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**INTRODUCTION:** Researchers and clinicians frequently point out that cognitive impairment is possibly cause and consequence of malnutrition associated with ageing. However, cognitively impaired community-dwelling older adults are frequently excluded from the analysis when malnutrition is studied.

**OBJECTIVES:** To characterise the association between cognitive function and nutritional status in community-dwelling older adults (≥ 65 years old) living in Portugal.

**METHODOLOGY:** Data reported here is based on a nationally representative sample of randomly selected community-dwelling older adults. Trained nutritionists collected data through face-to-face structured interviews regarding sociodemographic characteristics, cognitive function (Mini Mental Sate Examination, MMSE) and nutritional status (Mini Nutritional Assessment - Long Form, MNA®), among other variables of the PEN-3S study. Complex Samples Logistic Regression (SPSS® 24.0) was used to study the association between cognitive function and nutritional status.

**RESULTS:** In total, 1120 community-dwelling individuals (mean age: 75.9±8.1 years; 49.0% women) accepted to participate. Following MNA criteria, 16.9% (95% CI: 13.6-¬20.8) were categorised as malnourished or at risk of malnutrition. The mean MMSE score was 25.9 (25.3-26.5), and 17.7% (12.8-23.9) were classified as cognitively impaired, according to the Portuguese (education-specific) MMSE cut-offs. Cognitive impairment was significantly associated with increased chances of being at risk of malnutrition or malnourished, altogether (OR=3.2; 95% CI: 1.7-6.1), after adjusting for sex, age and monthly income.

**CONCLUSIONS:** These results embody the evidence of a significant association between cognitive function and nutritional status among community-dwelling older adults. Cognitive impairment becomes more prevalent as people age, and special attention should be given to their nutritional status in order to prevent malnutrition and its serious consequences.

## CO17: ARTERIAL STIFFNESS IS NEGATIVELY ASSOCIATED WITH SOUTHERN EUROPEAN ATLANTIC DIET ADHERENCE AMONG HIGH CARDIOVASCULAR RISK AGE GROUP

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**INTRODUCTION:** Evidences show that the Southern European Atlantic Diet (SEAD) is associated with lower blood pressure, and it is well known that blood pressure directly influences arterial stiffness, an independent cardiovascular risk factor. However, there is a lack of information regarding the association between arterial stiffness and SEAD.

**OBJECTIVES:** This study aimed to investigate the association between arterial stiffness and SEAD adherence.

**METHODOLOGY:** This cross-sectional study comprised 187 users (47.3±12.9 years; 58.8% female) of a primary health care centre. Participants were categorized according to age [low cardiovascular risk age group (<45 years for male and <55 years for female); high cardiovascular risk age group (age ≥ 45 years for male, age ≥ 55 years for female)]. Systemic arterial stiffness was assessed via Pulse Wave Analysis (PWA), and the indexes were Augmentation Index (AIX) and Augmentation Index corrected by 75bpm (AIX@75). Diet was assessed with a semi-quantitative food frequency questionnaire, and SEAD adherence was measured with an index that ranges from 0 (lowest adherence) to 9 (highest adherence). Data was analyzed separately for age groups, and multiple linear regression analysis was used to estimate the association between PWA indexes and SEAD.

**RESULTS:** Mean SEAD score was 4.3 points (P25: 3; P75: 5 points), mean AIX was 13.5 mmHg (P25: 7.0 mmHg; P75: 19.0 mmHg) and mean AIX@75 was 24.5 (P25: 15.3; P75: 35.0) After adjustments, linear regression models showed that SEAD was inversely associated with AIX (B= -1.59, CI 95%: -2.86, -0.32; p=0.015) and AIX@75bpm (B = –1.30; CI 95%: -2.33, -0.28, ; p =0.014) in the high cardiovascular risk age group.

**CONCLUSIONS:** SEAD adherence is associated with better arterial stiffness profile along high-risk age group, potentially conferring a protective effect in cardiovascular health.

