Omega-3 and vitamin D linked to better eye health

16/05/2007 - **Consumption of omega-3 fatty acids and omega-3 rich fish could slash the risk of developing age-related macular degeneration (AMD) by 40 per cent, says a new study.**

The new study also adds further support for increasing the ratio of omega-3 to omega-6 fatty acids with the finding that arachidonic acid (AA, omega-6 fatty acid) is associated with an increased risk of AMD.

"These results and those from other observational analytic investigations suggest that modifying diet to include more food rich in omega-3 [long chain polyunsaturated fatty acids] could result in a reduction in the risk of having [severe] AMD," wrote researchers.

Age-related macular degeneration (AMD) occurs when the macula, the area at the back of the retina that produces the sharpest vision, deteriorates over time. It is the most common cause of blindness among the over-50s.

According to the researchers, the prevalence of the condition is likely to increase as the population ages. While there is currently no known way of preventing the condition, more and more research is focusing on potentially modifiable risk factors and nutrient-based approaches, most notably on the carotenoids lutein and zeaxanthin.

Another class of nutrients showing promise is omega-3 fatty acids. Researchers assessed 4,519 individuals aged between 60 and 80 at the start of the study. They took photographs of the subjects' retinas to determine whether they had AMD, and if so, to which one of four stages the condition had progressed. Diets were assessed using a 90-item food frequency questionnaire (FFQ).

At the start of the study 1,115 subjects did not have any symptoms of AMD. They were compared with those who did, including 658 individuals with severe (neovascular) AMD. The authors calculated that dietary omega-3 fatty acid intake was associated with a 39 per cent reduction in neovascular AMD, while docosahexaenoic acid (DHA) was associated with a 46 per cent reduction.

"Higher fish consumption was also inversely associated with neovascular AMD," they added.

The researchers stated that omega-3 fatty acids might influence processes involved in the development of blood vessel- and nerve-related diseases of the retina. For example, DHA may protect the retina by influencing which genes turn on and off. Fatty acids overall may eventually form compounds that promote cell survival and proper blood vessel function, reduce inflammation and maintain energy balance.

On the other hand, increased consumption of the omega-6 fatty acid arachidonic acid (AA) was associated with a 54 per cent increase in neovascular AMD prevalence.

"Because increased intake of AA is also associated with an increased likelihood of having NV AMD, it is important to consider the balance and composition of dietary long chain polyunsaturated fatty acids from the omega-3 and omega-6 families," said the researchers.

The researchers called for clinical trials to explore the benefits of dietary or supplemental forms of omega-3 in preventing advanced AMD in more detail.

In a related study researchers reported that increased levels of vitamin D may be associated with a reduced prevalence of early AMD.

The researchers used data from the National Health and Nutrition Examination Survey, and focused on 7,752 individuals (including 11 per cent with AMD) seen as representative of the general U.S. population. As with the AREDS study, subjects had photographs taken of their retinas, questionnaires assessed dietary intakes, and blood samples were taken to calculate blood vitamin D (25-hydroxyvitamin D) levels.

When participants were split into five groups based on the level of vitamin D in the blood, those in the highest group had a 40 per cent lower risk of early AMD than those in the lowest group.

"The present study conducted in a large, representative sample of the US population provides evidence for inverse associations between AMD and higher serum vitamin D levels and higher intake of milk," wrote researchers.

"We also observed reduced prevalence of AMD among consistent vitamin D-supplement users who consumed milk less than daily," added the authors.

Researchers speculated that the beneficial effects of vitamin D might be via an anti-inflammatory effect or by preventing the growth of new blood vessels in the retina, which contributes to some forms of AMD.

"The results of the present research warrant further investigation for confirmation of the vitamin D-AMD association in other population studies," they concluded.