcaça" ( $p<0.001$ ), and "Mistura" ( $p<0.001$ ) breads. Results obtained from the consumer test only showed significant differences for salt reduction with "Taste liking" ("D'água",  $p<0.001$ ; "Carcaça",  $p<0.001$ ; "Mistura",  $p<0.001$ ; and "Regueifa",  $p<0.001$ ) and "Overall liking" ("D'água",  $p=0.002$ ; "Carcaça",  $p=0.001$ ; "Mistura",  $p<0.010$ ; and "Regueifa",  $p=0.005$ ) attributes. External preference mapping indicated consumer preferences and enabled selection of the lowest salt concentration with best acceptance, namely 0.8% for "D'água" bread; 0.8% for "Carcaça" bread; 1.0% for "Mistura" bread; and 1.1% for "Regueifa" bread.

**CONCLUSIONS:** The results of the present study indicate that it is possible reduce salt concentration in all bread types compared to the amount regulated (1.4%) without compromising consumers' acceptance.

## CO6. FRAILITY AND ASSOCIATED FACTORS IN HEART FAILURE OUTPATIENTS – PRELIMINARY DATA FROM THE DEUS EX MACHINA STUDY

**Rui Valdivieso<sup>1</sup>; Emília Moreira<sup>1</sup>; Sónia Martins<sup>1,2</sup>; Lia Fernandes<sup>1,3</sup>; José Silva Cardoso<sup>1,4,5</sup>; Nuno Borges<sup>1,6</sup>**

<sup>1</sup> Centro de Investigação em Tecnologias e Serviços de Saúde da Faculdade de Medicina da Universidade do Porto

<sup>2</sup> Departamento de Neurociências Clínicas e Saúde Mental da Faculdade de Medicina da Universidade do Porto

<sup>3</sup> Clínica de Psiquiatria e Saúde Mental do Centro Hospitalar do Porto do Hospital de São João

<sup>4</sup> Departamento de Medicina da Faculdade de Medicina da Universidade do Porto

<sup>5</sup> Serviço de Cardiologia do Centro Hospitalar do Porto do Hospital de São João

<sup>6</sup> Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto

**INTRODUCTION:** Frailty is prevalent among heart failure (HF) patients. Both conditions share pathophysiological mechanisms and have reciprocal influences in their prognosis.

**OBJECTIVES:** To determine the frequency of frailty in HF outpatients and their associations with HF severity and nutritional status.

**METHODOLOGY:** Patients were recruited from an outpatient clinic in a University Hospital. Left Ventricular Ejection Fraction (LVEF) and New York Heart Association

(NYHA) class were registered. Frailty was assessed using the Fried criteria (Fried et al., 2001). Undernutrition was assessed through the Mini Nutritional Assessment® (MNA), body mass index (BMI) using the World Health Organization cut-offs and mid-arm muscular circumference (MAMC) estimated from mid-acromial-radial circumference and triceps skinfold.

**RESULTS:** Overall 64 HF patients were included: age 57±19, 31% women, 54% had reduced LVEF, 30% intermediate LVEF and 16% preserved LVEF. Regarding NYHA class, 31% were at class I, 56% at class II and 13% at class III. Frailty was found in 7 patients (10.9%) and pre-frailty in 34 (53.1%). Exhaustion was the most frequent frailty criterion (38.5%), followed by low physical activity (34.5%), low strength (16.9%), weight loss (13.8%) and slowness (10.8%). Frailty score was correlated with older age ( $r_s=0.313$ ;  $p=0.014$ ), higher BMI ( $r_s=0.262$ ;  $p=0.041$ ), higher MNA score ( $r_s=-0.441$ ;  $p<0.001$ ) and lower muscular mass (MAMC;  $r_s=-0.267$ ;  $p=0.038$ ). Frailty was more prevalent among NYHA III patients ( $p<0.001$ ) and at the lowest tertile of MAMC ( $p<0.05$ ).

**CONCLUSIONS:** Frail and pre-frail HF patients present more severe HF symptoms, are at higher risk of undernutrition and have lower muscular mass. The onset of frailty and pre-frailty at these younger ages, as well as its association with nutritional status deserves further studies.

**ACKNOWLEDGMENTS:** Supported by ERDF through POCI-01-0145-FEDER-007746, funded by COMPETE2020, National Funds through FCT, within CINTESIS (UID/IC/4255/2013), and Project "NORTE-01-0145-FEDER-000026- Symbiotic technology for societal efficiency gains: Deus ex Machina", financed by NORTE2020 under PORTUGAL2020.

## CO7. LONGITUDINAL INTESTINAL COLONIZATION OF PROXIMAL REMNANT INTESTINE IN FOUR INFANTS WITH ENTEROSTOMY

**Inês Barreiros Mota<sup>1-3</sup>; Cláudia Marques<sup>1-3</sup>; Luís Pereira-da-Silva<sup>4-6</sup>; Conceição Calhau<sup>1-3</sup>**

<sup>1</sup> CINTESIS - Center for Health Technology and Services Research, ProNutri - Clinical Nutrition & Disease Programming

<sup>2</sup> Nutrition & Metabolism, NOVA Medical School | Faculdade de Ciências Médicas da Universidade Nova de Lisboa

<sup>3</sup> Comprehensive Health Research Centre of Universidade Nova de Lisboa

<sup>4</sup> Woman, Childhood and Adolescence Teaching and Research Area, NOVA Medical School

<sup>5</sup> Faculdade de Ciências Médicas da Universidade Nova de Lisboa

<sup>6</sup> NICU, Hospital Dona Estefânia, Centro Hospitalar de Lisboa Central

**INTRODUCTION:** The human gut microbiota plays a main role in the maintenance of hosts' health. Exposure to different conditions in early life contributes to distinct "pioneer" bacterial communities in the gut, which shape infants' development and influence their later physiological, immunological and neurological homeostasis. Infants with necrotizing enterocolitis (NEC) may require abdominal surgery and enterostomy. However, while the intestinal microbiota has been extensively studied in infants with anatomically uninterrupted intestine, little is known about the colonization of these infants' intestine.

**OBJECTIVES:** The aim of this study was to characterize the microbial colonization of the proximal remnant intestine in infants with enterostomy after surgery for NEC.

**METHODOLOGY:** A total of 29 ostomy samples from four infants after surgery for NEC were analyzed. The bacterial DNA contained in the fecal samples was extracted, purified and quantified by real-time PCR.

**RESULTS:** The amount of total bacteria increased almost 5 times after 21 days from enterostomy. *E.coli* was presented in all samples from the beginning.

**CONCLUSIONS:** In the first three weeks after surgery, the amount of bacteria increased constantly over time. The analysis of other bacterial species is currently being implemented to define which bacteria could be associated with enterostomy. This trial is registered in clinicaltrials.gov as NCT03340259.

**ACKNOWLEDGEMENTS:** The authors would like to thank to all children and parents who participated and contributed to the study. The project was supported by FEDER through the operation POCI-01-0145-FEDER-007746 funded by the Programa Operacional Competitividade e Internacionalização – COMPETE2020 and by National Funds through FCT - Fundação para a Ciência e a Tecnologia within CINTESIS, R&D Unit (reference UID/IC/4255/2013).

## CO8. EXERCISE IMPROVES METABOLIC SYNDROME, GUT MICROBIOTA IMBALANCE AND GUT-LIVER AXIS ALTERATION IN AN IN VIVO MODEL OF EARLY OBESITY AND NAFLD

**Sara Carbajo-Pescador<sup>1</sup>; David Porras<sup>1</sup>; Esther Nistal<sup>1,2</sup>; María Juárez-Fernández<sup>1</sup>; Susana Martínez-Flórez<sup>1</sup>; María José Cuevas<sup>1</sup>; José Luis Mauriz<sup>1-3</sup>; María Victoria García-Mediavilla<sup>1-3</sup>; Javier González-Gallego<sup>1-3</sup>; Sonia Sánchez-Campos<sup>1-3</sup>**

<sup>1</sup> Instituto de Biomedicina (IBIOMED), Universidad de León

<sup>2</sup> Servicio de Aparato Digestivo del Complejo Asistencial Universitario de León

<sup>3</sup> Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Instituto de Salud Carlos III

**INTRODUCTION:** Nowadays overweight and childhood obesity have reached epidemic levels representing one of the most serious public health concerns associated with metabolic syndrome, nonalcoholic fatty liver disease (NAFLD) and gut microbiota alterations. Physical exercise improves obesity and NAFLD progression, modulating the gut microbial balance.