## CO18: DETERMINATION OF SODIUM LEVELS IN BURGERS ADDED WITH *SALICORNIA RAMOSISSIMA*

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In Portugal, approximately 39% (first major cause) of deaths are due to diseases of the circulatory system (cardiovascular diseases). *Salicornia ramosissima*, is a halophyte belonging to *Amaranthaceae* family that can be found in salt flats and it is very common in Iberian Peninsula. It was known as an invasive plant, but recently it has awakened interest as a gourmet product due to its strong salty taste and crunchy texture. The objective of this study was to evaluate the use of glasswort (*Salicornia ramosissima*) as salt substitute in fresh meat by determination of sodium levels. Fresh beef (semitendinosus and semimembranosus muscles) was obtained from a local slaughterhouse and transported to laboratory under refrigeration. Then, beef was cut, minced in amounts (20 g) and added with different concentrations of glasswort (1, 1.5 and 2%w/w) or with salt (1%w/w). Control samples, untreated, were also prepared. Samples were packed in MAP (70%O2/30%CO2), stored at 2 ºC and analyzed for determination of sodium levels. The sample were dried, and then digested for elimination of the organic matter, following the protocol established in the laboratory. Then sodium levels were determinate by atomic emission spectrometry. For raw samples the mean value of sodium was 12.43 mg/100 g. Comparing the samples with 1% of glasswort and 1% sodium chloride it was observed that samples with glasswort had less sodium values, 22.0 mg/100 g and 35.7 mg/100 g, respectively. For the samples with 1.5 and 2% of glasswort the obtained values were 29.4 mg/100 g and 43.23 mg/100 g. The mean value of sodium in dried glasswort was 13.15 mg/g.

It was verified that *Salicornia ramosissima* is a good alternative to sodium chloride, due to is inner lower sodium levels.

## C019: INHIBITORY EFFECT OF VINEGAR ON PAHS FORMATION IN CHARCOAL GRILLED PORK LOIN

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**INTRODUCTION:** Processing methods such as grilling contribute to the formation of carcinogenic compounds, namely polycyclic aromatic hydrocarbons (PAHs).


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Household mitigation strategies to reduce PAH4 (Benzo(a)anthracene (BaA); Chrysene (Ch); Benzo(b)fluoranthene (BbF); Benzo(a)pyrene (BaP)) in charcoal grilled meat are of utmost relevance for consumers health. Vinegar can be used as a seasoning of meat with the purpose of assigning flavor and also tenderize meat.

**OBJECTIVES:** The effect of different types of vinegar on the formation of PAHs in charcoal grilled pork loin was evaluated and compared with the formation of these compounds in no-seasoning meat.

**METHODOLOGY:** Four independent pork loin steaks for each vinegar treatment (white wine (WWV), red wine (RWV) and apple cider (ACV) vinegars) and control (unseasoned) were used. Vinegars were sprayed homogeneously into the meat surface immediately before cooking in disposable charcoal barbecues. Acetonitrile-based extraction followed by high performance liquid chromatography coupled with fluorescence detection (doi:10.1007/s12161-018-1325-8) was conducted for PAHs analysis.

**RESULTS:** In control samples 31.47 ± 4.16 ng/g of PAH4 were found (Ch= 11.92 ± 1.76; BaA= 9.06 ± 1.40; BbF= 7.09 ± 0.95; BaP= 3.40 ± 0.27 ng/g). The vinegars studied inhibited significantly the PAHs formation, being WWV the most effective (6.67 ± 1.24 ng/g; BbF>Ch>BaA>BaP). Considering RWV (10.74 ± 3.16 ng/g); and ACV (10.70 ± 1.81 ng/g) the PAH4 followed the same profile of control (Ch>BaA> BbF>BaP). The inhibitory effect of vinegars was similar on formation of BaA, BbF and BaP, however, the main difference between vinegars was on Ch, where WWV (2.03 ± 0.56 ng/g) exhibited a superior effect compared with the inhibition observed by RWV (4.02 ± 1.37 ng/g) and ACV (4.06 ± 0.67 ng/g).

