EPA or DHA to Reduce Inflammation Markers in Men and Women

Allaire J1, Couture P2, Leclerc M1, et al. A randomized, crossover, head-to-head comparison of eicosapentaenoic acid and docosahexaenoic acid supplementation to reduce inflammation markers in men and women: the Comparing EPA to DHA (ComparED) Study.

BACKGROUND:

To date, most studies on the anti-inflammatory effects of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) in humans have used a mixture of the 2 fatty acids in various forms and proportions.

OBJECTIVES:

We compared the effects of EPA supplementation with those of DHA supplementation (re-esterified triacylglycerol; 90% pure) on inflammation markers (primary outcome) and blood lipids (secondary outcome) in men and women at risk of cardiovascular disease.

DESIGN:

In a double-blind, randomized, crossover, controlled study, healthy men (n = 48) and women (n = 106) with abdominal obesity and low-grade systemic inflammation consumed 3 g/d of the following supplements for periods of 10 wk: 1) EPA (2.7 g/d), 2) DHA (2.7 g/d), and 3) corn oil as a control with each supplementation separated by a 9-wk washout period. Primary analyses assessed the difference in cardiometabolic outcomes between EPA and DHA.

RESULTS:

Supplementation with DHA compared with supplementation with EPA led to a greater reduction in interleukin-18 (IL-18) (-7.0% ± 2.8% compared with -0.5% ± 3.0%, respectively; P = 0.01) and a greater increase in adiponectin (3.1% ± 1.6% compared with -1.2% ± 1.7%, respectively; P < 0.001). Between DHA and EPA, changes in CRP (-7.9% ± 5.0% compared with -1.8% ± 6.5%, respectively; P = 0.25), IL-6 (-12.0% ± 7.0% compared with -13.4% ± 7.0%, respectively; P = 0.86), and tumor necrosis factor-α (-14.8% ± 5.1% compared with -7.6% ± 10.2%, respectively; P = 0.63) were NS. DHA compared with EPA led to more pronounced reductions in triglycerides (-13.3% ± 2.3% compared with -11.9% ± 2.2%, respectively; P = 0.005) and the cholesterol:HDL-cholesterol ratio (-2.5% ± 1.3% compared with 0.3% ± 1.1%, respectively; P = 0.006) and greater increases in HDL cholesterol (7.6% ± 1.4% compared with -0.7% ± 1.1%, respectively; P < 0.0001) and LDL cholesterol (6.9% ± 1.8% compared with 2.2% ± 1.6%, respectively; P = 0.04). The increase in LDL-cholesterol concentrations for DHA compared with EPA was significant in men but not in women (P-treatment × sex interaction = 0.046).

CONCLUSIONS:

DHA is more effective than EPA in modulating specific markers of inflammation as well as blood lipids. Additional studies are needed to determine the effect of a long-term DHA supplementation per se on cardiovascular disease risk.

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