

University of Alberta & AB Health Services

EYE ON NUTRITION

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Macular Degeneration, Cataracts, and Nutrition

Research has shown that nutrition can affect the development of cataracts and age-related macular degeneration (AMD), the two leading causes of visual impairment among aging Canadians. Nutrition is particularly important given that currently, treatment options after diagnosis for these eye diseases are limited.

Cataracts develop when lens proteins are damaged, which causes them to become cloudy. Oxidative stress, principally from ultraviolet light is thought to play a crucial role in development of cataracts. Vitamin E is found in the membranes of all cells where it protects them from oxidative damage. Other studies have concluded that vitamin C is also useful in protecting the lens. Vitamin C penetrates the layers of the lens, protecting the area.

Dry AMD is characterized by “holes” or inconsistencies in the center of the visual field. This is due to a breakdown of cells in the macula. The macula contains a dense accumulation of cells responsible for providing color and fine

detail. When retinal cells are lost, they do not regenerate. The vision loss from AMD is irreversible.

Concentrations of vitamin E have been found to be protective against AMD. Researchers have also found that AMD risk was lower with increasing blood levels of the plant pigments Lutein and Zeaxanthin.

Eating five servings of fruits and vegetables each day can provide more than 100 mg vitamin C, two servings of nuts and seeds can provide 8-14 mg vitamin E. Studies suggest an intake of 6 mg or more per day of carotenoids to decrease the risk of developing AMD and cataracts. Given the positive association between nutrition and the prevention of cataracts and AMD, it seems prudent for people to increase the amount of certain vitamins in their diet.



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ESSENTIAL FATTY ACIDS

The omega-3 long chain polyunsaturated fatty acids, such as docosahexaenoic acid (DHA), are essential for normal brain and eye development. Omega-3 fatty acids are present in fish, and are the highest in mackerel, whitefish, tuna, and salmon. Recently, a gene was discovered in autosomal dominant macular degeneration that has a role in metabolizing DHA. Although it is too early to tell, a higher intake of this essential fatty acid may prove to be helpful in the treatment of certain types of macular degeneration. In addition, Omega-3 fatty acids have been shown to decrease the incidence of heart diseases and promote general well-being, which in turn improves eye health.



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VITAMIN A, C, AND E



Vitamins, which contain anti-oxidants, have been linked with eye health in various studies and clinical trials. They help to maintain healthy cells and tissues in the eye.

The focus has been on the anti-oxidant vitamins A, C and E. These vitamins can be found in many different sources of fruit and vegetables such as oranges, kiwis, dried apricots, green leafy vegetables, tomatoes, peppers, carrots, spinach. They can also be found in nuts, seeds, dairy products, and eggs. These are only a few of the food types in which anti-oxidant vitamins can be found.

ZINC

Zinc has an important role in the normal functioning of rhodopsin, a photoreceptor protein. Zinc is found in high protein foods such as beef, pork, and whole grain cereals.



ANTI-OXIDANTS

Recently, it has been suggested that two types of anti-oxidants, known as 'carotenoids', called Lutein (pronounced loo-teen) and Zeaxanthin (pronounced zee-uh-zan-thin) may also help with eye health.



They are the only carotenoids located in the eye. Lutein and Zeaxanthin can be found naturally in vegetables and fruit. In the Eye Disease Case Control Study, results found a significantly lower risk for developing AMD in people with high amounts of Lutein and Zeaxanthin in their blood. Dietary studies confirmed the association between lower AMD risk and frequent consumption of Lutein (from yellow peppers, mango, blueberries and green leafy vegetables such as Kale, spinach, chard and broccoli) and Zeaxanthin (found in orange sweet peppers, broccoli, corn, lettuce, spinach, tangerines, oranges and eggs).



SUPPLEMENTS



There are now many different vitamin supplements for eye health on the market.

They usually take the form of a once-a-day-tablet. Many will contain the daily-recommended amount of the vitamins and minerals found to be of benefit for eye health.

With a good healthy diet that includes sufficient fresh fruits and vegetables there should be no need to use supplements. Additionally, experts agree that taking supplements is not a substitute for a healthy diet. Remember to consult your doctor before taking any supplements.

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