

premenopausal women (Hazard ratio: 0.90; 95% confidence interval: 0.49, 1.68).

Conclusions: Even though the number of cases was small, we observed an association between SSB consumption and higher postmenopausal breast cancer risk. Nonetheless further longitudinal larger studies are needed to support this association.

P146-T | Plasma trimethylamine-N-oxide and related metabolites are associated to type 2 diabetes risk in the PREDIMED trial

C. Papandreou^{*}; M. Bulló^{*}; Y. Zheng[†]; M. Ruiz-Canela[‡]; E. Yu[†]; M. Guasch-Ferré[†]; E. Toledo[‡]; C. Clish[§]; D. Corella[¶]; R. Estruch^{**}; E. Ros^{††}; M. Fitó^{‡‡}; F. Arós^{§§}; M. Fiol^{¶¶}; J. Lapetra^{***}; L. Serra-Majem^{†††}; E. Gómez-Gracia^{‡‡‡}; L. Liang^{§§§}; G. Fragkiadakis^{¶¶¶}; C. Razquin[‡]; F. Hu[†]; J. Salas-Salvadó^{*}

Human Nutrition Unit, Faculty of Medicine and Health Sciences, Institut d'Investigació Sanitària Pere Virgili, Rovira i Virgili University, Reus, Spain, Reus, Spain; †Department of Nutrition, Harvard T.H. Chan School of Public Health, Boston, MA, USA, Boston, USA; ‡University of Navarra, Department of Preventive Medicine and Public Health, IdisNA, Pamplona, Spain; §Broad Institute of MIT and Harvard University, Cambridge, USA; ¶Department of Preventive Medicine, University of Valencia, Valencia, Spain; **Department of Internal Medicine, Department of Endocrinology and Nutrition Institut d'Investigacions Biomèdiques August Pi Sunyer (IDI-BAPS), Hospital Clinic, University of Barcelona, Barcelona, Spain; ††Lipid Clinic, Department of Endocrinology and Nutrition Institut d'Investigacions Biomèdiques August Pi Sunyer (IDI-BAPS), Hospital Clinic, University of Barcelona, Barcelona, Spain; †††Cardiovascular and Nutrition Research Group, Institut de Recerca Hospital del Mar, Barcelona, Spain; §§Department of Cardiology, University Hospital of Alava, Vitoria, Spain; ¶¶Institute of Health Sciences IUNICS, University of Balearic Islands and Hospital Son Espases, Palma de Mallorca, Spain; *Department of Family Medicine, Primary Care Division of Sevilla, San Pablo Health Center, Sevilla, Spain; ††††Department of Clinical Sciences, University of Las Palmas de Gran Canaria, Las Palmas, Spain; ‡‡‡Department of Preventive Medicine, University of Málaga, Málaga, Spain; §§§Departments of Epidemiology and Statistics, Harvard T.H. Chan School of Public Health, Boston, USA; ¶¶¶Department of Nutrition and Dietetics, Technological Education Institute of Crete, Crete, Greece*

Background: The role of trimethylamine-N-oxide (TMAO) in type 2 diabetes (T2D) is currently partially understood and controversial. We aimed to investigate associations between TMAO and related metabolites with type 2 diabetes (T2D) risk in subjects at high risk of cardiovascular disease.

Material and methods: This is a case-cohort design study within the PREDIMED study, with 251 incident T2D cases and a random sample of 694 participants (641 non-cases and 53 overlapping cases) without T2D at baseline (median follow-up: 3.8 years). We used liquid chromatography-tandem mass spectrometry to measure plasma TMAO, L-carnitine, betaine, lyso-phosphatidylcholine (LPC) and lyso-

phosphatidylethanolamine (LPE) species, phosphocholine, alpha-glycerophosphocholine, choline, at baseline and 1-year. We examined associations using weighted Cox proportional hazard models; accounting for the weighted case-cohort design by the Barlow method.

