was measured by an INFLA-score including C-reactive protein, leukocyte and platelet counts, and the ratio of granulocyte to lymphocyte number.
Results: Multivariable risk estimates associated with a 2-point increase MDS were 0.84 (95%CI 0.70–1.00), 0.77 (0.61–0.97) and 0.70 (0.52–0.93) for overall, CVD and coronary artery disease (CAD)/cerebrovascular deaths, respectively. Statins were not associated with death risk (0.79; 0.60–1.05). Subjects combining statins and good adherence to MD had much lower than expected risk of CVD and CAD/cerebrovascular mortality (p for interaction = 0.045 and 0.0015, respectively) as compared to those neither using statins nor having average-high MD. The combination of average-high MD and statins was associated in a likely synergistic way with reduced low-grade inflammation, measured by the INFLA-score, but not with blood cholesterol.
Conclusions: MD was associated with lower risk of all-cause, CVD and CAD/cerebrovascular mortality in CVD patients, net of statins. In the same population, statins reduced CVD death risk only in combination with MD. Low-grade inflammation, rather than lipids, is likely to be on the pathway of the interaction between MD and statins towards mortality risk.

A36
IMPACT OF THE KETOGENIC DIET ON HUMAN GUT

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Background: The classic ketogenic diet (KD) is an normocaloric dietary protocol with a high intake of fats (85–90% of energy), which is used as a therapy for drug-resistant epilepsies and type 1 glucose transporter deficiency syndromes (GLUT1-DS). It is known that specific dietetic patterns can influence the composition of the intestinal microbiota; in particular, it was shown that KD is associated with various pro-inflammatory changes in the microbiota. Aim of the study is to verify the impact of KD on the intestinal microbiota, through the evaluation of: intestinal bacterial composition, markers of bacterial metabolism (short chain fatty acids, SCFA), toxicity of faecal water.
Methods: Faecal samples were collected in 12 patients with GLUT1-DS or drug-resistant epilepsy (KD) and in matched healthy subjects (CTR); additionally, in 7 patients samples were collected also before the dietary treatment. The bacterial composition was evaluated by analysis of Next Generation Sequencing and Real-Time PCR. SCFAs were measured by gas-chromatography. Toxicity of faecal water was assessed by Trypan Blue (cytotoxicity) and Comet Assay (genotoxicity).
Results: The microbiota composition of KD patients was significantly different than CTR, especially for a different Firmicutes /Bacteroidetes ratio. SCFA decreased significantly during a KD, as well as the level of genotoxicity of faecal water.
Conclusions: This study confirmed the impact of KD on the intestinal microbiota, highlighting the need for further research to avoid long-term adverse effects and optimize therapy.

A37
DIETARY INTERVENTION WITH VEGETARIAN AND MEDITERRANEAN DIETS FOR CARDIOVASCULAR PREVENTION: EFFECTS ON HORMONES INVOLVED IN THE ENERGY BALANCE

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Background: First line treatment for obesity consists of improvement of dietary habits. Vegetarian (VD) and Mediterranean (MD) diets are reported as two of the healthiest diets. Our aim was to compare the effects of VD and MD on hormones involved in the energy balance, using data from the CARDIVEG study, a randomized dietary intervention trial.
Methods: One-hundred clinically healthy subjects (76 F; 24 M; mean age: 51.2 ± 12.4) were randomly assigned to VD or MD, lasting 3 months each, and then crossed over. Anthropometric measurements, body composition and blood sampling were obtained from each participant at the beginning and at the end of each intervention period.
Results: Both MD and VD determined a significant ($p < 0.05$) reduction of weight, fat mass and body mass index (BMI), without significant differences between the diets. With regard to hormones, VD determined a significant decrease of ghrelin [-3.6 pg/mL (−8.7%)], glucagon-like peptide 1 (GLP-1) [−5.02 pg/ml (−9.4%)], and visfatin [−0.30 ng/mL (−13.5%)] levels. MD, on the other hand, did not determine significant changes. A significant correlation was found between delta changes of leptin, and resistin and body weight modifications during the MD, whereas a significant correlation was found for C-peptide, ghrelin and glucagon levels and fat mass' modification during the VD.
Conclusions: VD was more effective than MD in reducing circulating levels of hormones linked to the energy balance such as ghrelin, GLP-1 and visfatin.

A38
ADHERENCE TO MEDITERRANEAN DIET AND QUALITY OF LIFE IN WOMEN TREATED FOR BREAST CANCER (DEDiCa Study)

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Introduction: Several lines of evidence confirm the role of the Mediterranean Diet (MedD) on primary and secondary prevention of chronic disease, such as diabetes, cardiovascular disease and cancer. Health-Related Quality of Life (HRQOL) includes physical, mental, emotional and social factors. A few studies evaluated the impact of the MedD on HRQOL. Therefore, we investigated the possible effect of adherence to the MedD on HRQOL in the DEDiCa Study (NCT02786875) participants, a study that evaluates the combined effect of diet, physical activity and vitamin D on the risk of recurrence in women diagnosed with breast cancer.
Method: Adherence to MedD was evaluated in a subgroup of 210 participants of DEDiCa Study using the 14-item PREDIMED questionnaire. Health status related to quality of life perceived by the

participants at baseline was assessed through three validated European questionnaires: EuroQol EQ-5D-3L, EORTC QLQ-C30 and EORTC QLQ-BR23. Statistical analyses were performed using a bivariate analysis (Pearson correlation) and univariate ANOVA.
Result: Significant correlations were observed between adherence to MedD and HRQOL measures: higher physical function (PF2, $r = 0{,}183$, $p = 0{,}007$), lower pain symptomatic scale (PA, $r = -0{,}16$; $p = 0{,}02$) and higher EQ5D3L score ($r = 0{,}149$, $p = 0{,}03$), which together indicate an improvementin the general state of health. Patients with high adherence to MedD (score >7) showed a significant improvement in PF2 ($p < 0{,}05$) and a reduction in symptomatic PA scale ($p < 0{,}05$).
Conclusion: A healthy diet and high adherence to the MedD in breast cancer survivors was related to better quality of life.

