Dietary omega-3 fatty acids and risk of type-2 diabetes: Lack of antioxidants?

American Journal of Clinical Nutrition

August 2011; Vol. 94; No. 2; pp. 618-619

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This author cites evidence that increased intake of dietary omega-3 fatty acids may increase the risk of type-2 diabetes.

Yet, he also notes that type-2 diabetes “is strongly associated with pro-inflammatory products,” and therefore omega-3 fatty acids should prevent type-2 diabetes because they suppress the production of these pro-inflammatory products, noting that it “seems difficult to understand why long-chained omega-3 fatty acids are associated with [increased] risk of type-2 diabetes.”

“Intake of omega-3 fatty acids may not always be beneficial because incorporation of these polyunsaturated fatty acids (PUFAs) in the cell membranes makes the cells more susceptible to oxidation if there is a lack of antioxidants where the omega-3 fatty acids are present in the membranes.”

“Contrary to an anti-inflammatory effect, PUFAs may cause oxidative stress whereby the production of pro-inflammatory products is enhanced.”

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“Everywhere where PUFAs are present in live material, there is always an excess of antioxidants, which are removed when the omega-3 fatty acids are refined or when they are isolated. This means that these fatty acids when taken as dietary supplements may cause severe oxidation in their local environment in which support of antioxidants may be quite low. Omega-3 fatty acids may thereby cause oxidative stress and subsequently an increase in pro-inflammatory products known to promote type-2 diabetes.”

The lack of type-2 diabetes in native Greenlanders despite their high intakes of omega-3 fatty acids in their diet through seal and whale blubber may be credited to the fact that “their diet is also rich in natural antioxidants associated with omega-3 fatty acids contained in blubber.”

Thus, antioxidants may be required for the anti-inflammatory benefit of omega-3 fatty acids in humans.

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COMMENTS

Over the years a number of other authors have made similar claims as this author: increasing the intake of omega-3 fatty acids increases the requirement for antioxidants. As examples:

Natural Strategies For Cancer Patients
Russell Blaylock, MD
Twin Streams Books, 2003

“The universal problem with polyunsaturated oils, even the good ones, is that they oxidize very easily. When an oil oxidizes, it becomes rancid.

Rancid oils can produce harmful substances (lipid peroxides) and free radicals.” p. 134
Healthy Fats For Life

Preventing and Treating Common Health Problems with Essential Fatty Acids
Lorna Vanderhaeghe and Karlene Kasrst Wiley, 2004

“Research has consistently shown that increased intake of essential fatty acids increases the need for antioxidants.” p. 184

When taking essential fatty acids, “increasing your antioxidant consumption to prevent free radical damage is very important.” p. 185

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I have always advocated that one should take a combination of antioxidants when consuming fish oil. The antioxidant formula I use is a network of exogenous antioxidants that help the cell produce the endogenous antioxidant glutathione, from the book Nutrition and Immune Function, edited by Phillip Calder, CABI Publishing, 2002. It includes a ratio of vitamin E, vitamin C, B2, B6, and B12, plus some necessary minerals. The formula is available from Nutri-West and is called Complete Omega-3 Co-Factors. I advocate taking 1 Co-Factor per gram of fish oil consumed.

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