

Flavonoids

Dietary Flavonol Intake May Lower Stroke Risk in Men and Women

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Significance: Flavonol intake from dietary sources may reduce stroke risk.

This meta-analysis of prospective cohort studies assessed quantitatively the strength of the association between flavonol intake and stroke incidence. Prospective cohort studies with data from individuals free of cardiovascular diseases (CVD) or stroke at baseline were included. Persons were followed for between 6 and 28 y. Data from 6 cohorts involving 111,067 persons with at least 2155 nonfatal and fatal cases were pooled. A random effects model was used. Adjustments were made for major CVD risk factors except for 2 that did not adjust for alcohol and energy intake. A high intake of flavonols compared with a low intake was inversely associated with nonfatal and fatal stroke with a pooled relative risk of 0.80 (95% CI: 0.65, 0.98).

Cardiovascular Disease

Meta-analysis of Prospective Cohort Studies Evaluating the Association of Saturated Fat with Cardiovascular Disease

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Significance: There is no significant evidence for concluding that dietary saturated fat is associated with an increased risk of coronary heart disease or cardiovascular disease.

This meta-analysis summarized the evidence related to the association of dietary saturated fat with risk of coronary heart disease (CHD), stroke, and cardiovascular disease (CVD; CHD inclusive of stroke) in 21 prospective epidemiologic studies. A random-effects model was used to derive composite relative risk estimates for CHD, stroke, and CVD. During 5–23 yrs of follow-up of 347,747 subjects, 11,006 developed CHD or stroke. Intake of saturated fat was not associated with an increased risk of CHD, stroke, or CVD. The pooled relative risk estimates that compared extreme quintiles of saturated fat intake were 1.07 (95%CI: 0.96, 1.19; $P=0.22$) for CHD, 0.81 (95%CI: 0.62, 1.05; $P=0.11$) for stroke, and 1.00 (95%CI: 0.89, 1.11; $P=0.95$) for CVD. Consideration of age, sex, and study quality did not change the results.

Plasma Free Fatty Acid Patterns and Their Relationship with CVD Risk in a Male Middle-aged Population

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Significance: The synergistic effect of multiple fatty acids may be more important in relation to the development of cardiovascular disease risk.

Patterns of fatty acids and estimated desaturase activity (enzymes that catalyze fatty acid desaturation) in plasma were determined and the investigators analysed how these patterns were related to 10-year cardiovascular disease (CVD) risk estimates in a middle-aged male population. Principal components analysis (PCA) was performed for defining fatty acid patterns in 379 men aged 30–49 years. The PCA generated three high fatty acid patterns: high saturated fatty acid (SFA), high omega 3 fatty acid and high monosaturated fatty acid. Results showed that a 1 s.d. increase in the SFA pattern score was significantly and positively associated with an increase in the 10-year CVD risk category (OR 1.71, 95%CI 1.33–2.21, $P < 0.0001$) even after adjustment for lifestyle factors. There were no significant relationships between the other two pattern scores and the 10-year CVD risk. An unhealthy fatty acid pattern representing both dietary intake and *in vivo* fatty acid metabolism was related to the 10-year CVD risk estimates.

Glycated Hemoglobin, Diabetes, and Cardiovascular Risk in Nondiabetic Adults

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Significance: Glycated hemoglobin was similarly associated with a risk of diabetes and more strongly associated with risks of cardiovascular disease and all-cause mortality as compared with fasting glucose.

The prognostic value of glycated hemoglobin (HgA1C) and fasting glucose were compared for identifying adults at risk for diabetes or cardiovascular disease (CVD). HgA1C was obtained from 11,092 adults who did not have a history of diabetes or CVD. Results showed that HgA1C at baseline was associated with newly diagnosed diabetes and cardiovascular outcomes. HgA1C <5.0%, 5.0 to <5.5%, 5.5 to < 6.0%, 6.0 to < 6.5%, and $\geq 6.5\%$, the multivariable-adjusted hazard ratios (HR) (95%CI) for diagnosed diabetes were 0.52 (0.40-0.69), 1.00 (reference), 1.86 (1.67-2.08), 4.48 (3.92-5.13), and 16.47 (14.22-19.08), respectively. For coronary heart disease (CHD), the HR were 0.96 (0.74-1.24), 1.00 (reference), 1.23 (1.07-1.41), 1.78 (1.48-2.15), and 1.95 (1.53-2.48), respectively. HgA1C and all-cause mortality were found to have a J-shaped association curve. The association between the fasting glucose levels and the risk of CVD or all-cause mortality was not significant in models with adjustment for all covariates and HgA1C. For CHD, measures of risk discrimination showed significant improvement when HgA1C was added to models including fasting glucose.