A39

DIFFERENT EFFECT OF A PERIOD OF CALORIC RESTRICTION FOLLOWING TREATMENT WITH A NORMAL LIPID OR HYPERLIPIDIC DIET IN THE EXPERIMENTAL ANIMAL MODEL: FOCUS ON MITOCHONDRIAL DYNAMICS PROTEINS IN THE LIVER

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Introduction: An excess of the daily caloric intake facilitates accumulations of fat that leads to the development of obesity. Caloric restriction is the strategy used to restore body composition to optimal levels. Likewise, a period of hypo-nutrition following a balanced diet promotes nutritional deficiencies. Both conditions above described induce changes in the cellular metabolism to which the mitochondria actively participate. These organelles are very dynamic and undergo against continuous fusion and fission processes in correlation with their functionality.
Objectives: In this study were monitored the effects of a caloric restriction period, following treatments with normal or hyperlipidic diet, on mitochondrial dynamics in rat liver. Therefore, 4 experimental groups were constituted: N (control diet); HFD high fat diet); Nr (N + restriction); HFDr (HFD + restriction). Attention was focused on the main mitochondrial dynamics' proteins, monitored by western blot: MFN2 (Mitofusin 2) and OPA1 (Optic atrophy type 1) as fusion markers; DRP1 (Dynamin-related protein 1) as a fission marker.
Results: The data show reduction of MFN2 and increase of DRP1 in the Nr group compared to N with variation of the high and low isoforms of OPA1, suggesting increase of the mitochondrial fission. In contrast, both MFN2 and DRP1 increase in the HFDr group compared to HFD. In this case, the data seem to suggest a beneficial effect of the restriction with a probable induction of the mitochondrial biogenesis. This mechanism, in fact, could make more the utilization of lipids mobilized by deposits in consequence to caloric restriction.
Conclusions: In conclusion, we can assume that a reduced caloric intake generates reorganization of the mitochondrial liver network by acting differently on the basis of the nutritional conditions prior to the hypocaloric regimen.

A40

FOOD WASTE AND CHILDREN'S PREFERENCES TOWARDS VEGETABLES IN PRIMARY SCHOOLS: TWO ITALIAN CASE STUDIES

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Introduction: The food waste analysis in the school canteen context is particularly relevant due to its educational and environmental relevance, the huge number of users and the consequent food amount handled every day. The present study, carried out within the EU H2020-funded Strength2food project, seeks to compare two case studies (Parma vs Lucca), characterised by different primary school food procurement models (local-organic vs organic) in relation to (i) the uneaten edible food served in primary school canteens and (ii) children's refusal towards the vegetable side dish.
Methods: The investigations were performed in 4 primary schools, 2 per case study, during 5 consecutive days in winter and spring, for a total of 40 days of data collection. The aggregate selective plate waste method was applied. Excluding special diets, the uneaten served food was scraped from children's plates according to 7 food categories (bread, starchy-based dish, protein based-dish, fruit, vegetables, dessert, other). Serving size of edible food was calculated as mean of the weight of 3 servings for each food. Finally, a questionnaire reporting a 5-point Likert scale was used to assess vegetable preferences.
Results: With the exception of bread ($p = 0.149$), with values ranged from 14.5% to 35.7%, the local-organic procurement model (Parma) has shown a significantly lower percentage of waste for most of the food categories compared to the organic model (Lucca), whose proportions ranged from 11.8% to 55.5%. The starchy-based dish, the protein-based dish and fruit gave higher wastes per child in Lucca, where a higher fraction of children (38%) compared to Parma (18%) did not appreciate at all the vegetables.
Conclusions: The obtained results suggest that a wider inclusion of products originating in the territory in the school food provision can contribute to a greater acceptability of the school menus and consequently to a lower food waste.

A41

EFFECTS OF A 3-MONTHS' DIETARY INTERVENTION WITH LACTO-OVO-VEGETARIAN DIET ON VITAMIN B12 LEVELS: RESULTS OF THE CARDIVEG STUDY

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Introduction: Previous studies have suggested that following a lacto-ovo-vegetarian diet (VD) may increase the risk of vitamin B12 deficiency. Our aim was to investigate whether VD followed for 3 months by omnivores could lead to decrease of circulating vitamin B12 levels.
Methods: Fifty-four omnivores (43 F; 11 M) who performed a 3-month VD as the first intervention were analysed on the frame of the CARDIVEG study, a randomized, open, crossover dietary trial with 2 intervention periods.
Results: After 3 months, VD resulted in a significant reduction ($p < 0.001$) of 48.8% of the vitamin B12 intake, and a consequent significant reduction ($p = 0.005$) of 6.2% of the circulating levels of vitamin B12 (−24.5 pg/mL). Changes in vitamin B12 intake were significantly correlated with changes in circulating levels of vitamin B12 ($R = 0.61$, $p < 0.001$). Subgroup analyses showed that changes in circulating levels of vitamin B12 were more evident in older participants than younger ones, in overweight subjects compared to obese ones, in non-smokers compared to smokers and in subjects with hypercholesterolemia compared to those with normal cholesterol levels. Analyzing the risk of undergoing a reduction in circulating levels of vitamin B12, we carried out a logistic regression analysis that showed that a reduction of vitamin B12 intake equal to the first quartile of population distribution determined an increased risk of obtaining a reduction in circulating levels of vitamin B12 (OR 10.1; 95% CI 1.3—76.1).