

Omega-3 fatty acids appear to impact age-related macular degeneration progression

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Omega-3 fatty acids found in fatty fish such as tuna and salmon may protect against progression of age-related macular degeneration (AMD), but the benefits appear to depend on the stage of disease and whether certain supplements are taken, report researchers at the Laboratory for Nutrition and Vision Research (LNVR), Jean Mayer USDA Human Nutrition Research Center on Aging (HNRCA) at Tufts University.

The researchers calculated intakes of docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) from dietary questionnaires administered to 2,924 men and women, aged 55 to 80 years, participating in an eight-year supplement trial, the Age-Related Eye Disease Study (AREDS) of the National Eye Institute (NEI). The AREDS trial results suggest taking supplements of antioxidants plus zinc prevents progression of late-stage AMD. AREDS study participants were randomly allocated to receive either a placebo or supplements containing the antioxidants vitamins C and E and beta carotene, the minerals zinc and copper, or a combination of both.

"In our study, we observed participants with early stages of AMD in the placebo group benefited from higher intake of DHA, but it appears that the high-dose supplements of the antioxidants and/or the minerals somehow interfered with the benefits of DHA against early AMD progression," says senior author Allen Taylor, PhD, director of the LNVR at the USDA HNRCA. Taylor is also a professor at the Friedman School of Nutrition Science and Policy at Tufts and Tufts University School of Medicine (TUSM).

The antioxidant supplements did not seem to interfere with the protective effects of DHA and EPA against progression to advanced stages of AMD. Participants who consumed higher amounts of DHA and EPA appeared to have lower risk of progression to both wet and dry forms of advanced AMD. The results are published on-line ahead of print in the *British Journal of Ophthalmology*.

"Data from the present study also shows the supplements and omega-3 [fatty acids](#) collaborate with low-dietary glycemic index (dGI) diets against progression to advanced AMD," says corresponding author Chung-Jung Chiu, DDS, PhD, a scientist in the LNVR and an assistant professor at TUSM. "Our previous research suggests a low-GI diet may prevent AMD from progressing to the advanced stage. We hypothesize that the rapid rise of blood glucose initiated by high-GI foods results in cellular damage that retinal cells cannot handle, thus damaging eye tissues."

dGI is a scale used to determine how quickly carbohydrates are broken down into blood sugar, also known as blood glucose. Foods such as sweetened drinks, sodas and white bread are high-GI because they trigger a sharp rise and fall of blood sugar. Low-GI foods, such as whole grain versions of pasta and bread, have a milder effect on [blood sugar](#) response. Earlier data published by Taylor and Chiu suggests that daily substitution of five slices of whole grain bread for white bread out of a total intake of 250 g of carbohydrate might cut out almost 8% of advanced AMD over five years. This is readily achievable with little diet behavior modification.

Eating two to three servings of fatty fish such as salmon, tuna, mackerel, shellfish, and herring every week would achieve the recommended daily intake of DHA and EPA. However, the majority of AREDS participants and Americans eat a much lower level than recommended. "If changing dietary habits is not easy, supplementation is an option," says Chiu.

The authors stress it is still premature to conclude dietary recommendations for people with AMD and more studies are warranted. "Taken together, these data indicate that consuming a diet with higher levels of omega-3 fatty acids, antioxidants and low-GI foods may delay compromised vision due to AMD," says Taylor. "The present study adds the possibility that the timing of a dietary intervention as well as the combination of nutrients recommended may be important."

AMD is a progressive disease that attacks central vision, resulting in a gradual loss of eyesight and, in some cases, blindness. The NEI reports that AMD is the most common causes of non-remediable vision loss in Americans over 60.

Source: Tufts University, Health Sciences

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