

- Topics:** Omega-3 fatty acids, docosahexaenoic acid (DHA), eicosapentaenoic acid (EPA), docosapentaenoic acid (DPA) long chain polyunsaturated fatty acids (LC-PUFAs), age-related macular degeneration (AMD), central geographic atrophy (CGA).
- Objective:** To determine if omega-3 LC-PUFA (EPA and DHA) intake is associated with a reduced risk of developing age related macular degeneration (AMD) in the eye in women with no prior diagnosis of the condition.
- Background:** AMD is one of the major causes of vision loss affecting about 1.7 million people in the USA with an additional 7.3 million having early signs of the disease. Currently about 9 million US adults aged 40 and older show signs of AMD and the incidence is expected to rise by about 50% over the next two decades. Previous population studies have shown that higher intake of fish and omega-3 LC-PUFAs may be associated with reduced incidence of advanced AMD, but few studies have looked at the impact on early AMD.
- Method:** This prospective study included data collected from the Women's Health Study, a completed, randomised trial of low-dose aspirin and vitamin E in the primary prevention of cardiovascular disease and cancer. It included 38,022 apparently healthy female US health professionals, 45 years or older who did not have a history of illness including prior diagnosis of AMD. The primary study end point was visually significant AMD defined as a self-report confirmed by medical record evidence on or before March 2004 with best corrected visual acuity reduced to 20/30 or worse attributable to AMD. The following assessments were conducted:
- 1) At the start of the study (in 1993) the women completed a questionnaire identifying possible risk factors for AMD.
 - 2) An annual questionnaire asked about any new diagnoses including AMD in the right eye and/or left eye. If diagnosed, then medical records were examined to determine the date of diagnosis, the date when best corrected visual acuity reached 20/30 and signs of AMD.
 - 3) Dietary omega-3 LC-PUFA intake over the past year measured by 131- food item, semi-quantitative, food frequency questionnaire (FFQ) was completed at baseline. It included questions on intake of canned tuna, dark-meat fish including mackerel, salmon, sardines, bluefish and swordfish, other fish, shrimp, lobster and scallops. Participants were ranked into 3 groups depending on their intake of omega-3 LC-PUFAs.
 - 4) The association of AMD with fish intake and omega-3 LC-PUFA intake (including DHA, EPA, DHA+EPA, DPA, ALA and total omega-3) was determined. AMD risk was calculated according to tertile comparing the incidence rates for a specific tertile of intake with the rate in the lowest tertile. Confounding variables were taken into account including age, smoking status, alcohol use, body mass index (BMI), postmenopausal hormone use, history of hypertension, history of high cholesterol, history of diabetes, multivitamin use, history of eye examination in the last two years, and intake of saturated, monounsaturated and trans fatty acids.
- Findings:**
- 1) 235 cases of AMD developed during the 10 years among the 38,022 participants who completed a FFQ at baseline and were without a prior diagnosis of AMD.
 - 2) Women in the highest tertile of DHA intake, compared with the lowest, had a 38% lower risk of AMD (RR, 0.62; 95% CI, 0.45-0.85; p for trend = 0.003). There were similar findings for EPA (RR, 0.64; 95% CI, 0.46-0.88; p for trend = 0.004); DHA + EPA (RR, 0.62; 95% CI, 0.45-0.86; p for trend = 0.004); intake of DPA, an intermediary between EPA and DHA was associated with a 25% reduced risk of AMD with borderline significance (RR, 0.75; 95% CI, 0.55-1.02; p for trend = 0.06). There was no association for ALA. These RR estimates were not altered after adjusting for other variables.
 - 3) Consumption of 1 or more servings of fish per week, compared with less than 1 per month, was associated with a 42% lower risk of AMD (RR, 0.58; 95% CI, 0.38-0.87; p for trend = 0.001). This was primarily due to intake of tuna and dark meat fish.
- Conclusion:** Regular intake of DHA, EPA and fish lowers the risk of developing AMD by up to 45%.
- Relevance to** Efalex Vision, Efalex Active 50+
- Reference:** Christen WG, Schaumberg DA, Glynn RJ, Buring JE. Dietary ω -3 fatty acid and fish intake and incident age-related macular degeneration in women. *Am J Clin Nutr* Published ahead of print March 14, 2011, doi:10.1001/archophthalmol.2011.34

