

Meta-analysis of the effects of n-3 polyunsaturated fatty acids on haematological and thrombogenic factors in type 2 diabetes

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Diabetologia (2007) **50**: 250–258

Abstract

Aim/hypothesis To determine whether marine-derived n-3 polyunsaturated fatty acids (n-3 PUFA) (also known as omega-3 fatty acids) have beneficial effects on haematological and thrombogenic risk markers in addition to dyslipidaemia, in patients with type 2 diabetes.

Methods A systematic review and meta-analysis of randomised controlled trials comparing dietary or non-dietary intake of n-3 PUFA with placebo in type 2 diabetes was conducted by systematically searching databases from 1966 to February 2006. Changes in C-reactive protein, IL-6, TNF- α , platelet function, fibrinogen, factor VII, von Willebrand factor, endothelial function, heart rate and blood pressure were recorded.

Inclusion of studies, data extraction and quality were assessed independently in duplicate.

Results Twelve trials involving 847 subjects with a mean treatment duration of 8.5 weeks included sufficient data to permit pooling. Compared with placebo, n-3 PUFA supplementation had a significant effect on two outcomes: reducing the level of diastolic blood pressure (five trials, 248 subjects) by a mean of 1.8 mm Hg (95% CI 0.0–3.6, $p=0.05$) and increasing factor VII (two trials, 116 subjects) by 24.9% (95% CI 7.2–42.6, $p=0.006$). There were no significant effects on systolic blood pressure, fibrinogen or heart rate.

Conclusions/interpretation These results suggest that, in addition to the recognised effects on dyslipidaemia, n-3 PUFA decreases diastolic blood pressure, and appears to increase factor VII. Larger and more rigorously conducted clinical trials are required to establish conclusively the role of n-3 PUFA in cardiovascular risk markers and clinical outcomes in type 2 diabetes.