

Nutrition in inflammatory disease: what is the evidence?

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Objective: To determine the efficacy of fish oil derived (n-3) fatty acid supplementation in subjects with osteoarthritis (OA) and rheumatoid arthritis (RA) compared to placebo.

Methods: Two placebo controlled, double blind, randomised studies were conducted to determine the effect of supplementation on lipid biomarkers and clinical variables in OA and RA patients¹ (n = 24 and n = 26 respectively). Fish oil and placebo were supplemented at a rate of 40 mg/kg body weight/day for 15 weeks in the RA study and 20 weeks in the OA study. Placebo for the RA subjects was a corn oil, olive oil mix and evening primrose oil for OA subjects. Eligibility protocol for OA and RA subjects required a background diet that contained <15 g n-6 fatty acids/day and low saturated fat intake (<33% of total fat intake), active disease, with stable medication for a minimum of 3 months. Background diet fatty acid content was determined by food frequency questionnaire and dietary compliance by 24 hour recall.

Results: Analysis of lipid biomarkers demonstrated a significant increase in n-3 fatty acids in phospholipid and plasma fatty acids in the supplemented RA and OA groups. Analysis of clinical variables in the RA group indicated a non-significant improvement in tender joint counts (TJC) and reduced duration in early morning stiffness (EMS). The OA group demonstrated a significant improvement in TJC and a reduced duration of EMS (P < 0.05).

Conclusions: These findings suggest that fish oil supplementation at an n-3 fatty acid dose of 40 mg/kg of body weight/day, in conjunction with a diet low in n-6 and saturated fat leads to a significant incorporation of n-3 fatty acids in the plasma fatty acids and phospholipids and improvement in clinical variables in Australians with inflammatory diseases such as OA and RA. These studies suggest the need for a nutritional regimen in diseases such as OA and RA.

Clinical Variable	RA ¹	RA ¹	OA ¹	OA ¹
	Intervention	Placebo	Intervention	Placebo
Tender Joint Count (0 wk)	6.0 ± 1.5	9.0 ± 1.2	5.0 ± 1.6	4.0 ± 1.2
Tender Joint Count (15/20 wk)	4.0 ± 1.2	8.0 ± 2.3	2.0 ± 0.6	4.0 ± 0.9
Early morning Stiffness Hrs (0 wk)	1.2 ± 0.5	1.5 ± 0.9	3.1 ± 1.9	0.32 ± 0.1
Early morning Stiffness Hrs (15/20 wk)	0.8 ± 0.1	2.2 ± 1.2	0.9 ± 0.1	0.54 ± 0.3

¹ mean ± SEM.

Reference

- Volker DH, FitzGerald PEB, Major GAC, Garg ML. Efficacy of fish oil concentrate in the treatment of rheumatoid arthritis. *J Rheumatol* 2000; 27: 2343–6.