**OBJECTIVES:** To evaluate the effect of exercise on gut microbiota and metabolic status modulation in an in vivo model of early obesity and NAFLD.

**METHODOLOGY:** 21 days old male Wistar rats fed with control (C) or high fat diet (HFD) were subjected to an interval aerobic training protocol. Fecal microbiota was sequenced by Illumina MiSeq system and parameters related to metabolic syndrome and gut-liver axis alteration were measured.

**RESULTS AND CONCLUSIONS:** Exercise decreased body weight gain (-17%), improved the metabolic syndrome (HOMA-IR:-37%), liver damage (ALT:-20%), NAS (-25%) and the intrahepatic lipid accumulation (-25%) induced by HFD intake as a result of its lipogenic metabolism modulatory capacity (SREBP-1c:-42%; FAT/CD36:-38%; FAS:-27%). Exercise training also reduced the subsequent lipotoxicity and improved the inflammatory response, effects that might be explained by its capacity to counteract the gut-liver axis alteration (TLR-4:-26%; TNF- $\alpha$ :-5%; NLRP3:-3%; CYP2E1:-43%) and downregulate NF-KB pathway (NF-KB transcriptional activity:-30%) induced by HFD. The ratio *Firmicutes/Bacteroidetes* was significantly higher in HFD-fed rats compared to control rats, changes that were partially reverted by exercise. Analyses of the bacterial communities at phylum level using Principal Coordinates Analysis indicated that the bacterial communities grouped separated according to different factors: diet, age, and exercise. We provide scientific evidences highlighting the benefits of physical exercise protocols to modulate the intestinal microbiota in the management of childhood obesity and NAFLD development, via its anti-inflammatory, lipid metabolism modulatory and prebiotic capacities. Supported by LE063U16 (JCyL and FEDER), GRS1428/A/16 and CIBERehd funded by ISC III.

## CO9. ASSOCIATION OF APPETITE-RELATED EATING BEHAVIOURS AT 7-YEARS-OLD WITH TOTAL AND CENTRAL ADIPOSITY AT 10-YEARS-OLD: A PROSPECTIVE ANALYSIS IN THE GENERATION XXI BIRTH COHORT

**Alexandra Costa<sup>1</sup>; Andreia Oliveira<sup>1,2</sup>**

<sup>1</sup> EPIUnit - Instituto de Saúde Pública da Universidade do Porto

**INTRODUCTION:** Appetite-related eating behaviours have been associated with weight. However, existing data were largely derived from cross-sectional studies and a few studies developed in early life.

**OBJECTIVES:** To evaluate if children's eating behaviors of 7-years-old children are associated with different anthropometric parameters, beyond weight, at 10 years of age.

**METHODOLOGY:** Participants are part of the Generation XXI birth cohort, assessed at both 7 and 10 years of age (n=4782 with variables of interest; twins excluded). A validated Portuguese version of the Children's Eating Behaviour Questionnaire to measure appetite traits in children was self-completed by mothers. Eight subscales were studied at 7 years-old: Satiety Responsiveness (SR); Slowness in Eating (SE); Food Fussiness (FF); Food Responsiveness (FR); Enjoyment of Food (EF); Desire for Drinks (DD); Emotional Undereating (EUE); Emotional Overeating (EOE). Anthropometrics were performed by trained staff. WHO z-score BMI, waist-to-hip ratio and waist-to-height ratio were calculated at 10 years-old and standardized to allow comparisons. Associations were evaluated by generalized linear regression models after adjustment for maternal age, education, child's sex and total energy intake.

**RESULTS:** Food-approach behaviors, e.g. Enjoyment of food ( $\beta=0.195$ , 95%CI: 0.128;0.261) and Food Responsiveness ( $\beta=0.304$ , 95%CI:0.242;0.366) at 7-years-old were positively associated with z-score BMI at 10 years-old and food-avoidance behaviors (SR, SE, EUE) negatively associated; Food Fussiness showed a positive association with z-score BMI. No association with DD was found. These associations remained with other anthropometrics beyond BMI. Strongest associations were found with waist-to-height ratio (EF:  $\beta=0.155$ , 95%CI: 0.086;0.223; SR:  $\beta=0.372$ , 95%CI: 0.309;0.476; FF:  $\beta=0.103$ , 95%CI: 0.057.0.150), rather than waist-to-hip ratio. The associations were similar by sex.

**CONCLUSIONS:** Appetite-related eating behaviours have a prospective effect on total and central adiposity. They should be considered in future intervention programs aiming to tackle childhood obesity.

**ACKNOWLEDGMENTS:** FEDER through COMPETE; EPIUnit-ISPUP and FCT (IF/01350/2015).

## CO10. THE IMPACT OF FOLIC ACID SUPPLEMENTATION ON GESTATIONAL AND LONG TERM HEALTH: CRITICAL TEMPORAL WINDOWS, BENEFITS AND RISKS

**Carla Silva<sup>1</sup>; Elisa Keating<sup>2a</sup>; Elisabete Pinto<sup>4,5</sup>**

<sup>1</sup> Administração Regional de Saúde no Norte da Unidade de Saúde Pública - AceS Tâmega II - Vale do Sousa Sul

<sup>2</sup> Department of Biomedicine – Biochemistry Unit, Faculty of Medicine of University of Porto

<sup>3</sup> CINTESIS - Center for Health Technology and Services Research

<sup>4</sup> Centre of Biotechnology and Fine Chemistry – School of Biotechnology of Portuguese Catholic University

<sup>5</sup> EPIUnit - Institute of Public Health of University of Porto

**INTRODUCTION:** The folic acid (FA) supplementation of pregnant women is one of the most popular nutritional interventions during pregnancy, as the protective effect of FA on neural tube defects (NTDs) has been extensively studied. However, although its consumption is generally considered safe, intakes above the recommended levels are likely to lead to the appearance of unmetabolized FA in fetal and maternal circulation. This fact raises questions related to the magnitude, timing, type and duration of exposure to FA.

**OBJECTIVES:** A systematic review was performed in order to: a) gather the current evidence regarding supplementation of maternal diet with FA and b)

to problematize the available literature in terms of dosages, critical temporal windows, and its potential benefits and risks.

**METHODOLOGY:** The methodological strategy included the search on PubMed database of the expression (pregnancy OR fetus OR offspring OR mother) AND ("folic acid" AND supplementation), filtering for articles published from 2005 to 2014. Publications referring to FA supplementation during the periconceptual period or pregnancy in which there was a conclusion about the effects of isolated FA supplementation on pregnant woman, pregnancy or offspring were included. Of the initial 1182 papers, 108 fulfilled the inclusion criteria.

**RESULTS:** FA supplementation outcomes on offspring's health, especially in NTDs, allergy/respiratory problems, cancer and behavior problems were reported in the major part of the publications. Except for NTDs, some inconsistent results were observed for different outcomes. Also, an increased concern about the impact of excessive supplementation, either in terms of doses or exposure's duration, was notorious.

**CONCLUSIONS:** This systematic review corroborates the protective effect of FA supplementation on NTDs has been confirmed, being the periconceptual period a critical window. It is suggested that allergy/respiratory outcomes arise from (excessive) FA supplementation particularly later in pregnancy. Further research on critical doses and time of exposure should be conducted.

