

Abstract

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The omega-3 fatty acids EPA and DHA decrease plasma F(2)-isoprostanes: Results from two placebo-controlled interventions.

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BACKGROUND: Omega-3 (omega3) fatty acids, particularly eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), protect against cardiovascular disease. Despite these benefits, concern remains that omega3 fatty acids may increase lipid peroxidation.

OBJECTIVE: It has previously been shown that urinary F(2)-isoprostanes (F(2)-IsoPs) were reduced following omega3 fatty acid supplementation in humans. It is now determined whether EPA or DHA supplementation affects plasma F(2)-IsoPs.

METHODS: In two 6-week placebo-controlled interventions, Study A: overweight, dyslipidaemic men; and Study B: treated-hypertensive Type 2 diabetic, patients were randomized to 4 g daily EPA, DHA.

RESULTS: Post-intervention plasma F(2)-IsoPs were significantly reduced by EPA (24% in Study A, 19% in Study B) and by DHA (14% in Study A, 23% in Study B) relative to the olive oil group. The fall in plasma F(2)-IsoPs was not altered in analyses that corrected for changes in plasma arachidonic acid, which was reduced with EPA and DHA supplementation. Neither F(3)- nor F(4)-IsoPs were observed in plasma in both studies.

CONCLUSIONS: These results show that in humans, EPA and DHA reduce in vivo oxidant stress as measured in human plasma and urine.

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