Eicosapentaenoic acid and docosahexaenoic acid containing supplements modulate risk factors for cardiovascular disease: a meta-analysis of randomised placebo-control human clinical trials.

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Abstract

BACKGROUND:

Over 200 clinical trials have examined the effect of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) supplements on risk factors associated with cardiovascular disease. However, an updated analysis of the evidence is lacking. The aim of the present meta-analysis was to quantify the effect of supplements containing EPA and DHA on risk factors for cardiovascular disease.

METHODS:

An analysis was carried on 171 clinical trials with acceptable quality (Jadad score ≥3) that were identified from a comprehensive electronic search strategy of two databases (Pubmed and Cochrane Library). A random effect model was used to obtain an overall estimate on outcomes of interest. Heterogeneity between trial results was tested for using a standard chi-squared test.

RESULTS:

Compared with control, EPA and DHA supplements produced significant reductions of triglycerides of 0.368 mmol L⁻¹ [95% confidence interval (CI) = -0.427 to -0.309], systolic blood pressure of 2.195 mmHg (95% CI = -3.172 to -1.217), diastolic blood pressure of 1.08 mmHg (95% CI = -1.716 to -0.444), heart rate of 1.37 bpm (95% CI = -2.41 to -0.325) and C-reactive protein of 0.343 mg L⁻¹ (95% CI = -0.454 to -0.232). This analysis indicates an increase in both low-density lipoprotein cholesterol (mean difference = 0.150 mmol L⁻¹; 95% CI = 0.058-0.243) and high-density lipoprotein cholesterol (mean difference = 0.039 mmol L⁻¹; 95% CI = 0.024-0.054). The triglyceride-lowering effect was dose-dependent.

CONCLUSIONS:
The lipid-lowering, hypotensive, anti-arrhythmic and anti-inflammatory actions of EPA and DHA supplements were confirmed in this analysis of randomised placebo-control blinded clinical trials.

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