## CO11. IDENTIFICATION OF DIETARY PATTERNS AT 7 YEARS-OLD THAT EXPLAIN BODY MASS INDEX (BMI) AT 10 YEARS-OLD: COMPARISON OF 3 METHODOLOGICAL APPROACHES IN THE G21 COHORT

**Andreia Pinto<sup>1,2</sup>; Milton Severo<sup>1,2</sup>; Andreia Oliveira<sup>1,2</sup>**

<sup>1</sup> EPIUnit - Instituto de Saúde Pública da Universidade do Porto

<sup>2</sup> Departamento de Ciências da Saúde Pública e Forenses e Educação Médica da Faculdade de Medicina da Universidade do Porto

**INTRODUCTION:** Dietary patterns (DP) represent the cumulative effect of a set of foods and nutrients that are commonly consumed. Most approaches to identify DP do not consider the explanation of a specific outcome, such as obesity.

**OBJECTIVES:** To compare 3 different approaches [linear regression, principal component analysis (PCA) and partial least squares (PLS)] that derive dietary patterns at 7 years-old and its association with body mass index at 10 years-old (BMI-10y).

**METHODOLOGY:** Children from the Generation XXI cohort with information of interest at 7 and 10 years-old were included (n=4759; twins excluded). Diet was assessed by a validated food-frequency questionnaire (37 items/food groups). WHO BMI z-scores were calculated. PCA aggregates food consumption independently of the outcome; PLS tries to explain the maximum variance in both predictor (37 items/food-groups at 7 years-old) and response variables (BMI-10y).

**RESULTS:** In linear regression, we identified a significant positive association of cakes and soft drinks with BMI-10y and a negative association with vegetable soup. It explained 0.1% of food-groups and 4.3% of BMI-10y. In PCA, two dietary patterns were derived; the cumulative variance explained was 13% for food-groups and only 0.2% for BMI-10y. PLS derived two dietary patterns that explained 10.1% of food-groups and 4.3% of the outcome. The first pattern derived (higher intake of pork products, soft-drinks and lower of vegetable soup) was the most associated with BMI-10y ( $B=0.216$ ,  $p<0.001$ ) and was more likely among children from younger and less educated mothers and those born large-for-gestational age.

**CONCLUSIONS:** PLS seems to be the best method to derive dietary patterns, since it tries to explain the variability of both food intake and the outcome. A pattern higher in red meat and soft drinks and with lower vegetable soup consumption explained better the z-score BMI at 10 year-old.

**ACKNOWLEDGMENTS:** FEDER through COMPETE; EPIUnit-ISPUP and FCT (IF/01350/2015).

## CO12. NUTRITIONAL AND METABOLIC PREDICTORS OF ELEVATED SERUM ALANINE AMINOTRANSFERASE (SALT) IN SCHOOL-AGE CHILDREN FROM NUEVO LEÓN, MÉXICO

**Raquel González-Garza<sup>2</sup>; Elizabeth Solis-Pérez<sup>1,2</sup>; Mario Alberto González-Medina<sup>2</sup>; Manuel López-Cabanillas-Lomeli<sup>1,2</sup>; Jesús Zacarías Villarreal-Pérez<sup>1,3</sup>; Fernando J Lavalle-González<sup>1,3</sup>; Alejandra Sánchez-Peña<sup>2</sup>; Lorena Ivonne Ibarra-Rodríguez<sup>2</sup>; Chandan Prasad<sup>1,4</sup>**

<sup>1</sup> TWU-UANL Consortium to Promote Research in Obesity and Obesity-related Diseases

<sup>2</sup> Universidad Autónoma de Nuevo León, Public Health and Nutrition School

<sup>3</sup> Universidad Autónoma de Nuevo León, Endocrinology Service, Hospital Universitario Dr. José Eleuterio González

<sup>4</sup> Department of Nutrition and Food Sciences

**INTRODUCTION:** Serum Alanine Aminotransferase (sALT) elevated to twice the normal level ( $\geq 60$  U/L, Lacobellis A, 2006) in children is an indicator of Non-Alcoholic Steatohepatitis (NASH), and it is related to obesity and its comorbidities. Studies in this matter are required in Mexico.

**OBJECTIVES:** To identify nutritional and metabolic predictors of NASH (sALT  $> 60$  U/L) in school age children with obesity and normal Body Mass Index (BMI).

**METHODOLOGY:** Cross-sectional study in 530 school age children (6-12 years old, 322 with obesity and 208 with normal BMI, OMS,2007) self-selected from a Childhood Obesity Program of the Public Health and Nutrition School of the Universidad Autónoma de Nuevo León. sALT was measured by kinetic reaction (Normal values= 10-30 U/L), fasting blood glucose, lipid profile and anthropometry were also measured by standardized criteria. Dietary intake was assessed through the 24-hour Recall with Food Processor Software. For the statistical analysis were used Mann Whitney Test, Tukey Test, Binary logistic regression, ANOVA and COR curve.

**RESULTS:** 9.1% of children presented sALT  $\geq 60$  U/L (NASH). The sALT mean level was 38.4 U/L in obese and 16.4 U/L in normal BMI (p value  $< 0.01$ ). NASH was associated with obese male (OR=25.3 p value 0.007), acanthosis nigricans (OR= 29.7, p. value 0.004), serum glucose (OR =2.0, p- value 0.007), Z HDL-c (OR =0.15, p.value 0.001).

**CONCLUSIONS:** The COR curve revealed that serum glucose (87.5 mg/dL), BMI (25.5 Kg/m<sup>2</sup>), waist circumference (70.5 cm) and cholesterol intake (320 mg) are predictors of NASH in this population. The age and gender are related to NASH. Therefore, biochemical and nutritional markers in school age children must be evaluated by dietitians in the clinical practice.

## CO13. DEVELOPMENT OF A MIXED-MEAL THAT IMPACTS CAROTID-BODY MEDIATED CARDIORESPIRATORY AND METABOLIC PARAMETERS - A PILOT STUDY

**Ana Frazão<sup>1</sup>; Andreia Costa<sup>1</sup>; Bárbara Teixeira<sup>1</sup>; Marisa Santo<sup>1</sup>; Gabriel Brito<sup>1,2</sup>; Marlene Lages<sup>1</sup>; Nuno Lopes<sup>1,2</sup>; Rui Fonseca-Pinto<sup>1,2</sup>; Cidália Pereira<sup>1</sup>; Maria P Guarino<sup>1,3</sup>**

<sup>1</sup> ciTechCARE da Escola Superior de Saúde de Leiria do Instituto Politécnico de Leiria

<sup>2</sup> Escola Superior de Tecnologia e Gestão de Leiria do Instituto Politécnico de Leiria

<sup>3</sup> CEDOC, NOVA Medical School | Faculdade de Ciências da Universidade NOVA de Lisboa

**INTRODUCTION:** The carotid bodies (CB) have been recently implicated in the genesis of metabolic diseases in animal models. The CBs respond to circulating insulin to increase heart rate, respiratory rate and blood glucose levels. In humans, this mechanism is not well characterized.

**OBJECTIVES:** To develop a balanced standardized mixed meal that evokes changes in cardiorespiratory parameters related to CB function in men.

**METHODOLOGY:** Pilot-study tests were performed in healthy volunteers recruited at Polytechnic of Leiria Health Sciences School. To assess CB activity the volunteers were fed either a mixed meal or a standard glucose tolerance test (OGTT) after a 12 hour fasting period, in different days. The mixed meal (400 kcal) had a macronutrient distribution of 65% of carbohydrates, 23% of protein and 12% of lipids; composed of 57 g of oat, 6 g of whole milk powder, 35 g of lyophilized strawberries, 14 g of 100% whey isolate protein powder chocolate flavoured and 100 ml of water. The OGTT consisted of 200 ml of water and 75 g of sugar (300 kcal). Both meals were ingested within 10 minutes. Cardiorespiratory parameters were monitored by means of a real time biosignal acquisition system and interstitial glucose was monitored continuously.

**RESULTS:** Mixed meal glucose excursion curve stabilized 30 minutes after the ingestion. The plasma glucose variation was similar after mixed meal ( $\Delta = 16,6$  mg/dl glucose, latency= 20 min) and OGTT ( $\Delta = 31$  mg/dl glucose, latency=20 min), even though the slope of the linear regression curves were significantly different (1.0 mg/dl/min vs. 2.3 mg/dl/min). Heart rate varied significantly after OGTT but not after mixed meal in healthy volunteers ( $\Delta = 3.7$  bpm vs. 0.1 bpm, respectively).