**CONCLUSIONS:** All vinegars studied inhibited significantly the PAHs formation to values below the maximum established (30 ng/g), being WWV the most effective (79%) compared with RWV and CV (66%).

## CO20: APPLICATION OF AN ACETONITRILE BASED-EXTRACTION IN PROCESSED MUSCLE FOODS FOR THE DETERMINATION OF 4 POLYCYCLIC AROMATIC HYDROCARBONS

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**INTRODUCTION:** The consumption of grilled, smoked and barbecued muscle foods such as meat and fish is still high, despite being long associated with increased risk of cancer, with PAHs as one of the potential carcinogenic agents. The European Food Safety Authority designated the sum of 4 PAHs - PAH4 (benz[a]anthracene, chrysene, benzo[b]fluoranthene and benzo[a]pyrene) – as the most suitable indicator for the occurrence of these compounds in food. Later, the European Commission (EC) established criteria for these compounds analysis and maximum levels in food.

**OBJECTIVES:** To determine the priority PAH4 in different grilled and smoked muscle foods with an acetonitrile based-extraction, verifying its reliability in compliance with EC No. 836/2011 and the meeting of the established European maximum levels (EC No. 835/2011).

**METHODOLOGY:** Samples – pork, chicken, beef, salmon, chorizo – were purchased in local barbecue grill restaurant and supermarkets, and PAHs were analyzed with an acetonitrile based-extraction and partitioning with optimized amounts of magnesium sulfate and sodium chloride, followed by HPLC-FLD detection.

**RESULTS:** Most recoveries fall in the range of 80–110% in the different muscle foods. All the analyzed matrices were compliant with EC legislation (PAH4 < 30 ng/g and <12 ng/g for grilled and smoked respectively), excepting charcoal grilled pork loin which presented a mean value of 31.5 ng/g of PAH4, followed by grilled salmon (21.54 ng/g). Concerning Benzo[a]pyrene (BaP) none of the analyzed samples presented values exceeding the maximum established limits.

**CONCLUSIONS:** In general, the analyzed matrices were compliant with the EC legislation. However, one representative sample of grilled meat exceeded the maximum levels, therefore mitigation strategies should be assessed, to decrease the risk associated with the consumption of this type of food.

## CO21: EVALUATION THROUGH ARTIFICIAL NEURAL NETWORKS OF THE SOCIODEMOGRAPHIC INFLUENCES ON FOOD CHOICES

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**INTRODUCTION:** The EATMOT Project is a multinational study that is being carried out in 16 countries about different eating motivations, given their recognized importance in the definition of people's dietary patterns.

**OBJECTIVES:** This study investigated the influence of sociodemographic factors on some types of eating motivations, specifically: health related factors; economic and availability aspects; emotional determinants; social, cultural and religious influences; marketing and advertising campaigns and finally environmental concerns.

**METHODOLOGY:** This is a longitudinal observational study carried out on a non-probabilistic sample with 11960 participants. For the analysis of the data were used the T-test for independent samples or ANOVA with Post-Hoc Tukey HSD, depending on the case. The modelling through artificial neural networks included 7 input variables (sociodemographic characteristics) and 6 output variables (the eating motivations' groups).

**RESULTS:** Variables like age, marital status, country, living environment, level of education or professional area significantly influenced all the types of eating motivations analysed. However, regarding gender, no significant differences were observed for two of the six types of motivations analysed: economic & availability and marketing & commercial. The results of the ANN modelling showed that the strongest positive factors determining the eating motivations were age for health, country for emotional motivations, gender for economic & availability, country for social & cultural, country for environmental & political, and finally country also for the marketing & commercial motivations.

**CONCLUSIONS:** These results highlight the importance of the sociodemographic characteristics as determinants for eating patterns around the globe, and particularly the geographic location.

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