Reference:

Higher plasma docosahexaenoic acid is associated with reduced progression of coronary atherosclerosis in women with CAD


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Summary:

This newly-reported study evaluated the potential relationship between omega-3 fatty acid levels in the circulating blood lipid and the progression of coronary artery atherosclerosis among women with established coronary artery disease (CAD). These subjects included 228 postmenopausal women younger than 80 years of age who were assessed by quantitative coronary angiography at baseline and after a mean follow-up of 3.2 years so as to measure for the progression of coronary atherosclerosis. The levels of DHA (docosahexaenoic acid), EPA (eicosapentaenoic acid), and ALA (alpha-linolenic acid) were measured in blood plasma phospholipid since such measures are used to assess the omega-3 fatty acid status in human subjects; furthermore, a higher dietary intake of DHA plus EPA (such as from fish/fish oils) has been positively correlated with the resulting higher levels of DHA and EPA in the blood lipid biomarker.

The results indicated that women with higher levels of DHA (above the median) had a significantly lesser progression of coronary atherosclerosis over the 3.2 year period as determined by resting changes in minimum coronary artery diameter and in the percentage stenosis. Furthermore, women with higher levels of DHA in their circulating lipid had significantly fewer mean lesions developing over the 3.2 year interval. No significant relationships between the levels of EPA or ALA in the blood lipid (biomarker) and the progression of atherosclerosis were found. The authors concluded that these results further support dietary recommendations to increase the intake of fatty fish containing omega-3 fatty acids to reduce the risk of CAD.
Coronary angiography is a medical procedure wherein a special dye is injected into one of the arteries of the heart and X-ray equipment is used to monitor blood flow through the heart and to observe the presence of internal plaques and lesions which can adversely affect blood flow.

Stenosis an abnormal narrowing of a blood vessel which can hamper normal blood flow and cause the heart to work harder to push blood through narrower openings

Dr. Holub's Comments:

These results support and extend previous findings in the literature from both population and randomized clinical trials indicating that higher intakes of fish/fish oils containing DHA plus EPA (combined) have been associated with a reduced risk of cardiovascular events and cardiac-related mortality. The present results are of considerable interest with respect to the potential cardioprotective properties of DHA which may be provided by various mechanisms which act independently of blood cholesterol-lowering. Omega-3 fatty acids, including DHA, have been found to offer potential as a nutritional strategy for anti-arrhythmic, anti-thrombotic, anti-inflammatory, blood triglyceride-lowering, as well as other effects which appear to favourably reduce the risk of cardiovascular-related disorders including sudden cardiac death. The reduced progression of coronary atherosclerosis observed with higher levels of plasma DHA but not with higher levels of EPA is of interest since fish contain both DHA plus EPA. However, it should be noted that the type of fish as commonly consumed in the United States has considerably higher levels of DHA as compared to EPA. Furthermore, the levels of DHA in the blood lipid of the subjects with lower progression of atherosclerosis were approximately five times higher than for EPA. It remains to be determined whether populations which have much higher intakes of EPA than those found in the typical U.S. population might possibly have exhibited an inverse relationship between higher EPA levels in the plasma phospholipid (biomarker) and the progression of coronary atherosclerosis.

Although not addressed by the authors in the present paper, it is of interest to consider the daily intake of DHA that might be required to attain the higher (low-risk) levels of DHA in the plasma phospholipid (biomarker). The latter subjects with DHA levels above the median value had mean values of 3.20 % DHA (of total fatty acids) and mean + one standard deviation (SD) level of 3.80 %. From the published literature, it is reasonable to expect that daily average intakes of DHA of approx. 220 mg and 340 mg would give rise to the corresponding levels of 3.20 % and 3.80 %, respectively, within a 6-week period. Such intakes of DHA can be attained from various fish sources (eg., 2-3 servings of rainbow trout or salmon per week), DHA-containing functional foods, or appropriate supplements. It is of interest to note that a large group of scientific and
medical experts who met in Bethesda (ISSFAL workshop) in 1999 (J. Am. Coll. Nutr. 18: 487-489, 1999) advised a combined intake of DHA/EPA of 650 mg/day for overall health of which at least one third should be in the form of DHA – this recommendation amounts to a minimal intake of DHA of 220 mg/day.