**CONCLUSIONS:** Compared to OGTT, the mixed meal tested caused a steadier increase in plasma glucose, being suited to be used as a test meal to determine variations in CB-related cardiorespiratory parameters.

Project funded by FCT/SAICT-POL/23278/2016.

## CO14. FACTORS RELATED WITH FOOD CHOICE AMONG OLDER ADULTS LIVING IN THE COMMUNITY. RESULTS OF THE PRONUTRISENIOR PROJECT\*

**Leandro Jorge Guimarães de Oliveira<sup>1</sup>; Rui Manuel de Almeida Póinhos<sup>1</sup>; Maria Daniel Vaz de Almeida<sup>1</sup>**

<sup>1</sup> Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto

**INTRODUCTION:** Elderly food choices are influenced by diverse factors that contribute to diet quality and health status.

**OBJECTIVES:** To identify factors influencing food choice by older adults living in the community and their social determinants.

**METHODOLOGY:** A representative sample of 602 older adults ( $\geq 65$  years) living in the community (Vila Nova de Gaia municipality) was selected and an interview-assisted questionnaire was used to collect the data by trained nutritionists in a face-to-face situation.

**RESULTS:** Participants' mean age was 74 years (SD = 6); the majority were women (64.0%). Men attributed greater importance to "other person decides most of the food I eat" while women to the ease of food preparation. Individuals without adequate social support attributed greater importance to ease of preparation, vegetarian eating or other special habits, and softness.

There were positive associations with education and the importance attributed to: weight control; content in additives, colours and preservatives; packaging; and vegetarian food or other special habits. Negative associations were found between education and the importance attributed to the price of food and the fact that they could be bought close to home.

The level of independence showed positive associations with the importance attributed to additive, colour and preservative contents, as well as packaging, and negative associations with another person deciding most of the foods to be consumed and ease of chewing.

**CONCLUSIONS:** The relationship between sociodemographic variables and the factors that influence older adults' food choice are very important for elderly food intake. Such aspects are to be taken into account when tailoring effective community and clinical interventions.

\*The PRONUTRISENIOR project was financed by Iceland, Liechtenstein and Norway through the EEA Grants (PT06 – Public Health Initiatives Program, reference 81NU5).

## CO15. THE ASSOCIATION BETWEEN NUTRITIONAL STATUS AND HAVING MEALS WITH FRIENDS OR RELATIVES AMONG NURSING HOME RESIDENTS (PEN-3S STUDY)

**Teresa Madeira**<sup>1,3</sup>; **Catarina Peixoto-Plácido**<sup>1,3</sup>; **Nuno Sousa-Santos**<sup>1,3</sup>; **Oswaldo Santos**<sup>1,3</sup>; **Violeta Alarcão**<sup>1,3</sup>; **Nuno Mendonça**<sup>1,4</sup>; **Carla Lopes**<sup>5,6</sup>; **João Gorjão Clara**<sup>1,3</sup>

<sup>1</sup> Faculdade de Medicina da Universidade de Lisboa

<sup>2</sup> Instituto de Saúde Ambiental da Faculdade de Medicina da Universidade de Lisboa

<sup>3</sup> Instituto de Medicina Preventiva e Saúde Pública da Faculdade de Medicina da Universidade de Lisboa

<sup>4</sup> Institute for Ageing of Newcastle University

<sup>5</sup> Unidade de Investigação em Epidemiologia (EPIUnit) do Instituto de Saúde Pública da Universidade do Porto

<sup>6</sup> Departamento de Ciências da Saúde Pública e Forenses e Educação Médica da Faculdade de Medicina da Universidade do Porto

**INTRODUCTION:** Malnutrition is frequent among older adults. Loneliness, eating alone and depression seem to have a negative impact on food intake and nutritional status. However, these relations are scarcely studied, particularly in a nursing home setting.

**OBJECTIVES:** To study the association between loneliness, depression and eating alone, and nutritional status among non-cognitively impaired nursing home residents aged 65 and over in Portugal.

**METHODOLOGY:** The PEN-3S study is a national survey that collected data through face-to-face structured interviews. It included a national representative sample of older adults, without severe dementia and not bedridden, from randomly selected nursing homes. The full Mini Nutritional Assessment (MNA<sup>®</sup>) was used to assess the nutritional status, the Geriatric Depression Scale 15-items for depressive symptoms, and the UCLA Loneliness Scale for loneliness feelings. Energy intake was estimated from two 24H recalls (using The National Food, Nutrition and Physical Activity Survey method). Binomial logistic regression was used to study the association between depression and sharing a meal with friends/relatives, and malnutrition.

**RESULTS:** Overall, 577 non-cognitively impaired nursing home residents (mean age: 82.6±7.2 years; 69.8% women) from 79 institutions accepted to participate. According to the MNA, 32.7% (95% CI: 27.6-38.3%) were classified as malnourished or at risk of malnutrition. Also, 68.8% (95% CI: 64.5-72.8%) reported never having meals with friends or relatives, and 42.5% (95% CI: 37.3-47.9%) reported loneliness feelings. Depression symptoms (OR=3.9; 95% CI: 2.6-5.8%) and never having meals with friends or relatives (OR=1.8; 95% CI: 1.1-3.1%) were significantly associated with increased odds of being at risk of malnutrition or malnourished, after adjusting for sex, age, energy intake and loneliness feelings.

**CONCLUSIONS:** These findings highlight the importance of social relationships during mealtimes, as well as the impact of depression symptomatology on malnutrition. These results may inform interventions to improve the nutritional status and quality of life of older adults in nursing homes.

## CO16. ALMOND (*PRUNUS DULCIS*) SHELLS AS A SOURCE OF ANTIOXIDANT COMPOUNDS

**Pedro Fontes**<sup>1</sup>; **M Antónia Nunes**<sup>1</sup>; **Rita Alves**<sup>1</sup>; **M Beatriz PP Oliveira**<sup>1</sup>

<sup>1</sup> LAQV/REQUIMTE da Faculdade de Farmácia da Universidade do Porto

**INTRODUCTION:** Almond production has increased worldwide due to its nutritional relevance. Consequently, high amounts of almond by-products are generated, which are currently used as energy source or discarded. Nowadays, there is a growing interest in finding natural ingredients to replace synthetic ones. The valorization of food by-products is, thus, of great importance to develop

innovative and sustainable applications. This is the case of almond shells (AS), a by-product with bioactive compounds that can be used as innovative ingredients.

**OBJECTIVES:** This work aimed to develop and optimize a sustainable extraction process to recover the phenolic compounds of AS.

**METHODOLOGY:** AS (*Prunus dulcis* (Mill.) D. A. Webb) from Trás-os-Montes (Portugal) were used for this study. The extraction conditions tested were mass/volume ratio, temperature (room temperature (RT), 40, 60, 80, 95 °C), and time by stirring (1h/2h) and maceration (12h/24h). Total phenolic and flavonoid contents were determined by spectrophotometric methods. Antioxidant activity was evaluated by FRAP and DPPH• inhibition assays. A tentative identification of phenolic compounds was carried out by HPLC.

**RESULTS:** Total phenolics extraction increased until 95 °C (438 mg GAE/L). In turn, total flavonoids increased until 85 °C (24 mg CE/L). Concerning the antioxidant activity evaluated by the FRAP assay, there were no significant differences between RT and 40 °C (p>0.05), but then the FRAP values increase with temperature. Regarding the DPPH• inhibition assay, no statistical differences (p>0.05) were observed between extractions performed at 80 and 95 °C.

**CONCLUSIONS:** Results showed that the highest amounts of antioxidant compounds were obtained with maceration of 5 g of AS, during 24h at 80 °C. It is foreseen that the AS extracts may have potential application in food industry, since the major compound of the aqueous extract was vanillin (used as a flavouring compound in food and beverage products and as a natural preservative).

