FISH OIL SUPPPLEMENTATION AND BLOOD RHEOLOGY IN HEALTHY SUBJECTS

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Omega-3 fatty acid (ω3FA) consumption reduces blood rheological parameters, including viscosity (η). This effect may contribute to lowered incidence of cardiovascular disease (CVD) among populations having a high fish diet. Exercise also is beneficial in reducing CVD. This work investigated the possible interaction between ω3FA consumption, exercise, and blood viscosity.

Healthy volunteer subjects were classified as exercisers (Ex) if they participated in at least three exercise sessions at a level of ≥ 75% of their maximum heart rate (MHR) /wk; or, non exercisers (NEx) exercising ≤ two sessions/wk at 60-70% MHR. All subjects were supplemented daily with ω3FA given as five HiMega capsules providing 1500 mg eicosapentenoic acid (EPA) and 1000 mg docosahexaenoic acid (DHA) orally, for six weeks. Blood was taken for heamatocrit (PCV), platelet numbers, total plasma protein and fibrinogen (Fn) concentrations. Plasma and whole blood η (at 20% PCV) were determined in a Brookfield viscometer at shear rates between 23 sec-1 and 230 sec-1 at an average 5% CV.

		Initial	3 wks	6 wks	4 wks post supp
Blood η (cP)#	NEx	6.90 ± 1.05	7.25 ± 1.21	7.24 ± 0.88	6.09 ± 0.85*
	Ex	7.11 ± 0.64	7.01 ± 0.73	7.19 ± 0.69	6.25 ± 0.51
Plasma η (cP)#	NEx	2.07 ± 0.29	2.10 ± 0.32	2.33 ± 0.30*	1.99 ± 0.19
	Ex	1.91 ± 0.30	2.00 ± 0.22	2.21 ± 0.30*	1.96 ± 0.42
Fibrin mg/100 ml	NEx	222 ± 43	274 ± 60*	234 ± 57	241 ± 42
	Ex	207 ± 37	241 ± 43	269 ± 40	254 ± 28

viscosity measured at shear rate 23 sec^{-1}
*P <0.05 compared to initial value; mean ± SD, n = 12 NEx; n = 6 Ex.

The current study showed no clear change in blood rheological factors in either group; however four weeks after supplementation ceased, blood η was reduced compared to initial values. This preliminary study used ω3FA supplementation at significantly lower levels and for shorter period than previous work which has shown reduction in η (Bruckner et al. 1987), suggesting that substantial, and long term, fish intake (> 70 g/d) is required to improve blood rheological parameters. We conclude that a modest intake of ω3FA together with moderate exercise as a part of a sedentary lifestyle has no significant effect on blood viscosity.

BRUCKNER, G., WEBB, P., GREENWELL, L., CHOW, C. and RICHARDSON, D.(1987). Atherosclerosis 66: 237

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