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Dairy foods, fat and human bowel health

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Background – Dairy foods such as cheese and yogurt provide a health promoting option, and components present within their fat could be offering some significant benefits. Dairy fat has an optimal ratio of w6/w3 fatty acids (2), along with conjugated linoleic acids (CLA) are also present (particularly cis-9, trans-11 18:2) which have been identified as potentially beneficial to bowel health eg antiinflammatory and cancer preventing effects (1).

Design – Dairy fat has undergone investigation in experimental animal models of disease, and in human clinical studies, to evaluate potential benefits with respect to bowel cancer prevention.

Outcomes – A rat study of high fat diets showed cheese was an optimal source of w3 fatty acids producing high concentrations of long chain w3 fatty acids: EPA and DHA in liver triglycerides. A report by Larsson et al (2) from the women’s mammography prospective cohort study showed that over 15 years of observation the highest intakes of full fat dairy products (≥ 4 serves/day) were associated with reduced expression of colorectal cancers (down by 41%, p trend = 0.002) relative to those ingesting ≤ 1 serve of dairy per day. CLA intake in this study also showed there was a significant inverse association (multivariate rate ratio 0.71, p trend = 0.004). Increased apoptosis was identified in animal studies as a possible protective mechanism.

Conclusions – Dairy foods have an important role to play in health and carry some functionally significant components (w3FAs and CLA) of benefit in maintaining bowel health.

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Effectiveness of DPA in comparison to DHA in lowering plasma triglyceride levels and other cardiovascular risk factors

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Background – Numerous health benefits have been attributed to both eicosapentaenoic acid (EPA, 20:5n3) and docosahexaenoic acid (DHA, 22:6n3) found in fish oil. However, docosapentaenoic acid (DPA, 22:5n3) found particularly in red meat has been less well studied. Australians consume 6 times more meat than we do fish. The richest commercial capsule source of DPA available is seal oil.

Objective – To compare the effects of DPA rich seal oil supplementation with DHA rich fish oil, on measures of plasma lipids in hypertriglyceridaemic subjects.

Design – A randomised, parallel, placebo controlled, double blind study was conducted in 52 hypertriglyceridaemic subjects. They were randomly allocated to one of three groups receiving a total of 1g/d EPA, DPA & DHA but different relative amounts: seal oil capsules (360mg EPA, 250mg DPA, 450mg DHA), fish oil capsules (210mg EPA, 30mg DPA, 810mg DHA) or placebo capsules (containing a vegetable oil) for 6 weeks. Fasting blood samples were taken at baseline and at 6 week post intervention. Blood samples were tested for red blood cell (RBC) fatty acids and plasma lipids (triglycerides, total cholesterol, LDL-C and HDL-C).

Outcomes – Seal oil supplementation significantly increased incorporation of DPA (from 2.5-2.7%), DHA (from 4.9-5.8%) and EPA (from 1-1.8%), p<0.0005), whereas fish oil increased incorporation of DHA only (from 5.2-6.2%), p<0.01 into RBC. Plasma triglycerides remained unchanged in the placebo group (2.30-2.46mmol/l), whilst reductions of 7% (2.24-2.09mmol/l) and 14% (2.54-2.19mmol/l) were seen in the fish oil and seal oil groups respectively, but only the seal oil group reached significance (p<0.05).

Conclusion – Seal oil supplementation increased RBC levels of DPA, EPA and DHA whilst DHA rich fish oil supplementation increased RBC levels of DHA only. It appears that seal oil may be more effective than fish oil at lowering plasma triglyceride levels in hypertriglyceridaemic subjects.

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