**ACKNOWLEDGMENTS:** The authors thank the financial support to the project *Operação NORTE-01-0145-FEDER-000011 – denominada Qualidade e Segurança Alimentar-uma abordagem (nano)tecnológica*. This work was also supported by the project UID/QUI/50006/2013– POCI/01/0145/FEDER/007265 with financial support from FCT/MEC through national funds and co-financed by FEDER. M. Antónia Nunes acknowledges the PhD fellowship (SFRH/BD/130131/2017) funded by the Foundation for Science and Technology.

## CO17. EFFECT OF HYDROCOLLOIDS AND TEMPERATURE ON TEXTURE AND NUTRITIONAL PROPERTIES OF NO SUGAR, GLUTEN- AND LACTOSE-FREE CEREAL BARS

**Vanessa Martins**<sup>1</sup>; **Rui Alves**<sup>1,2</sup>; **Rita Pinheiro**<sup>1,3</sup>

<sup>1</sup> Instituto Politécnico de Viana do Castelo

<sup>2</sup> REQUIMTE - Laboratório Associado para a Química Verde

<sup>3</sup> Centro de Engenharia Biológica

**INTRODUCTION:** Organizations responsible for public health throughout the world have been increasingly concerned with the feeding of the populations, by encouraging a nutritious and balanced diet in order to decrease the occurrence of chronic diseases, which are constantly related to an inadequate diet. Still, consumers are increasingly seeking convenient products due to the modern lifestyle. Cereal bars were introduced over a decade ago as a “healthy” alternative confectionery, and became a practical food, as it can be easily consumed, do not require any preparation and are a source of essential nutrients. More, according to several authors, the tendency to associate cereal bars with healthy food has already been remarked in food industry.

**METHODOLOGY:** In this work a gluten- and lactose-free cereal bar with no added sugar, suitable for lactose intolerants and for celiac people was developed. The cereal bar was formulated with extruded rice, oat flakes, flaxseeds, sesame, sunflower lecithin, hydrocolloids, maltodextrin, mannitol, maltitol syrup and sodium chloride. The effect of different hydrocolloids, locust bean gum, pectin and carboxymethylcellulose, and drying temperatures, 20°C, 60°C and 70°C, on nutritional and texture properties of the cereal bars was assessed by an experimental design based on Taguchi method.

**RESULTS:** Results showed that despite the variation in hydrocolloids levels and drying temperature of cereal bars, ash and protein content revealed no

changes. On the contrary, carbohydrates results presented differences between the experiments with 20 °C and 70 °C, regardless of the type of the hydrocolloid. Hardness and fraturability values increased with temperature increase. The application of the Taguchi method, allowed identifying the temperature as being the factor of greater influence on the characteristics of the cereal bars. Also according to this method, the composition of the optimum formulation is with 0.05% locust bean gum and 0.1% pectin under 70 °C.

## CO18. CHARACTERIZATION OF NUTRITIONAL INTAKE OF OVERWEIGHT OR OBESE FORMER ATHLETES

**Filipe Jesus<sup>1</sup>; Catarina Nunes<sup>2</sup>; Bárbara Carapeto<sup>2</sup>; Luís B Sardinha<sup>2</sup>; Analiza M Silva<sup>2</sup>**

<sup>1</sup> Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto

<sup>2</sup> Laboratório de Exercício e Saúde, CIPER, Faculdade de Motricidade Humana da Universidade de Lisboa

**INTRODUCTION:** After the end of their career, many athletes tend to reduce their physical activity. Normally, this reduction is not followed by a decrease in nutritional intake, leading to weight gain and, consequently, to a higher susceptibility for developing overweight/obesity. There is a lack of information about former athletes' nutritional intake.

**OBJECTIVES:** Our purpose was to characterize the nutritional intake of inactive and overweight/obese former athletes.

**METHODOLOGY:** Thirty-nine inactive former athletes (71.8% male, 43±9 years, 93.8±16.1 Kg, 175(13) cm) with a BMI higher than 25 Kg/m<sup>2</sup> (31.4±4.6 Kg/m<sup>2</sup>) participated in a lifestyle intervention program (Champ4Life). Baseline values of nutritional intake were assessed through a three-day food record and analyzed using the software Food Processor SQL, ESHA Research. Body composition was assessed using a dual energy X-ray absorptiometry (DXA).

**RESULTS:** Mean fat mass and fat-free mass vales were 32.9±7.3% and 66.9±8.4%, respectively. According to the recommendations, 38.5% of the sample was below the recommendations for fats, 87.2% for carbohydrates, and 84.6% for fiber. On the other hand, 94.9% were above the recommendations for protein, 51.3% for saturated fats, 64.1% for cholesterol and 46.2% for sugar intakes. There were no significant differences between sex with respect to intake of other macronutrients. For both sex the micronutrients with the highest inadequacy were vitamin E (100.0%), vitamin A (94.9%), vitamin D (94.9%), folate (92.3%) and calcium (89.7%) with a significant difference of inadequacy between sexes (p<0.001) for iron (14.3% for males and 90.9% for females).

**CONCLUSIONS:** Both male and female former athletes were above the recommendations for protein, saturated fats, cholesterol and sugar intakes whereas an insufficient intake of micronutrients was observed. An intervention program designed to improve the lifestyle of overweight/obese and inactive athletes during their post-sport career is required and should include the promotion of healthy eating habits and physical activity.

## CO19. ASSOCIAÇÃO ENTRE INDICADORES ANTROPOMÉTRICOS DE DESNUTRIÇÃO E O TEMPO DE INTERNAMENTO EM DOENTES HOSPITALIZADOS

**Ana C Pinto<sup>1</sup>; Ana S Sousa<sup>2</sup>; Teresa F Amaral<sup>3,4</sup>; Rita S Guerra<sup>1,4</sup>**

<sup>1</sup> Faculdade de Ciências da Saúde da Universidade Fernando Pessoa

<sup>2</sup> Instituto Politécnico de Leiria

<sup>3</sup> Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto

<sup>4</sup> UISPA – INEGI/LAETA

**INTRODUÇÃO:** A avaliação antropométrica é fundamental na identificação da

desnutrição. A desnutrição está associada a maior tempo de internamento hospitalar (TI). Contudo, desconhece-se quais os indicadores antropométricos que melhor se associam com o TI.

**OBJETIVOS:** Estudar a associação independente do perímetro do braço (PB), prega cutânea tricipital (PCT), área muscular do braço (AMB), perímetro muscular do braço (PMB) e *adductor pollicis* (AP) com o TI.

**METODOLOGIA:** Conduziu-se um estudo observacional num Hospital Universitário. Recolheu-se informação sociodemográfica, clínica, dependência nas atividades de vida diária (índice de Katz) e mediram-se os indicadores antropométricos: peso, estatura, PB, PCT e AP. Identificou-se depleção de massa muscular e de tecido adiposo recorrendo aos percentis 5 e 25 de valores de referência. Identificou-se a presença de desnutrição pelo *Patient-Generated Subjective Global Assessment* (PG-SGA). Avaliou-se a associação entre os indicadores com a desnutrição pelo coeficiente de correlação de Spearman e com o TI através de modelos de regressão logística e calcularam-se os Odds Ratio (OR) e os Intervalos de Confiança a 95% (IC 95%).

**RESULTADOS:** Peso, Índice de Massa Corporal, PB, PCT, AMB, PMB e AP associaram-se com o PG-SGA:  $r \geq -0,155$  ( $p < 0,001$ ). Encontraram-se diferenças significativas entre os participantes com TI curto (<7 dias) versus longo ( $\geq 7$  dias) nos valores de PCT: 15,5 (10,9) mm versus 13,5 (11,8) mm ( $p = 0,043$ ) e de AP: 21,4 (6,0) mm versus 20,5 (5,8) mm ( $p = 0,029$ ). Através de modelos de regressão logística, PB (percentil 5): OR=1,531 (IC 95%: 1,061-2,209), PCT (percentil 25): OR=1,534 (IC 95%: 1,068-2,202) e AP (percentil 5): OR=1,487 (IC 95%: 1,080-2,048) associaram-se com o TI após ajuste para sexo, idade, escolaridade, serviço de internamento e índice de Katz.

