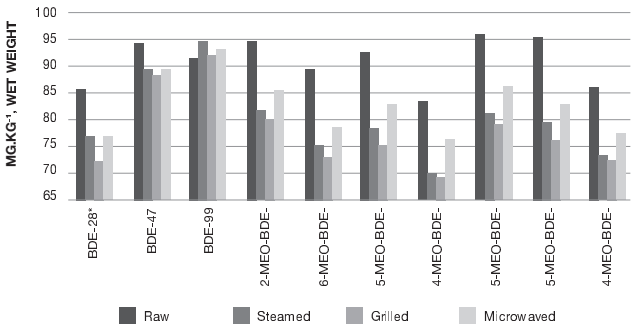
FIGURE 1

Impact of cooking on the degree of contamination



*ANOVA $p < 0.0001$

CONCLUSIONS: The outcomes of this study showed that the cooking methods tested herein were not sufficiently effective to diminish seafood contamination. Further research involving fat addition to food processing as well as bioaccessibility evaluation may provide new insights into actual human health risk.

ACKNOWLEDGMENTS: This work received financial support from PTDC/ASP-PES/28708/2017. Rebeca Cruz thanks to FCT for the PhD grant SFRH/BD/101945/2014. António Marques thanks to FCT IF program. Sara C. Cunha also acknowledges FCT for the IF/01616/2015 contract.

CO12: PERCEPTION OF RISK-BENEFIT ASSOCIATED TO THE CONSUMPTION SOME PORTUGUESE GREEN, BROWN AND RED SEAWEEDS BASED ON BIOACCESSIBILITY STUDIES

Cláudia Afonso[1,2]; Carlos Cardoso[1,2]; Joana Matos[1,3]; Romina Gomes[1]; Ana Gomes[1,2]; João Francisco[1]; Inês Coelho[4]; Inês Delgado[4]; Isabel Castanheira[4]; Pedro Pousão-Ferreira[2,5]; Narcisa Maria Bandarra[1,2]

[1] Division of Aquaculture, Upgrading and, Bioprospection (DivAV), Portuguese Institute for the Sea and Atmosphere

[2] Interdisciplinary Centre of Marine and Environmental Research, University of Porto

[3] Faculdade de Ciências da Universidade de Lisboa

[4] Food and Nutrition Department, National Health Institute Doutor Ricardo Jorge

[5] Aquaculture Research Station, Olhão (EPPO), Portuguese Institute for the Sea and Atmosphere

INTRODUCTION: Marine species are increasingly viewed as a major source of food and health ingredients. Wild-harvested or cultivated seaweeds can be a solution to meet an increasing global demand for sustainable food source. Despite variation (duo to species, season, etc), seaweeds are one of the main underexploited resources that can possess valuable nutrients (like iodine) and biomolecules, many showing important biological activities. However, seaweeds can accumulate some contaminants that can represent a hazard to consumers. There are no intake recommendations and, in most countries, no special regulations enforced for the seaweeds used as human food/ingredient. Therefore, their potential for use and health benefits-risks warrant further research. Furthermore, a realistic risk-benefit assessment requires not only knowing the total compounds concentration but also their maximum fraction released from the food into the digestive tract (bioaccessibility).

OBJECTIVES: This work aims to evaluate the risk-benefit associated to the consumption of Portuguese seaweeds based on bioaccessibility studies.

METHODOLOGY: Proximate composition, fatty acids (GC) and essential/non-essential elements (ICP-MS/AAS) from seven wild-harvested/cultivated Portuguese seaweeds (red/brown/green) were determined by standard methods. Bioaccessibility was simulated by an in vitro method. The risk-benefit was calculated by using statistical processing of the probabilities of exceeding the advised/recommended thresholds.

RESULTS AND CONCLUSIONS: Seaweed species have unique nutritional profiles. They present important levels of essential elements, particularly iodine. Contaminants (Hg, As, Cd, and Pb) contents were low and do not represent a hazard. Total fat was below 3.6% (dried *Petalonia binghamiae*). Eicosapentaenoic acid was always more abundant than docosahexaenoic acid. Bioaccessibility varied between compounds and species. Iodine bioaccessibility can reach to 75% in dried *Fucus spiralis*, 2.0 g is required to meet the recommended daily allowance. The seaweeds have potential to be a source of sustainable food but this study showed the importance of taking into account bioaccessibility results in estimating dietary intakes.

ACKNOWLEDGEMENTS: The experimental work was funded by the project I9+PROALGA (Ref.: MAR2020-16-01-03-FMP-0011) and AQUAMAX (Ref.: 16-02-01-FMP-0047). This work was supported by the following Post Doctoral Grants: IPMA-2017-48-BPD (Algared+ Project) for the author Ana Gomes, SFRH/BPD/102689/2014 ("Fundação para a Ciência e a Tecnologia", FCT) for the author Carlos Cardoso and DIVERSIAQUA (MAR2020, Ref.: 16-02-01-FEAM-66) for the author Cláudia Afonso. Doctoral grant awarded by FCT supported the work performed by Joana Matos (SFRH/BD/129795/2017).