Results: After adjusting for recognized T2D risk factors and multiple testing, individuals in the highest quartile of baseline TMAO and alpha-glycerophosphocholine had lower risk of T2D; hazard ratio (HR) 0.52 (95% CI 0.29, 0.89), and 0.46 (95% CI 0.24, 0.89), respectively. The HR (95% CI) comparing the extreme quartiles of betaine was 0.41 (0.23, 0.74). Similar trends were observed for C16:0 LPC, C18:1 LPC, C18:0 LPC, C20:4 LPC, C22:6 LPC, C18:1 LPC plasmalogen and C16:0 LPE. After correcting for multiple comparisons, participants in the highest quartile of 1-year changes in C18:1 LPC plasmalogen levels had lower T2D risk as compared to the reference quartile.

Conclusions: Whether the associations between plasma TMAO and certain metabolites levels with T2D risk reflect its pathophysiology or represent an epiphenomenon need to be elucidated.

P147-T | Assessing dietary sustainability at the community level

C. Ruano-Rodríguez^{*}; P. Momo-Cabrera^{*}; A. Ortiz-Andrelluchi^{*}; E. González-Padilla[‡]; A. Alvarez-Falcón^{*†}; L. Serra-Majem^{*‡}

**Research Institute of Biomedical and Health Sciences, University of Las Palmas de Gran Canaria (ULPGC), Las Palmas De Gran Canaria, Spain; †University Hospital of Gran Canaria "Doctor Negrín", Las Palmas de Gran Canaria, Spain; ‡UNESCO Chair of Local Health Systems and Food Systems, Spain*

Background: The Mediterranean Diet is considered to be the epitome of what a Sustainable Diet means. "The Island on Your Plate" is a communication project that intends to draw attention towards the gastronomic diversity of the island of Gran Canaria (Canary Islands, Spain) and to encourage a more sustainable diet by adapting the local habits to a Mediterranean-like Diet. A survey has been developed with the aim to investigate consumer's dietary habits and food shopping preferences in Gran Canaria.

Material and methods: The survey will be piloted in twenty subjects at two SPAR stores located in both rural and urban areas of the island. Validity and Reliability of the piloted survey will be tested through SPSS analyses. A final model will be developed and distributed around the island through SPAR's weekly catalogue expecting to recollect at least data from 3000 participants.

Results: Results of the survey are expected to provide representative data of diverse socioeconomic levels and food

shopping behaviours in Gran Canaria. Moreover, we had elaborated the Decalogue of a Healthy Diet in the Community: 10 keys for a healthy life and world. This Decalogue was edited in a video format with the aim to be a useful tool to disseminate healthy eating habits, and its relation with science and our food heritage. Finally, an online platform was created to divulge information regarding other initiatives—both public and private—that promote the ideology behind food sustainability.

Conclusions: This project has manifested the possibility to make a significant change on Gran Canaria's dietary pattern to promote and encourage a sustainable diet of proximity that is balanced, varied, and healthy and to bring it closer to the Mediterranean Diet pattern. Results gathered from the survey will enable to evaluate sustainability in food shopping and dietary practices in Gran Canaria.

P148-T | Effects of a walnut-enriched diet for 2 years on oxylipins derived from arachidonic and alpha-linolenic acids

M. Cofan^{*,†,‡}; A. Sala-Vila^{*,†,‡}; A. Checa[§]; C.E. Wheelock[§];
T.-M.F. Simoes^{†,‡}; M. Serra-Mir^{†,‡}; S. Rajaram[¶]; J. Sabaté[¶];
E. Ros^{*,†,‡}

^{*}Ciber Fisiopatología de la Obesidad y Nutrición (CIBEROBN), Instituto de Salud Carlos III (ISCIII), Madrid, Spain; [†]Lipid Clinic, Department of Endocrinology and Nutrition, Hospital Clínic de Barcelona, Barcelona, Spain; [‡]Institut d'Investigacions Biomèdiques August Pi Sunyer (IDIBAPS), Barcelona, Spain; [§]Department of Medical Biochemistry and Biophysics, Karolinska Institute, Stockholm, Sweden; [¶]Department of Nutrition, School of Public Health, Loma Linda University, Loma Linda, US