**CONCLUSÕES:** A depleção do PB, da PCT e do AP está independentemente associada a maior TI. Estes resultados poderão ser utilizados para otimizar os métodos de identificação da desnutrição em doentes hospitalizados.

## CO20. AVALIAÇÃO DO DESPERDÍCIO ALIMENTAR NUMA CANTINA ESCOLAR DO ENSINO SUPERIOR: COMPARAÇÃO DE METODOLOGIAS

**Ana Pedrosa<sup>1</sup>; Ana Braga<sup>1</sup>; Fabiana Estrada<sup>1</sup>; Matilde Silva<sup>1</sup>; Ana Sousa<sup>1</sup>; Cidália Pereira<sup>1</sup>; João Lima<sup>1,2</sup>; Vânia Ribeiro<sup>1</sup>**

<sup>1</sup> Escola Superior de Saúde de Leiria do Instituto Politécnico de Leiria

<sup>2</sup> Escola Superior de Tecnologia da Saúde de Coimbra do Instituto Politécnico de Coimbra

**INTRODUÇÃO:** Em Portugal, cerca de 1 milhão de toneladas de alimentos são desperdiçados anualmente. A avaliação do desperdício alimentar nas escolas desempenha uma importante função na educação alimentar, na perspetiva nutricional, social e ética, atendendo ao seu impacto a estes níveis.

**OBJETIVOS:** Comparar a avaliação do desperdício alimentar numa cantina escolar do ensino superior através da aplicação de três metodologias.

**METODOLOGIA:** A avaliação do desperdício alimentar foi realizada nas refeições do almoço e do jantar num dia escolhido aleatoriamente, na cantina e *snack-bar* do Instituto Politécnico de Leiria, que servem o maior número de refeições diárias. Apenas foi quantificado o desperdício do prato principal, por questões logísticas. Foram utilizados os métodos de pesagem por componentes agregados, pesagem por componentes por prato e análise visual por retrato fotográfico. Foi utilizada uma amostra de 52 refeições nos métodos de análise prato-a-prato, e analisadas todas as refeições servidas (exceto vegetariano).

**RESULTADOS:** No método de pesagem por componente no prato obteve-se 20,45% de desperdício. No método de pesagem por componentes agregadas afere-se um desperdício de 13,57%. No que diz respeito ao método da análise visual do desperdício por retrato fotográfico, conclui-se que cerca de 55,8% das refeições servidas apresentam um desperdício correspondente a 0%.

**CONCLUSÕES:** Verifica-se uma má concordância entre os resultados avaliados pelas metodologias por pesagem agregada e pesagem por componente no prato,

verificando uma aparente sobrestimação do índice de restos observado pelo método de pesagem no prato. Por outro lado, a metodologia da análise visual por retrato fotográfico constitui uma forma menos conclusiva de análise, pois, de acordo com este método, cerca de metade não originaram restos. Desta forma, conclui-se que o método por pesagem de componentes no prato, por amostragem, não deverá ser usado como metodologia de rotina na avaliação do desperdício nesta unidade, optando-se pela avaliação por componentes agregada.

## CO21. THE NUTRITIONAL AND BIOACTIVE VALUE OF THE MICROALGAE *ISOCHRYSIS GALBANA*: LIPID COMPOSITION, BIOACCESSIBILITY, AND ANTI-INFLAMMATORY ACTIVITY

Carolina Bonfanti<sup>1</sup>; Carlos Cardoso<sup>2,3</sup>; Cláudia Afonso<sup>2,3</sup>; Thaís Garcia<sup>1</sup>; Suzana Tanni<sup>1</sup>; Narcisa Bandarra<sup>2,3</sup>

<sup>1</sup> Faculty of Medicine (FMB), Universidade Estadual Paulista (UNESP), Campus de Botucatu

<sup>2</sup> Division of Aquaculture and Upgrading (DivAV), Portuguese Institute for the Sea and Atmosphere (IPMA, IP)

<sup>3</sup> CIIMAR, Interdisciplinary Centre of Marine and Environmental Research of University of Porto

**INTRODUCTION:** Western diet is clearly deficient in n-3 polyunsaturated fatty acids (PUFA), such as eicosapentaenoic (EPA) and docosahexaenoic (DHA) FAs, which is a factor that has a pro-inflammatory effect on health. Therefore, new foods or natural sources of food ingredients rich in n-3 PUFA and/or anti-inflammatory bioactives could offer a dietary route for the prevention and delay of a wide array of diseases related to the inflammatory processes. The microalga *Isochrysis galbana* is such a potential alternative, which meets the aforementioned criteria.

**OBJECTIVES:** Accordingly, this study aimed at the analysis of the lipid fraction composition, EPA+DHA bioaccessibility, and anti-inflammatory activity before and after digestion of *I. galbana*.

**METHODOLOGY:** The influence of bioaccessibility on lipid composition and anti-inflammatory bioactivity was evaluated through the application of an in vitro model of the human digestion.

**RESULTS AND CONCLUSIONS:** The FA profile of *I. galbana* was rich in PUFA and, within PUFA, n-3 PUFA were the most abundant. Specifically, myristic, oleic, linoleic, alpha-linolenic, stearidonic, and docosahexaenoic (DHA) acids contents were high. It was observed a low degree of lipolysis — low level of hydrolysis of triacylglycerols and phospholipids after digestion. Total fat bioaccessibility and specific FA bioaccessibility were low, 7-15%. The highest bioaccessibility percentages were determined for palmitic, oleic, and linoleic acids as well as total n-6 PUFA and the lowest bioaccessible percentages were calculated for myristic and stearidonic acids, DHA, and total n-3 PUFA. Regarding anti-inflammatory activity, it was only detected in the lipid extract of *I. galbana* prior to digestion (79 ± 7% of COX-2 inhibition). No activity was found in the bioaccessible fraction extract. Apparently, the COX-2 inhibitory compounds were not rendered bioaccessible. Future work should focus on preparing extracts for nutraceutical applications or microalgal processing through decoction (tisane) for achieving a higher bioaccessibility of lipid components and anti-inflammatory bioactives.

## CO22. AVALIAÇÃO DA EVOLUÇÃO DA OFERTA DE FRUTA E LEITE EM ESCOLAS DO 1.º CICLO DO ENSINO BÁSICO ENTRE 2008 E 2016 - COSI PORTUGAL

Marília Gama<sup>1</sup>; Sofia Mendes<sup>1</sup>; Rita Cruz de Sousa<sup>1</sup>; Ana Rito<sup>1,2</sup>

<sup>1</sup> Centro de Estudos e Investigação em Dinâmicas Sociais e Saúde

<sup>2</sup> Instituto Nacional de Saúde Doutor Ricardo Jorge

**INTRODUÇÃO:** A escola, constituindo-se como veículo privilegiado de acesso à formação das crianças, afigura-se como meio ideal para a promoção de hábitos alimentares saudáveis. O “Programa de Leite Escolar” e o “Regime de Fruta Escolar”, instituídos nas escolas de 1.º Ciclo, em Portugal, são um fator essencial para a sensibilização da consciência coletiva que determinam a obtenção de resultados sustentáveis a longo prazo a favor da saúde e com vista a regredir a prevalência da obesidade infantil.

**OBJETIVOS:** Avaliar a disponibilidade de leite e fruta nas escolas participantes no estudo *Childhood Obesity Surveillance Initiative* (COSI) – Portugal, em 2008 e 2016.

**METODOLOGIA:** Foi avaliada a disponibilidade de leite, simples e aromatizado, e de fruta, através de um inquérito aplicado às 180 e 212 escolas do 1.º Ciclo de Ensino Básico participantes no estudo COSI, nos anos 2008 e 2016, respetivamente, por regiões portuguesas.

**RESULTADOS:** Verificou-se um aumento da oferta de fruta escolar, para cerca do dobro, de 2008 (33,3%) para 2016 (66,5%) tendo sido a região Centro aquela que apresentou o maior aumento desta oferta (+69,4%). Em relação ao leite escolar, de forma contrária, diminuiu nas Escolas COSI de 2008 (98,0%) para 2016 (94,8%), tendo a disponibilidade de leite aromatizado aumentado (+25,4%) e a de leite simples diminuído (-17,7%) (Tabela 1).

