

non-vegans, vegans had significantly lower total cholesterol (3.6 vs. 4.7 mmol/L, $p < 0.0001$), low density lipoprotein cholesterol (LDL-c) (1.7 vs. 2.6 mmol/L, $p < 0.0001$) and triglycerides (0.67 vs. 0.85 mmol/L, $p = 0.04$). Compared to omnivores, vegans had lower percentage of plasma saturated (28.1% vs. 58.3%), and trans (1.0% vs. 7.1%) and higher levels of unsaturated (51.7% vs. 35.8%) fatty acids. The most common fatty acids in omnivores were stearic acid and palmitic acid whereas in vegans these were linoleic and oleic acid. Palmitelaidic acid (0.94 (0.78 to 1.27)% total fat) was the most predominant trans fatty acid found in vegans, however, in omnivores this was trans-vaccenic acid (5.70%). These trans fatty acids were accounted for the largest relative difference in fatty acids in vegans and controls.

Conclusions: Vegans have a more favourable cardiometabolic and fatty acid profile compared to omnivores. This may explain the reduced risk of cardiovascular events in this population

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P5323 | BEDSIDE

Prospective association between dietary calcium intake and metabolic syndrome among Korean adults: the Korean Multi-Rural Communities Cohort Study (MR Cohort)

Y.-H. Lim¹, H.-W. Woo², M.-K. Kim², J. Shin¹, J.-K. Park¹, J.-H. Shin³, Y.-H. Lee², D.-H. Shin⁴, M.-H. Shin⁵, B.-Y. Choi². ¹Hanyang University, Seoul, Korea Republic of; ²Hanyang University, Preventive Medicine, Seoul, Korea Republic of; ³Hanyang University Kuri Hospital, Guri, Korea Republic of; ⁴Keimyung University Hospital Dongsan Medical Center, Occupational and Environmental medicine, Daegu, Korea Republic of; ⁵Chonnam National University Medical School, Preventive Medicine, Gwangju, Korea Republic of

Introduction: Metabolic syndrome (MetS) characterized by the clustering of glucose intolerance, central obesity, abnormal lipid profiles, and hypertension has been increasing rapidly worldwide and is a major public health problem. Numerous studies have shown that calcium consumption can contribute to a decreased risk of developing MetS by affecting one or several of its components. However, epidemiologic evidence relating calcium intake and metabolic syndrome is limited. This study aimed to evaluate the association between habitual calcium intake and MetS incidence, as well as its components, in a population-based cohort of Korean adults aged ≥ 40 years old.

Method: Data from the Korean Multi-Rural Communities Cohort Study (MR Cohort) which is a part of the Korean Genome Epidemiology Study (KoGES), were used. There were total 5,509 subjects (men 2,204, women 3,305) who did not have MetS at enrollment. Calcium intake was calculated using a food frequency questionnaire (FFQ) composed of 106 items. MetS was defined using the updated National Cholesterol Education Program Adult Treatment Panel III criteria after modified according to the International Diabetes Federation and Korean Diabetes Association criteria. The association between calcium intake and MetS risk was investigated by a modified Poisson regression model, using a robust error estimator.

Results: For 18,880 person-years of follow-up, 876 participants developed de novo MetS (312 subjects in male, 564 subjects in female). When total calcium intake was divided by quintile, it was not statistically significant for males, but the higher the total calcium intake, the less the diagnosis of new MetS (Q1:Q3:Q5 = 1:0.56 (0.40–0.78):0.85 (0.61–1.17, adjusted incidence rate ratio (IRR) (95% CI), p for trend 0.922). In females, a higher amount of intake of animal calcium (Q1:Q3:Q5 = 1:0.58 (0.45–0.75):0.71 (0.55–0.92), IRR (95% CI), p for trend 0.0091), vegetable calcium (Q1:Q3:Q5 = 1:0.73 (0.57–0.93):0.48 (0.73–0.81), IRR (95% CI), p for trend 0.0304) and total calcium (Q1:Q3:Q5 = 1:0.69 (0.54–0.88):0.74 (0.57–0.96), IRR (95% CI), p for trend 0.0434) was associated with lower incidence of new MetS. In addition, there was a mainly inverse relationship between calcium intake and abdominal obesity (Q1:Q3:Q5 = 1:0.57 (0.40–0.81):0.50 (0.35–0.72), IRR (95% CI), p for trend 0.0006) of components of MetS in male and blood glucose level (Q1:Q3:Q5 = 1:0.68 (0.55–0.85):0.75 (0.607–0.93), IRR (95% CI), p for trend 0.0336) of components of MetS in female.

