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Introduction: Alcohol intake has a monotonic detrimental role for several diseases (in particular some cancers), but is associated with reduced risk of ischemic heart disease when consumed in moderation. The association of moderate alcohol intake with total mortality remains controversial.

Objectives: Using data from the MOnica Risk, Genetics, Archiving and Monograph (MORGAM) Project, the association of alcohol intake with risk of total mortality was assessed using Cox regression and spline cubic analysis, stratified by country.

Results: Data for alcohol consumption (67.4% drinkers, median intake among drinkers 11 g/day), total mortality during follow-up (median 13.8 y) and covariates (age, sex, smoking, hypertension, diabetes, BMI and level of education) were available for 19 cohorts (1 from Australia and 18 from Europe (3 from Italy)), 193,557 individuals (mean age 51 ± 12 y, 60% men) and 34,799 deaths. Former drinkers have been excluded from the reference group, constituted by teetotallers. In comparison with the reference group, intake of alcohol up to 5 g/day was associated with a 10% (95%CI: 6.0% to 14.0%) reduction in the risk of death, intake between 5 and 10 g/day with a 4.4% (0% to 8.0%) reduction, while intake over 20 g/day was associated with a 19.7% (14.4% to 25.4%) increase in risk of death. Findings were similar in men and women and according to level of education, whereas they were heterogeneous by Countries, with greater protection of alcohol in moderation observed in Italy and France and lower in Australia, Germany and UK. Non-linear (J-shaped) association of alcohol intake with total mortality was confirmed by cubic spline curves.

Conclusions: Using a large multi-country cohort, we confirmed that intake of more than 2 alcoholic units per day has a detrimental health effect, while intake of alcohol in moderation (up to 1 unit per day) reduces the risk of death for any cause.

A33
BIOMARKERS OF INTAKE OF A MEDITERRANEAN DIET: WHICH CONTRIBUTION FROM THE GUT MICROBIOTA?

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Introduction: Observational studies indicate that the adherence to a Mediterranean diet is inversely associated with the incidence of some noncommunicable chronic diseases. The effect may be mediated by the gut microbiota that can influence the etiopathogenetic mechanisms through some metabolites active at colon and/or systemic level. On the frame of the DINAMIC project the objective of this study is to shade light on the biomarkers of Mediterranean diet in association with the composition of gut microbiota.

Methods: Eighty-two overweight/obese volunteers at risk of cardiovascular diseases participated into the randomized controlled trial. Volunteers followed for 8 weeks a personalized diet, isocaloric compared to the habitual diet, and based on a typical mediterranean dietary pattern (MD, n = 43) or a control diet (CD, n = 39). Adherence to the diets was assessed by a food diary filled every 2 weeks. At baseline and every 4 weeks blood, samples from fasting subjects and urine and fecal samples for the metabolomic analysis by LC/MS/MS and for the analysis of microbiota composition were collected.

Results: Diaries demonstrated that volunteers in MD vs CD increased the intake of wholegrain products, legumes, fish, nuts, fruits and vegetables while reducing meat, dairy and refined cereal products. Urine sample analysis showed in MD vs CD volunteers a reduction of carnitine, a trend towards increased betaine, and an increase of di-hydrocaffeic acid, chlorogenic acid and of urolithins-glucuronides. Such differences were accompanied by specific variations of gut mirobiota composition or by a specific composition at baseline in some subgroups of subjects.

Conclusion: Individual adherence to MD modifies circulating metabolites that can mirror variations of gut microbiota composition and other parameters associated with the health.

A34
RELATIONSHIP BETWEEN ADHERENCE TO A MEDITERRANEAN DIETARY PATTERN AND CARDIOMETABOLIC RISK FACTORS PROFILE IN PEOPLE WITH TYPE 2 DIABETES

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Introduction: To analyze the relationship between adherence to the Mediterranean diet, glucose control, body weight and major cardiovascular (CV) risk factors in people with type 2 diabetes mellitus (T2DM) and to evaluate the impact thereon of specific foods, typical of this dietary pattern.

Methods: We studied 2568 patients with T2DM. Dietary habits were assessed with the EPIC (European Prospective Investigation into Cancer and Nutrition) questionnaire. Adherence to the Mediterranean diet (MED) was evaluated with the relative Mediterranean diet score (rMED) and low or high adherences were defined by a score of 0−6 or 11−18, respectively. Anthropometric and biochemical parameters were measured with standard protocols.

Results: High adherence to MED is associated with overall better quality of the diet (lower energy, added sugars, saturated fat and cholesterol intake: p <.05 for all) and with a greater adherence to the nutritional recommendations for diabetes. However, even in the high adherence group, only 17% of the participants complied with the recommendations for fibers and only 30% with those for saturated fat intake. The group with the greatest adherence to MED had a better control of glucose, plasma lipids and blood pressure independent of the use of drugs, and had lower BMI. Regarding the single components of MED, the consumption of fish, fruit and nuts is associated with a higher proportion of patients achieving treatment targets for plasma lipids; a high consumption of fruits, nuts, legumes, cereals and fish increases the frequency of patients with blood pressure values on target; the consumption of fish is also associated with a better glucose control.

Conclusions: In people with T2DM, adherence to MED is associated with a more favorable CV risk factors profile and a better glucose control independent of the use of drugs, and with a lower BMI. The beneficial effects of the diet as a whole are amplified by individual foods.

A35
INTERACTION BETWEEN MEDITERRANEAN DIET AND STATINS ON MORTALITY RISK IN PATIENTS WITH CARDIOVASCULAR DISEASE: PROSPECTIVE FINDINGS FROM THE MOLI-SANI STUDY

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Introduction: Statins are prescribed for patients with cardiovascular disease (CVD), along with the recommendation of adopting healthy diets. This stufy aimed to evaluate the independent and the combined effect of statins and Mediterranean diet (MD) towards mortality risk in subjects with previous CVD by using real-life data from a population-based prospective cohort. We performed a longitudinal analysis on 1,180 subjects (mean age 67.7 ± 10) with prior CVD at enrollment in the Moli-sani study and followed up for 7.9 years (median). Adherence to MD was appraised by a Mediterranean diet score (MDS). Hazard ratios (HR) with 95% confidence intervals (95%CI) calculated by multivariable Cox regression and competing risk models. Low-grade inflammation

was measured by an INFLA-score including C-reactive protein, leuko-cyte 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)/cere-brovascular 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-in-flammatory 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 di-etary 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 Try-pan 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 re-ported as two of the healthiest diets. Our aim was to compare the ef-fects 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 deter-mined 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 sig-nificant 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 Medi-terranean 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 question-naire. Health status related to quality of life perceived by the