Background: Oxylipins are biologically active oxidation products of dietary polyunsaturated fatty acids (PUFAs) that play a role in cardiovascular disease and aging. Research on dietary strategies to modulate serum oxylipins is incipient. Results from clinical trials indicate that fish oil-derived n-3PUFAs promote the formation of anti-inflammatory and vasodilatory oxylipins, but there are little clinical data on oxylipins derived from alpha-linolenic acid (ALA), the vegetable n-3PUFA. Walnuts are a sustainable source of ALA. We investigated whether a diet enriched with walnuts at 15% energy (30–60 g/d) for 2 y would shift circulating oxylipins to a more vasculoprotective pattern in healthy elders (aged 63 to 79 y) compared to a control diet.

Materials and methods: The Walnuts and Healthy Aging study is a two-center (Barcelona and Loma Linda, California) parallel trial designed to test the effects of walnuts on age-related diseases. In a sub-study of the Barcelona site participants, randomly assigned to the walnut diet ($n = 64$)

or the control diet ($n = 51$), we used HPLC-MS to measure serum concentration of 53 oxylipins at baseline and 2 year. We also determined the red blood cell (RBC) proportion of ALA by gas-chromatography as a measure of compliance.

Results: After 2 years, RBC ALA increased significantly ($P < 0.001$) in the walnut group compared with the control group. Consumption of walnuts decreased arachidonic acid-derived products of soluble epoxide hydrolase, namely 5-6-, 8-9-, 11-12- and 14-15-dihydroxy-eicosatrienoic acid ($P = 0.029, 0.013, 0.019$ and 0.076 vs control, respectively). Compared to control diet, the walnut diet also resulted in significant increases of ALA-derived oxylipins 9-, 13-hydroxy-octadecatrienoic acid, 9-oxo-octadecatrienoic acid, and 12,13-epoxy-octadecatrienoic acid ($P < 0.001$, all).

Conclusions: Long-term walnut consumption was associated with decreased levels of arachidonic acid-derived oxylipins with vasoconstrictor and pro-inflammatory properties and increased ALA-derived oxylipins with putative vasculoprotective effects. These results add novel mechanistic evidence to the well-known cardioprotective effects of walnuts.

P149-T | Comparative study of the oxidative status of subcutaneous and omental fat and their contribution to adipose tissue dysfunction and insulin resistance

M.D.C.N. Ruiz^{*}; R.G. Ruiz^{*,†}; A. Díaz-Ruiz[‡]; J.R. Peinado[§];
A. Membrives[¶]; J.L. Miranda^{†,***}; Md.M. Malagón^{*,†}

^{*}Department of Cell Biology, Physiology, and Immunology/University of Córdoba (UCO)/Maimónides Biomedical Research Institute of Córdoba (IMIBIC)/Reina Sofia University Hospital (HURS), Córdoba, Spain; [†]CIBER Fisiopatología de la Obesidad y Nutrición (CIBEROBN), Instituto de Salud Carlos III (ISCIII), Córdoba, Spain; [‡]Translational Gerontology Branch, National Institute on Aging (NIH), Baltimore, USA; [§]Department of Medical Sciences/University of Castilla-La Mancha (UCLM), Ciudad Real, Spain; [¶]Department of Surgery/Maimónides Biomedical Research Institute Of Córdoba (IMIBIC)/Reina Sofia University Hospital (HURS), Córdoba, Spain; ^{**}Lipids and Atherosclerosis Unit/University of Córdoba (UCO)/Maimónides Biomedical Research Institute of Córdoba (IMIBIC)/Reina Sofia University Hospital (HURS), Córdoba, Spain

Background: Obesity is a multifactorial disease characterized by adipose tissue (AT) dysfunction, which is commonly associated to insulin resistance (IR). At the molecular level, adipose tissue dysregulation is related, among other processes, to obesity-triggered oxidative stress. In this scenario, carbonylation is one of the most common oxidative modifications of proteins, yet poorly characterized, which serves as a marker of oxidative stress. Herein, we aimed at profiling carbonylated proteins in