TABELA 1

Oferta de fruta e leite, simples e aromatizado, nas Escolas COSI Portugal, em 2008 e 2016, por região

	FRUTA		LEITE SIMPLES		LEITE AROMATIZADO	
	2008 (n=180)	2016 (n=212)	2008 (n=98)	2016 (n=212)	2008 (n=180)	2016 (n=212)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Norte	23 (41,1)	42 (72,4)	22 (88,8)	35 (60,3)	26 (46,4)	36 (62,1)
Centro	5 (8,9)	36 (78,3)	24 (100,0)	33 (71,7)	8 (14,3)	38 (82,6)
LVT	15 (34,1)	19 (54,3)	31 (88,6)	24 (68,6)	19 (43,2)	21 (60,0)
Alentejo	6 (54,5)	9 (47,4)	8 (100,0)	14 (73,7)	6 (54,5)	18 (94,7)
Algarve	4 (80,0)	8 (50,0)	4 (80,0)	14 (73,7)	4 (80,0)	12 (75,0)
Açores	3 (75,0)	11 (52,4)	0 (0,0)	16 (94,1)	0 (0,0)	2 (11,8)
Madeira	4 (100,0)	16 (94,1)	1 (100,0)	21 (100,0)	0 (0,0)	1 (4,8)
<b>Portugal</b>	<b>60 (33,3)</b>	<b>141 (66,5)</b>	<b>90 (91,8)</b>	<b>157 (74,1)</b>	<b>63 (35,0)</b>	<b>128 (60,4)</b>

LVT: Lisboa e Vale do Tejo

**CONCLUSÕES:** De 2008 para 2016, verificou-se um aumento significativo na disponibilidade de fruta escolar o que pode ser parcialmente justificado pela implementação do programa “Regime de Fruta Escolar” a partir de 2010. Relativamente ao leite escolar, para além de ter sido verificada uma ligeira diminuição na sua oferta no período de 2008 a 2016, este estudo reforça que a monitorização e avaliação do tipo de leite oferecido deve ser continuada, verificando-se principalmente se este cumpre com as normativas da Direção-Geral da Educação, designadamente quanto ao seu conteúdo de açúcar.

## CO23. UNDERSTANDING THE LINK BETWEEN SLEEP DURATION AND EATING BEHAVIOR OF CHILDREN WITH OVERWEIGHT/OBESITY

Cristiana Costa<sup>1</sup>; Sofia Ramalho<sup>2</sup>; Diana Silva<sup>1,3,4</sup>; Pedro F Saint-Maurice<sup>5</sup>; Eva Conceição<sup>2</sup>

<sup>1</sup> Faculty of Nutrition and Food Sciences of University of Porto

<sup>2</sup> School of Psychology of University of Minho

<sup>3</sup> Faculty of Medicine of University of Porto

<sup>4</sup> Paediatric Service of São João Hospital

<sup>5</sup> National Institutes of Health of National Cancer Institute

**INTRODUCTION/OBJECTIVES:** Literature supports the link between short sleep



duration, reduced self-regulation of appetite, dysfunctional eating behaviors and obesity. The aim of this study was to explore associations between eating behaviors and sleep duration of children with overweight/obese.

**METHODOLOGY:** This is a cross-sectional study conducted in São João Hospital Center, in the north of Portugal. The study assessed 82 children (36 boys; 46 girls; age  $10.33 \pm 1.28$  years; BMI z-score  $2.74 \pm 0.66$ ) with BMI Percentile  $\geq 85$  in hospital ambulatory treatment for overweight/obesity (WHO). Spearman's correlation coefficients were used to testing correlations between variables. A multivariate linear regression was performed to examine relationships between age and sleep duration with BMI z-score of children. The Children's Eating Attitudes Test was used to assess eating behaviors of children. Sleep habits and meal times were evaluated using a 7-day sleep diary.

**RESULTS:** The average nighttime sleep duration was  $9:05 \pm 1:08$  hours for children, the mean sleep latency time was  $00:21 \pm 0:22$  hours. Late dinnertime was related with more disturbed eating behaviors in children ( $r_s = 0.24$ ,  $p < 0.05$ ). The regression model explained 22.4% of the variance of children BMI z-score ( $R^2_{aj} = 0.22$ ),  $F(2,79) = 12.69$ ,  $p < 0.001$ . After controlling for age, a significant inverse association was found between average nighttime sleep duration of children ( $B = -0.34$ ,  $t = -3.50$ ,  $p < 0.001$ ) with children BMI z-score.

**CONCLUSIONS:** Short sleep duration of children was associated with higher BMI z-scores in children in hospital ambulatory treatment for overweight/obesity. Longitudinal studies are needed to explore relationships between sleep patterns, mealtime and eating behaviors in children with overweight/obesity.

## CO24. MATERNAL PERCEPTION OF THE NUTRITIONAL STATUS OF SCHOOL-AGED CHILDREN AND ASSOCIATED FACTORS – COSI PORTUGAL 2016

**Sofia Mendes<sup>1</sup>; Rita Cruz de Sousa<sup>1</sup>; Ana Rito<sup>1,2</sup>**

<sup>1</sup> Centro de Estudos e Investigação em Dinâmicas Sociais e Saúde

<sup>2</sup> Instituto Nacional de Saúde Doutor Ricardo Jorge

**INTRODUCTION:** Mothers usually have a greater responsibility in the children's eating habits and education, therefore an accurate perception of their child's nutritional status is crucial for the early recognition of childhood overweight and obesity as well as for its prevention.

**OBJECTIVES:** To assess maternal perception of children's nutritional status and its related environmental factors.

**METHODOLOGY:** The Body Mass Index (BMI) of 5150 Portuguese children aged 6-8 years old, participants of the 4th round of the Childhood Obesity Surveillance Initiative/World Health Organization (WHO) Europe (COSI Portugal 2016), was assessed. Children's nutritional status was determined using the WHO criteria and data regarding mother's perception, anthropometric and socioeconomic characteristics were obtained through the COSI Portugal 2016 Family-questionnaire.

**RESULTS:** The COSI study showed that 19.1% of the children were pre-obese and 11.5% were obese, which corresponds to an overweight prevalence of 30.6%. Out of the 35,6% mothers who underestimated their child's nutritional status, the frequency of underestimation was substantially higher among children classified as being pre-obese or obese (89.9% and 98.0%, correspondingly). Maternal misperception was associated with mothers' nutritional status and educational level ( $p < 0.05$ ), where mothers with higher BMI and with lower educational level (up to mandatory education) underestimated more frequently their child's nutritional status (50.4% and 62.5%, respectively). Being employed (government employed/non-government employed/self-employed) at the moment of the study was significantly associated with a maternal accurate perception (80%) of children's nutritional status ( $p < 0.05$ ). No statistical association between mothers' place of residence (in urban, semi-urban or rural areas) and maternal misperception was found ( $p > 0.05$ ).

**CONCLUSIONS:** Given the high proportion of mothers who wrongly perceived their child's nutritional status and the influence of maternal perception in the child's

weight development, and thus in health, a greater focus and awareness to this matter should be given to prevent childhood obesity.

## CO25. EFEITOS DE UM PROGRAMA DE EDUCAÇÃO ALIMENTAR NA INGESTÃO DE FRUTA E HORTÍCOLAS EM INDIVÍDUOS COM DIABETES TIPO 2: ESTUDO RANDOMIZADO E CONTROLADO

**Carlos Vasconcelos<sup>1,2</sup>; Maria Cabral<sup>3</sup>; Elisabete Ramos<sup>3,4</sup>; Romeu Mendes<sup>1,3,5</sup>**

<sup>1</sup> Universidade de Trás-os-Montes e Alto Douro

<sup>2</sup> Instituto Politécnico de Viseu

<sup>3</sup> EPIUnit - Instituto de Saúde Pública da Universidade do Porto

<sup>4</sup> Faculdade de Medicina da Universidade do Porto

<sup>5</sup> Unidade de Saúde Pública, ACES Douro I – Marão e Douro Norte, Vila Real

**INTRODUÇÃO:** A importância da ingestão de fruta e hortícolas para melhorar a saúde cardiometabólica, especialmente na população com diabetes tipo 2 (DT2), é internacionalmente reconhecida.

