Systematic review and meta-analysis investigating a role for n3 polyunsaturated fatty acids in major depressive disorder

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Various lines of evidence suggest a potential role for n3 polyunsaturated fatty acids (n3PUFAs) in depressive conditions. The evidence, however, is far from conclusive, and reviews and meta-analyses clearly demonstrate heterogeneity between studies\textsuperscript{(e.g. 1,2)}. Investigations of heterogeneity show differential effects of n3PUFAs dependent on severity of depressive symptoms, suggesting a possible benefit in studies of individuals with more severe depressive symptomology\textsuperscript{(1)}. This work aimed to investigate the impact of n3PUFAs on depressive symptomology in adults with major depressive disorder (MDD).

A systematic review of the literature was undertaken by searching The Cochrane Depression, Anxiety and Neurosis Review Group’s Specialised Registers, CINAHL and International Trial Registries over all years to May 2014, for: randomized controlled trials; that provided n3PUFAs as an intervention; used a comparator; measured depressive symptomology, and were conducted in adults with MDD. Primary outcomes were depressive symptomology (continuous data collected using a standard rating scale) and adverse events. Secondary outcomes were depression remission and response, quality of life and failure to complete studies. Quality of the evidence was also assessed. Data from all included trials were combined, by comparator, in meta-analyses.

Twenty-one studies involving 1153 participants investigating the impact of n3PUFAs compared to placebo, and one study involving 40 participants investigating the impact of n3PUFAs compared to antidepressant treatment, were identified. For the placebo comparison, the mean depressive symptomology in n3PUFA groups was 0.36 (95\%CI: 0.12, 0.59) SDs lower than placebo following treatment. This effect is small-modest, and unlikely to be clinically significant. In assessments of adverse events, no differences were found between intervention and placebo groups (OR = 1.10, 95\%CI: 0.82, 1.48; 15 studies, 942 participants). For the antidepressant comparison, no differences between conditions in depressive symptomology were found (MD (HDRS) = −0.08 (95\%CI: −0.70, 0.54), and adverse events could not be analysed. The evidence on which these results are based, however, is very limited. Further well designed large trials are needed.