PRESS RELEASE**Omega-3 intake prevents age-related macular degeneration¹.**

Increased intake of fish and fish derived omega-3 long chain polyunsaturated fatty acids (LC-PUFAs), significantly decreases the risk of developing age-related macular degeneration (AMD) by up to 42 percent, according to the strongest observational evidence to date¹. The study supported by a research grant from the National Institutes of Health and completed at Harvard Medical School, Boston, USA, included 38,022 women aged 45 years or older and **initially free of AMD** who were followed for over ten years. Eating habits were assessed at the start of the study to measure the quantity of fish and omega-3 LC-PUFAs including docosahexaenoic acid (DHA), eicosapentaenoic acid (EPA), and docosapentaenoic acid (DPA), and yearly questionnaires and follow up medical examinations tracked the development of AMD. Following analysis of the data, participants were ranked into 3 groups depending on their intake of LC-PUFAs. Women who consumed the most DHA compared to women who consumed the lowest amount had a 38% lower risk of developing AMD. Higher EPA intake was associated with a 35% lower risk, DPA with a 25% lower risk and eating one or more servings of fish per week compared to less than one serving per month was associated with a 42% reduction.

AMD is a leading cause of vision loss affecting about 1.7 million people in the USA with an additional 7.3 million having early signs of the disease. People in middle-age have about a 2 percent risk of getting AMD, but this risk increases to nearly 30 percent in those over age 75. AMD gradually destroys sharp, central vision that is needed for seeing objects clearly and for common daily tasks such as reading and driving. It affects the macula, the part of the eye that allows you to see fine detail. It is located in the center of the retina, the light-sensitive tissue at the back of the eye. The retina is comprised largely of DHA, a dietary omega-3 LC-PUFA that we consume primarily from fish.

Previously, the *Age-Related Eye Disease Study (AREDS)* showed that eating 240 mg of combined EPA and DHA daily reduced the likelihood of developing AMD and a related condition called central geographic atrophy (CGA) by 30%². The twelve year AREDS study included 1837 people aged 55-80 years who had a **moderate-to-high risk of developing AMD** later in life. All were periodically assessed using retinal photography over the twelve years of the study and their dietary LC-PUFA intake was measured using a validated, semi-quantitative, food frequency questionnaire. Following analysis of the data, participants were ranked into 5 groups depending on their intake of LC-PUFAs. Results showed that those with the highest reported intake of omega-3 LC-PUFAs (0.11 % of total energy or 240 mg of combined EPA+DHA) had a 30% lower risk of developing AMD and CGA.

Results of these two large studies confirm finding in previous smaller studies including reports that:

- Higher dietary total omega-3 LCPUFA, and total and broiled/baked fish intake was inversely associated with AMD³
- DHA intake was modestly inversely related to AMD incidence while greater than 4 servings of fish per week was associated with a 35% lower risk of AMD compared with 3 or less servings per month⁴
- Increased fish intake reduced risk of AMD, particularly when 2 or more servings per week were consumed, while dietary omega-3 fatty intake was inversely associated with AMD⁵
- People with the highest versus lowest intake of omega-3 LC-PUFAs had a lower risk of early AMD development⁶
- People who ate fish more often had decreased development of late AMD⁷, and
- Diets high in omega-3 LC-PUFAs⁸ and fish intake⁹ were inversely associated with risk for AMD when intake of linoleic acid was low.

Combined, all these results strongly indicate that DHA and EPA supplementation may prevent the onset and/or slow the progression of AMD. A five year randomized, double-blind, placebo controlled clinical study including over 4000 people is now underway to provide proof of that benefit (www.areds2.org).

References:

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