Conclusion: Our findings suggest that increased calcium intake was associated with decreased MetS incidence, especially decreased waist circumference in males and decreased blood glucose level in females in a population-based cohort of Korean adults aged ≥ 40 years old.

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P5324 | BENCH

Saffron (*Crocus sativus*) intake provides nutritional preconditioning against myocardial ischemia-reperfusion injury in wild type and Apo-E(–/–) mice: involvement of Nrf2 activation

P. Efentakis¹, A. Rizakou¹, E. Christodoulou¹, A. Chatzianastasiou², M. Lopez³, R. Leon⁴, E. Balafas⁵, N. Kadoglou⁶, I. Tseti⁷, N. Kostomitsopoulos⁵, E.K. Iliodromitis⁸, G. Valsami¹, I. Andreadou¹. ¹University of Athens, Faculty of Pharmacy, Athens, Greece; ²Evangelismos General Hospital of Athens, Athens, Greece; ³Autonomous University of Madrid, Madrid, Spain; ⁴University Hospital De La Princesa, Madrid, Spain; ⁵Biomedical Research Foundation, Academy of Athens, Athens, Greece; ⁶University of Oxford, Oxford, United

Kingdom; ⁷Uni-Pharma, Athens, Greece; ⁸University of Athens Medical School, Second University Cardiology Department, Athens, Greece

Background: Saffron is an antioxidant herbal derivative with potential anti-atherosclerotic and cardioprotective properties. However, its efficacy as a nutritional preconditioning agent is not yet fully elucidated.

Purpose: We tested potential cardioprotective properties of a standardized saffron aqueous extract (SFE) against ischemia (isc)/reperfusion (rep) injury in Wild-Type and Apo-E(–/–) mice and the underlying molecular mechanisms.

Methods: Wild-Type and Apo-E(–/–) mice were subjected to 30 min isc and 2 h rep, with the following per os interventions for 4 weeks: 1) Control Group, receiving Water for injection (WFI); 2) Crocus Group, receiving SFE at a dose of 60 mg/kg; 3) Apo-E(–/–) Control Group, receiving WFI and 4) Apo-E(–/–) Crocus Group, receiving SFE at a dose of 60 mg/kg. Ischemic area/area at risk (I/R%) ratio was measured. Blood samples and ischemic myocardial tissue were collected at the 10th min of reperfusion for assessment of malondialdehyde (MDA) and nitrotyrosine, p-eNOS, Akt, p-Akt, p-p42/p-p44, p42/p44, p-GSK3 β , GSK3 β , IL-6 and Nrf-2 expression. Moreover, we assessed SFE effect on Nrf-2 expression in vitro on HEK 293T transfected cells, via luciferase assay.

Results: SFE reduced %I/R both in Wild-type (15.50 \pm 3.27 vs Control 42.00 \pm 2.73, $^*p < 0.05$) and Apo-E(–/–) mice (16.13 \pm 1.47 vs Control 46.69 \pm 1.56, $^*p < 0.05$). SFE induced eNOS, Akt, GSK-3 β and p-44/p-42 phosphorylation, reduced IL-6, MDA and nitrotyrosine levels and increased Nrf-2 expression both in Wild-Type and Apo-E(–/–) mice. Moreover, SFE induced Nrf-2 expression on HEK 293T transfected cells in vitro, in a dose-dependent manner.

Conclusions: SFE exerted infarct size-limiting effect both in Wild-Type and Apo-E(–/–) mice via activation of Akt/eNOS/ERK1/2/GSK3- β /Nrf-2 pathway, bestowing anti-apoptotic and antioxidant protection against ischemia-reperfusion injury.