CO13: CEREAL-BASED PRODUCTS CONSUMPTION AND SODIUM INTAKE AMONG PORTUGUESE INFANTS AND YOUNG CHILDREN

Catarina Carvalho[1,2]; Daniela Correia[2,3]; Géraldine Boué[4]; Ricardo Assunção[5-7]; Paula Alvito[5,6]; Carla Lopes[2,3]; Duarte Torres[1,2]

[1] Faculty of Nutrition and Food Sciences, University of Porto

[2] EPIUnit – Institute of Public Health, University of Porto

[3] Department of Public Health and Forensic Sciences, and Medical Education, Epidemiology Unit, Faculty of Medicine, University of Porto

[4] SECALIM, INRA, Oniris, Université Bretagne Loire

[5] Food and Nutrition Department, National Institute of Health Doutor Ricardo Jorge

[6] CESAM, Centre for Environmental and Marine Studies, University of Aveiro

[7] Division for Diet, Disease Prevention and Toxicology, The National Food Institute, Technical University of Denmark

INTRODUCTION: There is evidence that Portuguese children under 3 years of age are replacing infant cereals (IC) by breakfast cereals (BC) consumption. BC are not targeted for this age group, and its nutritional composition and safety are not considered in the scope of the European regulations on "Food for infants and young children". Bearing in mind infants' particular vulnerability, this could represent an increased risk, for example concerning sodium intake.

OBJECTIVES: To evaluate the impact on current intake of sodium and the prevalence of inadequacy among Portuguese infants and young children (6 months up to 3 years old) by replacing BC for IC and vice-versa.

METHODOLOGY: Consumption data was obtained from the National Food, Nutrition, and Physical Activity Survey (IAN-AF 2015-2016) (n=779). The usual intake of BC, IC, sodium and the prevalence of inadequacy of sodium was estimated for the current and two alternative scenarios (AS) defined under RiskBenefit4EU project. Each AS corresponds to the total substitution from one cereal type to another (AS1= 100% IC; AS2= 100% BC), through an isocaloric approach.

RESULTS: Currently, the usual intake of IC and BC of Portuguese infants and young children is 12.8 g/day and 2.8 g/day, respectively. The mean intake of sodium for this age group, considering the overall diet, is 1169 mg/day, and the prevalence of inadequacy is 24.8% (Upper limit: 1500 mg/day). Considering the AS, the mean sodium intake and the prevalence of inadequacy were estimated as 1164 mg/day and 24.3% in AS1 and 1183 mg/day and 25.7 % in AS2.

CONCLUSIONS: These results reveal that the consumption of BC among Portuguese infants and young children is low. Sodium intake and the prevalence of inadequacy did not differ largely between the AS, suggesting that replacing BC by IC (and vice-versa) would not have a major impact in sodium intake for this age group.

ACKNOWLEDGEMENTS: Authors acknowledge EFSA Partnering Grant (RiskBenefit4EU, Grant Agreement Number GP/EFSA/AFSCO/2017/01 - GA02) and the National Food Nutrition and Physical Activity Survey (IAN-AF 2015-2016) (EEA Grants - Public Health Initiatives - PT06- 000088SI3).

CO14: DIETARY INTAKE MISREPORT AND ITS ASSOCIATION WITH SPECIFIC FOOD GROUPS

Vânia Magalhães[1]; Sofia Vilela[1]; Daniela Correia[1]; Duarte Torres[1,3]; Carla Lopes[1,2]

[1] Unidade de Investigação em Epidemiologia do Instituto de Saúde Pública da Universidade do Porto

[2] Departamento de Ciências da Saúde Pública e Forenses, e Educação Médica da Faculdade de Medicina da Universidade do Porto

[3] Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto

INTRODUCTION: Dietary intake misreport may impact consumption estimates as it has been linked with specific foods/drinks.

OBJECTIVES: To identify which foods/drinks are associated with under or over-report.

METHODOLOGY: Participants from the Portuguese National Food, Nutrition and Physical Activity Survey (IAN-AF 2015-2016), aged 18-84 years were included (n=3639). Dietary intake was measured by two 24-Hour recall. Under, plausible and over-reporters were identified according to the Goldberg method. The contribution of each food group to the individual total energy intake (TEI) was estimated and categorized as below or equal vs. above the median (for "Alcoholic beverages", non-consumers *vs.* consumers). The association between misreport and the contribution of food groups to the TEI was assessed through binary logistic regression models.

RESULTS: Dietary misreport prevalence was 29.9%, being 28.5% of under-report and 1.4% of over-report. Compared to plausible reporters, under-reporters showed higher odds of having a contribution to TEI below the median from "Fats" and "Cereals, derivatives and tubers" (OR:2.47, CI95%:2.18-2.88 and OR:1.95, CI95%:1.68-2.27, respectively) and by the contrary, over-reporters showed lower odds of having a contribution from those food groups below the median (OR:0.39, CI95%:0.21-0.74 and OR:0.54, CI95%:0.30-0.99, respectively). Under-reporters showed higher odds of having a contribution below the median for "Meat, fish and eggs", "Sweets, cakes and cookies" and "Alcoholic beverages" (OR:1.89, CI95%:1.63-2.20; OR:1.64, CI95%:1.42-1.91 and OR: 2.48, CI95%: 2.12-2.91; respectively). Under-reporters also showed lower odds of lower consumption of "Non-alcoholic beverages" (OR:0.42, CI95%:0.36-0.48) while over-reporters reported more (OR:3.56, CI95%:1.78-7.17). For "Fruit and vegetables" and "Dairy", the contribution to TEI was similar among under, plausible and over-reporters.

