

Health News from 3Care Therapeutics

New study suggests gender-specific omega-3 roles

The omega-3 fatty acids EPA and DHA may have gender-specific effects on blood platelet aggregation, researchers in Australia have found.

The study, published in *Nutrition, Metabolism and Cardiovascular Diseases*, suggests that differences in how males and females process eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) could affect platelet aggregation – due to interactions with sex hormones.

“The distinctive gender-specific, inhibitory response pattern observed in our study suggests that males may benefit more from EPA supplementation while females are more responsive to DHA,” wrote the researchers, led by Monohar Garg from the University of Newcastle in Australia.

The results may have implications for how omega-3’s are formulated in certain supplements.

Platelets are mainly responsible for blood clot development and wound healing, but are also involved in the processes of thrombus formation and blood vessel blockage.

There has been a growing demand for the use of non-medical anti-platelet agents, focusing in particular on supplementation with omega-3 polyunsaturated fatty acids like EPA and DHA.

Previous research has shown omega-3 to have a protective role over thrombotic events; although it remains unclear which forms of omega-3 are the most advantageous.

The majority of studies on omega-3 supplements use fish oil containing both EPA and DHA, however recent research has suggested that EPA and DHA may have different (gender specific) effects.

The aim of the new study was to establish whether previously observed gender differentiation may affect platelet aggregation.

Thirty healthy participants were given a single dose of either EPA or DHA rich oil, and assessed over 24 hours.

The study saw that both EPA and DHA fatty acids reduced platelet aggregation, but when the data was separated into gender groups the responses were divided according to the suggestions of previous research.

EPA was seen to be highly effective in males when compared to DHA and placebo, whereas in females it was DHA that was found to be significantly more effective than EPA and placebo.

“We have shown that gender-specific responses exist in platelet aggregation in the 24 hours following dietary supplementation with a single oral dose of EPA or DHA rich oil capsules. These data confirm our previous observations.”

Research Team

The researchers put forward that the observed gender differences may be down to interactions between EPA/DHA and sex hormones.

“Interactions between sex hormones and omega-3 fatty acids exist to differentially reduce platelet aggregation. For healthy individuals, males may benefit more from EPA supplementation while females are more responsive to DHA,” wrote the researchers

The findings of the study could see a change in how omega-3’s are delivered in dietary supplements.

Source: Nutrition, Metabolism and Cardiovascular Diseases

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“Gender-specific inhibition of platelet aggregation following omega-3 fatty acid supplementation”

Authors: M. Phang, A.J. Sinclair, L.F. Lincz, M.L. Garg

Omega-3s May Improve Metabolic Syndrome Outcomes

Omega-3-rich supplements may improve blood lipid levels of people with metabolic syndrome, reducing the risks of developing serious health problems, says a new study.

The research, published in *The Journal of Nutrition*, suggests that the effects of metabolic syndrome – a major risk factor for insulin resistance and diabetes - can be reduced through the addition of omega-3 fatty acids in low-fat, high-complex carbohydrate diets.

“Fish oil supplements correct many metabolic alterations associated with insulin resistance, including reduced postprandial plasma triglyceride concentration” stated the researchers, led by Jose Lopez-Miranda from the University of Cordoba, Spain.

Metabolic syndrome is the name given to a group of risk factors that frequently include obesity, hypertension, high levels of blood lipids, and high blood sugars.

The condition is a common precursor to type II diabetes, and is also strongly associated with increased risk of major health problems such as heart disease and stroke.

The causes of metabolic syndrome are unknown, although they are thought to involve both genetic and environmental factors – including poor diet.

One way to increase the overall health – and reduce the risks - of people with metabolic syndrome, has been to eat a diet low in saturated fat and high in complex carbohydrates. However, previous research has suggested that this diet does not help to reduce high levels of blood lipids - with some studies observing such a diet could even be raising blood lipid levels.

Positive Effects of Omega-3

The new study looked into the effects of four different diet combinations on blood lipid metabolism, in 117 patients with metabolic syndrome.

In accordance with previous suggestions, the researchers found that a low-fat, high-complex carbohydrate diet had “several detrimental effects”, including significantly increasing total triglyceride levels, and triglyceride rich lipoprotein cholesterol levels.

In contrast, intake of the same diet supplemented with omega-3 was found to have no effects on blood lipid levels, with researchers observing that a diet rich in monounsaturated fats, or a low-fat diet rich in complex carbohydrates and omega-3 fatty acids, resulted in lower circulating blood lipid levels than a diet rich in high saturated fats or a diet low in fats and high in complex carbohydrates.

The data from the study suggest a place for higher omega-3 intake in people with metabolic syndrome, and supports previous research that suggests monounsaturated fatty acids can have a positive effect on blood lipid levels.

"The long-term effect of the low-fat, high-complex carbohydrate diet, pre vs. post intervention phases, showed several beneficial effects of long chain omega-3 PUFA supplementation," stated the researchers.

"Our data suggest that long-term intake of an isocaloric, low-fat, high-carbohydrate diet supplemented with long chain omega-3 ... have beneficial effects on postprandial lipoprotein response in patients with metabolic syndrome,"

Source: The Journal of Nutrition

Published online ahead of print, doi:10.3945/jn.109.120816

"A Low-Fat, High-Complex Carbohydrate Diet Supplemented with Long-Chain (n-3) Fatty Acids Alters the Postprandial Lipoprotein Profile in Patients with Metabolic Syndrome"

Authors: Y. Jimenez-Gomez, C. Marin, P. Perez-Martinez, et al

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