











Effects of walnut consumption on blood lipids and other cardiovascular risk factors: an updated meta-analysis and systematic review of controlled trials

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ABSTRACT

BACKGROUND

Intervention studies suggest that incorporating walnuts into the diet may improve blood lipids without promoting weight gain.

OBJECTIVE

We conducted a systematic review and meta-analysis of controlled trials evaluating the effects of walnut consumption on blood lipids and other cardiovascular risk factors.

Design

We conducted a comprehensive search of PubMed and EMBASE databases (from database inception to January 2018) of clinical trials comparing walnut-enriched diets with control diets. We performed random-effects meta-analyses comparing walnut-enriched and control diets for changes in pre-post intervention in blood lipids (mmol/L), apolipoproteins (mg/dL), body weight (kg), and blood pressure (mm Hg).

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weighted mean differences (WMDs) in reductions were obtained for walnut-enriched diets compared with control groups: -6.99 mg/dL (95% CI: -9.39, -4.58 mg/dL; P < 0.001) (3.25% greater reduction) for total blood cholesterol (TC) and -5.51 mg/dL (95% CI: -7.72, -3.29 mg/dL; P < 0.001) (3.73% greater reduction) for low-density lipoprotein (LDL) cholesterol. Triglyceride concentrations were also reduced in walnutenriched diets compared with control [WMD = -4.69 (95% CI: -8.93, -0.45); P = 0.03; 5.52% greater reduction]. More pronounced reductions in blood lipids were observed when walnut interventions were compared with American and Western diets [WMD for TC = -12.30 (95% CI: -23.17, -1.43) and for LDL = -8.28 (95% CI: -13.04, -3.51); P < 0.001]. Apolipoprotein B (mg/dL) was also reduced significantly more on walnutenriched diets compared with control groups [WMD = -3.74 (95% CI: -6.51, -0.97); P = 0.008 and a trend towards a reduction was observed for apolipoprotein A [WMD = -2.91 (95% CI: -5.98, 0.08); P = 0.057]. Walnut-enriched diets did not lead to significant differences in weight change (kg) compared with control diets [WMD = -0.12](95% CI: -2.12, 1.88); P = 0.90], systolic blood pressure (mm Hg) [WMD = -0.72 (95% CI: -2.75, 1.30); P = 0.48], or diastolic blood pressure (mm Hg) [WMD = -0.10 (95% CI: -1.49, 1.30; P = 0.88].

Conclusions

Incorporating walnuts into the diet improved blood lipid profile without adversely affecting body weight or blood pressure.

Keywords: walnuts, blood lipids, apolipoprotein, body weight, meta-analysis

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