Omega 3 Fatty Acids

Effects of N–3 Fatty Acids on Macro- and Microvascular Function in Subjects with Type 2 Diabetes Mellitus

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Significance: In subjects with type 2 diabetes mellitus, 6 wk of supplementation with n–3 FAs reduced the postprandial decrease in macrovascular function and it improved postprandial microvascular function relative to placebo.

This double-blind, placebo-controlled, randomized, crossover study investigated the effects of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) on postprandial vascular function in 34 subjects with type 2 diabetes mellitus. Subjects received either 2 g purified EPA/DHA (termed omega-3 [n–3] fatty acids [FAs]) or olive oil (placebo) daily for 6 wk. At the end of this period, macrovascular (brachial ultrasound of flow-mediated dilatation [FMD]) and microvascular [laser-Doppler measurements of reactive hyperemia (RH) of the hand] function were measured at fasting and 2, 4, and 6 h after a high-fat meal (600 kcal, 21 g protein, 41 g carbohydrates, 40 g fat). Fasting vascular function remained unchanged after n–3 FAs and placebo. Postprandial FMD decreased from fasting after placebo, with a maximum decrease (38%) at 4 h—an effect that was significantly reduced ($P=0.03$ for time x treatment interaction) by n–3 FA supplementation (maximum decrease in FMD was at 4 h: 13%). RH improved significantly ($P=0.04$ for time x treatment interaction) after n–3 FA supplementation (maximum increase was at 2 h: 27%).

Lipids

Long-Term Walnut Supplementation without Dietary Advice Induces Favorable Serum Lipid Changes in Free-Living Individuals

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Significance: The lipid-lowering effects of walnuts were more evident among subjects with higher lipid baseline values, precisely those people with greater need of reducing plasma total and low-density lipoprotein cholesterol.

This randomized crossover design study examined the effect and sustainability of walnut consumption on serum lipids for longer duration in 87 subjects with normal to moderate high plasma total cholesterol. Subjects were initially assigned to a walnut-supplemented diet or habitual (control) diet for a 6-month period, then switched to the alternate dietary intervention for a second 6-month period. Results showed that supplementing a habitual diet with walnuts (12% of total daily energy intake equivalent) improves the plasma lipid profile. This beneficial effect was more significant in subjects with high plasma total cholesterol at baseline. Significant changes in total cholesterol ($P=0.02$) and triglycerides ($P=0.03$) were seen and nearly significant changes in LDL-cholesterol ($P=0.06$) were found. No significant change was detected in either HDL-cholesterol or LDL:HDL ratio.

Metabolic Syndrome

Alcohol Consumption and Metabolic Syndrome in the Elderly: Results from the Italian Longitudinal Study on Aging

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Significance: Alcohol can modify an individual's metabolic condition and that, even among the elderly, men might be more sensitive to the effects than women.

This multicenter study assessed the association between alcohol consumption and the prevalence and incidence of metabolic syndrome (MS) and its components in a large sample of Italian elderly people. The median length of follow-up was 3.5 years. The analysis included 1321 men grouped into five alcohol consumption classes: abstainers, and those consuming ≤ 12 , 13–24, 25–47 or ≥ 48 g of alcohol in a day. Among the 1122 women considered, the last two of the above five categories were pooled together (>24 g/day). MS was defined according to the ATP III criteria. Results showed that categorized alcohol consumption was not significantly associated with the prevalence and incidence of MS when compared with abstainers in either gender. For the MS incidence survey, three of five components (systolic pressure, glycemia and waist circumference) proved to be significantly and harmfully affected by alcohol consumption in males, whereas no such significant association emerged in females.