**OBJETIVOS:** Avaliar os efeitos de um programa de educação alimentar (PEA) na ingestão de fruta e hortícolas em indivíduos de meia-idade e idosos com DT2.

**METODOLOGIA:** Participaram neste estudo 42 indivíduos com DT2 (entre 50 e 80 anos de idade), envolvidos no programa Diabetes em Movimento<sup>®</sup> Vila Real (3 sessões de exercício físico semanais; 75 min de duração cada sessão; 9 meses). Os participantes foram randomizados em 2 grupos: programa de exercício físico (PEX;  $n=19$ ); ou programa de exercício físico + PEA ( $n=23$ ). O PEA teve a duração de 16 semanas, e em cada semana foi abordado um tema através de uma sessão teórica de 15 min + estratégias de dupla-tarefa durante o exercício físico. As porções de fruta e hortícolas foram avaliadas antes e após a intervenção (9 meses) através de diário alimentar de três dias. Os participantes do PEA foram ainda divididos em dois sub-grupos, de acordo com a adesão às sessões de educação alimentar ( $<50\%$  vs.  $\geq 50\%$ ).

**RESULTADOS:** Completaram o estudo 33 participantes (14 mulheres;  $65,42 \pm 5,88$  anos de idade; PEX,  $n=15$ ; PEA,  $n=18$ ). Apesar de não ter sido observado um efeito significativo da interação tempo\*grupo na ingestão de fruta ( $p = 0,069$ ) e hortícolas ( $p = 0,099$ ), foram verificadas alterações importantes no grupo PEA  $>50\%$  após a intervenção (Fruta: PEX,  $0,19 \pm 0,60$ ; PEA  $<50\%$ ,  $0,19 \pm 0,74$ ; PEA  $\geq 50\%$ ,  $0,77 \pm 0,67$ . Hortícolas: PEX,  $-0,32 \pm 0,61$ ; PEA  $<50\%$ ,  $0,00 \pm 0,53$ ; PEA  $\geq 50\%$ ,  $0,15 \pm 0,43$ ).

**CONCLUSÕES:** Os dados sugerem que a participação no PEA está associada a um aumento da ingestão de fruta e hortícolas em indivíduos com DT2.

## CO26. QUANTIFICAÇÃO DE AÇÚCARES (MONO E DISSACARÍDEOS) EM REFRIGERANTES, SUMOS E NÉCTARES POR UPLC-MS/MS

**Susana de Jesus<sup>1,2</sup>; Andreia Rego<sup>1,2</sup>; Rita Guerra<sup>1</sup>; Carla Motta<sup>1</sup>; Inês Delgado<sup>1,3</sup>; Isabel Castanheira<sup>1</sup>**

<sup>1</sup> Departamento de Alimentação e Nutrição do Instituto Nacional de Saúde Doutor Ricardo Jorge

<sup>2</sup> CERENA - Centro de Recursos Naturais e Ambiente da Universidade de Lisboa, Instituto Superior Técnico

<sup>3</sup> Departamento de Engenharia Química da Universidade de Lisboa, Instituto Superior Técnico

**INTRODUÇÃO:** Segundo o IAN-AF os refrigerantes, sumos e néctares contribuem entre 3% e 10% para a ingestão diária de açúcares (mono e dissacarídeos). A introdução recente da taxa sobre açúcares neste tipo de bebidas, aconselha a análise crítica comparativa entre os teores de açúcar de refrigerantes antes e depois da publicação do deste imposto.

**OBJETIVOS:** Quantificar o teor de açúcares mono e dissacarídeos (sacarose, frutose e glucose) em refrigerantes, sumos e néctares de marca branca e marca comercial, disponíveis nas grandes superfícies.

**METODOLOGIA:** Foram analisadas vinte e quatro amostras de sumos, refrigerantes e néctares de pêssego, ananás, morango, frutos vermelhos, laranja e frutos tropicais. As amostras recolhidas em janeiro de 2018 foram analisadas por cromatografia líquida de alta resolução acoplada ao detetor de massas (UPLC-MS/MS). Os resultados analíticos foram depois comparados com os publicados na Tabela Portuguesa de Composição de Alimentos (TAC), para os açúcares totais.

**RESULTADOS:** Nas bebidas analisadas, foram observadas largas variações para o teor de sacarídeos pesquisados, variando entre 1,7 g/100 mL e 12,47 g/100 mL. A concentração de glucose variou entre 0,78 g/100 mL (ananás) e 4,44 g/100 mL (frutos vermelhos). No entanto, a frutose foi o monossacarídeo encontrado em maior quantidade e oscilou entre 0,53 g/100 mL (ananás) e 6,96 g/100 mL (frutos tropicais). A mesma amplitude de valores foi observada para a sacarose entre 0,50 g/100 mL (maçã) e 6,83 g/100 mL (frutos tropicais). Estes valores foram depois comparados com os publicados na TAC. O valor máximo encontrado neste estudo foi de 12,47 g/100 mL enquanto que o publicado na TAC é 15,16 g/100 mL.

**CONCLUSÕES:** Os teores totais de açúcar nas amostras analisadas decresceram em comparação com os dados anteriores. Este estudo revela que as medidas de taxação do teor de açúcar em refrigerantes afiguram-se efetivas, também na redução do teor de açúcar presente neste tipo de bebidas.

---

## C, O, VENCEDORES

### 1.º Prémio

**CO4** | Coexistence of sarcopenia, frailty, undernutrition and obesity in a representative sample of the Portuguese elderly population

### 2.º Prémio

**CO6** | Frailty and associated factors in heart failure outpatients – preliminary data from the Deus Ex Machina study

### 3.º Prémio

**CO11** | Identification of dietary patterns at 7 years-old that explain body mass index (BMI) at 10 years-old: Comparison of 3 methodological approaches in the G21 cohort

## CO27. SALT CONTENT IN READY TO EAT SOUPS – COMPARISON BETWEEN PORTUGAL AND IRELAND

**Paulo Fernandes<sup>1</sup>; Andreia Vargues<sup>1</sup>; Roberto Brazão<sup>1</sup>; M Graça Dias<sup>1</sup>; M Antónia Calhau<sup>1</sup>**

<sup>1</sup>Instituto Nacional de Saúde Doutor Ricardo Jorge

**INTRODUCTION:** High salt intake is a public health concern with increasing awareness in several European Countries and it is currently being addressed by the WHO. Also, the Portuguese Government established the goal of reaching individual intake of salt of 5 g/day by 2020, in an Integrated Strategy for Healthy Eating Promotion (EIPAS).

**OBJECTIVES:** To compare the salt content of ready to eat soups between a country that is starting to enforce the reduction of salt content in food (Portugal) and a country that already has specific recommendations on salt reduction (Ireland) and also the compliance with EIPAS goal of 0.2 g of salt/100 g.

**METHODOLOGY:** The information on the labelling of ready to eat soups, available on Portuguese and Irish markets, independently of production country, was gathered and analysed. The labelling information was collected from the nutritional declaration available at online stores of supermarket chains.

**RESULTS:** A total of 161 soups from Portugal (n=56) and Ireland (n=105) were considered. Salt content ranged from 0.0 to 1.1 g/100 g. No apparent differences were found between the distributions of the two countries. Only 2 soups presented a salt content within the 0.2 g/100 g limit, one from Ireland and one from Portugal, with a salt content of 0.0 g/100 g.

**CONCLUSIONS:** 98.8% of all soups considered presented a salt content above EIPAS recommendation of 0.2 g/100 g, pointing out the need for a progressive reduction and involvement of food industry to obtain the desired values. Only 1 soup from each country complied with EIPAS. Although the value is achieved in these 2 products the vast majority is non-compliant. These values are self-reported by food business operators and this data analysis must be performed with caution. The unlikely lowest value found (0.0 g/100 g) needs further confirmation because of ingredients' naturally present sodium.