CONCLUSIONS: "Fats", "Cereals, derivatives and tubers" and "Non-alcoholic beverages" were conversely associated with under and over-report. Under-reporters report less "Meat, fish and eggs", "Sweets, cakes and cookies" and "Alcoholic beverages". A particular attention should be taken with these food groups during the data collection.

CO15: MATERNAL ADHERENCE TO MEDITERRANEAN DIET: EFFECTS ON PRETERMS' GROWTH AND GUT MICROBIOTA – RESULTS FROM THE FEEDMI TRIAL

Juliana Morais[1,2]; Cláudia Marques[1,2]; Diana Teixeira[1-3]; Catarina Durão[1,4]; Ana Faria[1,2,5]; Sara Brito[6]; Manuela Cardoso[7]; Israel Macedo[6]; Teresa Tomé[6]; Conceição Calhau[1-3]

[1] Nutrition and Metabolism, NOVA Medical School | Faculdade de Ciências Médicas da Universidade NOVA de Lisboa

[2] CINTESIS, Center for Health Technology Services Research

[3] Unidade Universitária Lifestyle Medicine José de Mello Saúde by NOVA Medical School

[4] EPIUnit - Institute of Public Health da Universidade do Porto

[5] Comprehensive Health Research Centre da Universidade NOVA de Lisboa

[6] Neonatal Intensive Care Unit da Maternidade Dr. Alfredo da Costa, Centro Hospitalar de Lisboa Central

[7] Nutrition and Dietetics Unit da Maternidade Dr. Alfredo da Costa, Centro Hospitalar de Lisboa Central

INTRODUCTION: Preterm infants present an immature immune system with high susceptibility for early- or late-onset of intestinal dysbiosis. Maternal nutrition has been shown to be crucial for a healthy fetal growth and for the development of infant's immune system.

OBJECTIVES: The aim of this study was to evaluate the association between adherence to Mediterranean Diet (MD) during pregnancy in women delivering prematurely and preterm microbiota and clinical outcomes.

METHODOLOGY: This is an observational study including very preterm infants with gestational age lower than 32 weeks, hospitalized in the neonatal intensive care unit of *Maternidade Dr. Alfredo da Costa*. After delivery, mothers were asked to collect their own fecal samples and were invited to complete a semi-quantitative food frequency questionnaire (FFQ) in order to estimate their MD adherence. Fecal microbiota composition were quantified by real-time polymerase chain reaction. Maternal and neonatal sociodemographic and clinical data were collected from medical records. This trial is registered in clinicaltrials.gov as NCT03663556.

RESULTS: From the FEEDMI trial, 82 mothers-infants pairs were selected for the analysis. Preterm newborns delivered by mothers with MD adherence (23.7%) had significantly higher weight at birth (p=0.016) which is correlated with total amount of Firmicutes phylum in mothers' gut microbiota (r=0.543; p<0.0001). In addition, maternal MD adhesion promote a higher bacterial colonization of meconium (p=0.040) and a higher amount of Lactobacillus in the offspring at third week of life (p=0.011). The mode of delivery did not influence the infants' gut microbiota composition or even their clinical outcomes.

CONCLUSIONS: MD adherence increased the fetal intrauterine growth and favored the gut microbiota composition of the preterm infants.

ACKNOWLEDGEMENTS: This study is supported by Milupa DN-ELN 2017 grant awarded by the Portuguese Neonatal Society and by ERDF through the operation POCI-01-0145-ERDF-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).

CO16: COGNITIVE FUNCTION AND NUTRITIONAL STATUS IN COMMUNITY-DWELLING OLDER ADULTS (PEN-3S STUDY)

Teresa Madeira[1,2]; Catarina Peixoto-Plácido[1,2]; Nuno Sousa-Santos[2,3]; Osvaldo Santos[1,2]; Violeta Alarcão[1,2,4]; Paulo Jorge Nicola[1,2]; Carla Lopes[5,6]; João Gorjão Clara[1,2]

[1] Instituto de Medicina Preventiva e Saúde Pública da Faculdade de Medicina da Universidade de Lisboa

[2] Instituto de Saúde Ambiental da Faculdade de Medicina da Universidade de Lisboa

[3] Escola Superior de Saúde de Leiria do Instituto Politécnico de Leiria

[4] Centro de Investigação e Estudos de Sociologia do Instituto Universitário de Lisboa

[5] Unidade de Investigação em Epidemiologia do Instituto de Saúde Pública da Universidade do Porto

[6] Departamento de Ciências da Saúde Pública e Forenses e Educação Médica, Unidade de Epidemiologia da Faculdade de Medicina da Universidade do Porto