P5325 | BEDSIDE

Eating behaviours of hypertensive, diabetics, hypercholesterolemic, and obese in the Italian adult population: the Osservatorio Epidemiologico Cardiovascolare/Health Examination Survey-OEC/HES results

C. Donfrancesco¹, L. Palmieri¹, C. Lo Noce¹, A. Di Leonardo¹, S. Vannucchi¹, C. Meduri¹, D. Vanuzzo², S. Giampaoli¹ on behalf of Osservatorio Epidemiologico Cardiovascolare/Health Examination Survey-OEC/HES. ¹Superior Institute of Health, Department of Cardiovascular, Dysmetabolic and Aging-associated Diseases, Rome, Italy; ²ANMCO Foundation For Your Heart, Florence, Italy

Background: Healthy diet is fundamental for maintaining good health during life. The assessment of dietary habits at population level allows to estimate adherence to recommended food intakes, providing essential elements to plan community actions such as nutrition education campaigns and specific prevention programmes. Eating behaviours of hypertensive-HyBP, diabetics-Db, hypercholesterolemic-HyCh, obese-Ob persons in the Italian adult population are described.

Method: Data are from the Osservatorio Epidemiologico Cardiovascolare/Health Examination Survey enrolling samples of general adult population resident in all Italian regions during 2008–12 (9,111 men/women aged 35–79 years); lifestyles, drugs, risk factors, high risk conditions were collected using standardized methods/procedure. Dietary information were collected using EPIC questionnaire. According to European Guidelines on CVD prevention, healthy diet was defined as vegetables ≥ 200 g/day (2–3 servings/sv), fruit 200–500g/day (2–3 sv), fish at least twice/week (150g/sv) cheese no more than three times/week (75g/sv), preserved meat no more than twice/week (50g/sv), sweets (cake/desserts) no more than twice/week (100g/sv), sweet drinks less than one/week (330ml); alcoholic beverages consumption limited to two glasses/day for men (20g ethanol) and one glass/day for women (10g ethanol), salt intake < 5 g/day. Prevalence are age-standardized.

Results: HyBP men eat more adequately vegetables and sweets than non-HyBP (33% vs 30%, 16% vs 12%), the opposite for alcohol (38% vs 42%); HyBP women consume more adequately sweets (19% vs 14%). Db men eat more adequately vegetables, sweets, sweet drinks than non-Db (37% vs 30%, 30% vs 12%, 53% vs 45%); the opposite for fruit (50% vs 53%); Db women eat more adequately fruit, fish, preserved meat, sweets, alcohol, salt (63% vs 58%, 42% vs 33%, 42% vs 39%, 33% vs 14%, 74% vs 67%, 59% vs 56%). HyCh men eat more adequately cheese, sweets, sweet drinks, salt than non-HyCh (45% vs 40%, 17% vs 13%, 48% vs 45%, 40% vs 37%), the opposite for alcohol (35% vs 42%); HyCh women eat more adequately cheese, sweets, salt (53% vs 48%, 18% vs 15%, 59% vs 55%), the opposite for vegetables and fruit (29% vs 32%, 55% vs 59%). Ob men eat more adequately vegetables, sweets, alcohol than non-Ob (36% vs 29%, 17% vs 14%, 42% vs 39%); the opposite for preserved meat, sweet drinks, salt (17% vs 23%, 44% vs 47%, 35% vs 39%); Ob women eat more adequately vegetables, fish, sweets, alcohol (34% vs 31%, 37% vs 32%, 20% vs 14%, 77 vs 65%), the opposite for preserved meat, sweet drinks, salt (33% vs 41%, 51% vs 55%, 54% vs 57%).

Conclusions: Majority of HyBP, Db, HyCh, Ob don't follow recommendations on healthy diet, women less than men. For some items, in particular for sweets, persons with high risk conditions result more adherent to recommendations than non-HyBP, non-Db, non-HyCh, non-Ob. Community interventions, like nutrition education campaigns and specific prevention programmes are needed.