

Abstract

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Updated systematic review and meta-analysis of the effects of n-3 long-chain polyunsaturated fatty acids on depressed mood.

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BACKGROUND: The debate over a role for n-3 long-chain polyunsaturated fatty acids (n-3 PUFAs) in depressed mood continues.

OBJECTIVE: The objective was to update a previous systematic review and meta-analysis of published randomized controlled trials investigating the effects of n-3 PUFAs on depressed mood and to explore potential sources of heterogeneity.

DESIGN: Eight databases were searched for trials that randomly assigned participants to receive n-3 PUFAs/fish, measured depressed mood, used human participants, and included a comparison group up to April 2009.

RESULTS: Thirty-five randomized controlled trials were identified; 17 were not included in the previous review. The pooled standardized difference in mean outcome of the 29 trials that provided data to allow pooling (fixed-effects model) was 0.10 SD (95% CI: 0.02, 0.17) in those who received n-3 PUFAs compared with placebo, with strong evidence of heterogeneity ($I(2) = 65\%$, $P < 0.01$). The presence of funnel plot asymmetry suggested that publication bias was a likely source of this heterogeneity. Depressive symptom severity and participant diagnosis also explained some of the observed heterogeneity. **Greater effects of n-3 PUFAs were found in individuals with more-severe depressive symptoms.** In trials that enrolled individuals with a diagnosed depressive disorder, the combined mean difference was 0.41 (95% CI: 0.26, 0.55), although evidence of heterogeneity was also found ($I(2) = 71\%$). In trials that enrolled individuals without a depressive diagnosis, no beneficial effects of n-3 PUFAs were found (largest combined mean difference: 0.22; 95% CI: -0.01, 0.44; $I(2) = 0\%$).

CONCLUSIONS: Trial evidence of the effects of n-3 PUFAs on depressed mood has increased but remains difficult to summarize because of considerable heterogeneity. The evidence available provides some support of a benefit of n-3 PUFAs in individuals with diagnosed depressive illness but no evidence of any benefit in individuals without a diagnosis of depressive illness.

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