

Abstract

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Enhanced increase of omega-3 index in response to long-term n-3 fatty acid supplementation from triacylglycerides versus ethyl esters.

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BACKGROUND: There is a debate currently about whether different chemical forms of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are absorbed in an identical way.

OBJECTIVE: The objective of this study was to investigate the response of the omega-3 index, the percentage of EPA+DHA in red blood cell membranes, to supplementation with two different omega-3 fatty acid (n-3 FA) formulations in humans.

DESIGN: The study was conducted as a double-blinded placebo-controlled trial. A total of 150 volunteers was randomly assigned to one of the three groups: (1) fish oil concentrate with EPA+DHA (1.01 g+0.67 g) given as reesterified triacylglycerides (rTAG group); (2) corn oil (placebo group) or (3) fish oil concentrate with EPA+DHA (1.01 g+0.67 g) given as ethyl ester (EE group). Volunteers consumed four gelatine-coated soft capsules daily over a period of six months. The omega-3 index was determined at baseline (t(0)) after three months (t(3)) and at the end of the intervention period (t(6)).

RESULTS: The omega-3 index increased significantly in both groups treated with n-3 FAs from baseline to t(3) and t(6) ($P < 0.001$). The omega-3 index increased to a greater extent in the rTAG group than in the EE group (t(3): 186 versus 161% ($P < 0.001$); t(6): 197 versus 171% ($P < 0.01$)).

CONCLUSIONS: A six-month supplementation of identical doses of EPA+DHA led to a faster and higher increase in the omega-3 index when consumed as triacylglycerides than when consumed as ethyl esters.

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