

NUTRITION & TIPS FOR HEALTHY EYES

By Dr. Nick Flebotte, OD, FAAO

Key Vitamins and Nutrients for Healthy Eyes:

Lutein & Zeaxanthin

Many studies show that lutein and zeaxanthin reduce the risk of chronic eye diseases, such as macular degeneration and cataracts. Dark green leafy vegetables are the primary source of lutein and zeaxanthin, as well as other colorful fruits and vegetables like broccoli, corn, peas, persimmons and tangerines.

Vitamin C

Evidence suggests vitamin C lowers the risk of developing cataracts and when taken in combination with other essential nutrients, it may even be beneficial in slowing the progression of age-related macular degeneration. For your daily dose, try incorporating oranges, grapefruit, strawberries, papaya, green peppers and tomatoes into your diet.

Vitamin E

Vitamin E protects cells in the eyes from unstable molecules called free radicals, which break down healthy tissue. Good food sources of Vitamin E include vegetable oils (including safflower and corn oil), nuts, wheat germ and sweet potatoes.

Essential fatty acids

Omega-3 fatty acids are important for proper visual development and retinal function. Studies in pre-term and full-term infants suggest that getting enough omega-3 fatty acids in the diet is essential for optimal visual development. Salmon, tuna and other cold-water fish are the best sources of omega-3 fatty acids and can help reduce inflammation, enhance tear production and support the eye's oily outer layer.

Zinc

Zinc plays a vital role in bringing vitamin A from the liver to the retina in order to produce melanin, a protective pigment in the eyes. Impaired vision, such as poor night vision and cloudy cataracts, has been linked to zinc deficiency. For natural dietary sources of zinc, try red meat, oysters and other shellfish, and nuts and seeds.

Why Diet is Important for our Eye Health:

Diet is important because certain nutrients protect the body from damaging substances called oxidants. Oxidants are thought to be partly responsible for the aging process. In the eye they may contribute to the development of age-related macular degeneration (AMD) by speeding up cell degeneration. Foods rich in vitamins A, C and E, carotenoids, lutein and zeaxanthin, and selenium (pasta, bread and grains) all help protect our cells from damage.



Vitamins A, C and E are antioxidants. Put simply, antioxidants are foods that keep us healthy by delaying or slowing down oxidation, which causes aging or cell death. Oxidation can lead to cataracts by causing changes to fats and proteins in the eye's lens, making the lens cloudy.

Studies show that a diet rich in foods with antioxidants may reduce your risk of developing cataracts.

Carotenoids are also effective against oxidants. Lutein and zeaxanthin are important carotenoids. Many of these substances can only be obtained from food. Lutein and zeaxanthin are yellow plant pigments which give certain foods their color. **Lutein** and **zeaxanthin** are found in high concentrations in the macula. Another carotenoid, **meso-zeaxanthin**, is formed in the body from lutein.

These three carotenoids are known as macular pigment. They are thought to play an important role in absorbing damaging blue wavelengths of light. They act as a natural sunblock for the macula and can counteract the effects of free radicals. Some studies have suggested that people with low levels of macular pigment may be more likely to develop AMD. Some people may have naturally low levels of macular pigment, but weight and diet may also be factors.

The human body cannot make lutein or zeaxanthin. They have to be consumed in food. Several studies suggest that eating at least 10mg of lutein a day has the most beneficial effect on macular pigment levels. The average western diet is thought to contain no more than 3mg of lutein and zeaxanthin a day.

Foods with the Highest Amount of Lutein are:

- Kale 11.4 mg
- Red pepper 8.5 mg
- Spinach 7.9 mg
- Lettuce 4.7 mg
- Leek 3.6 mg
- Broccoli 3.3 mg
- Peas 1.7 mg



Macular.org has several recipes for meals rich with Lutein

Some studies suggest very light cooking may increase the bioavailability of lutein, making it easier for the body to absorb. It is thought too much cooking may destroy it. Cooking with oil or fat may help with absorption into the body.

Kale is the best source of lutein and has good bioavailability, even when raw. Eggs contain lutein and zeaxanthin, and these carotenoids may be more easily absorbed by the body because they are eaten with the fat contained in the egg. Zeaxanthin is also found in orange and yellow fruits and vegetables such as sweetcorn and orange peppers. Many of these foods also contain vitamins C and E.



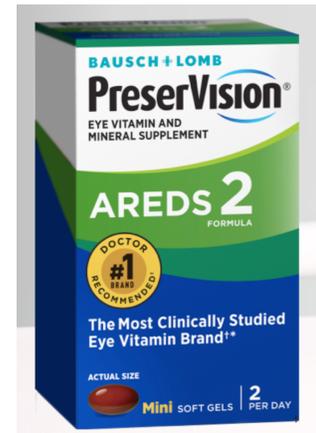
While you can get supplements in pill form at the drug store, antioxidants are most beneficial when consumed organically from fruits and vegetables and other whole foods. Studies showed that antioxidant supplements do not help prevent cataracts. Supplements may even be harmful to certain people. For example, high-dose beta-carotene supplements have been shown to increase risk of lung cancer in smokers and former smokers. High-dose vitamin E supplements increase risk of hemorrhagic stroke (stroke caused by bleeding in the brain) and prostate cancer.

AREDS2 Formula for AMD:

People with certain forms of AMD may be able to slow the progression of the disease to advanced form by taking the AREDS2 supplements. This formula—developed from the Age-Related Eye Diseases Study (AREDS)—includes:

- Vitamin C (500 mg)
- Vitamin E (400 IU)
- Lutein (10 mg)
- Zeaxanthin (2 mg)
- Zinc oxide (80 mg) and
- Copper oxide (2 mg)

The AREDS study found that 25% of patients with intermediate macular degeneration didn't progress to advanced. The AREDS2 study also looked at whether decreasing the amount of zinc and adding omega-3 fatty acids found in fish oil, specifically DHA and EPA, to the above ingredients further lowers the risk of AMD progression and found no additional benefit. Moreover, the AREDS studies found no prevention or slowing down of cataract progression by these supplements.



Before starting these supplements, be sure to talk with your eye doctor to learn if they are recommended for you. Some people should not take large doses of antioxidants or zinc for medical reasons. In addition to causing gastric upset, more recent studies have shown high levels of zinc to be harmful and may actually contribute to macular degeneration in up to 15% of cases. Individual genetic testing is available to determine if high levels of zinc may be harmful, but at this time, the American Academy of Ophthalmology does not condone making treatment decisions based on the results of genetic testing. Your eye doctor may recommend the AREDS formulation with a lower dose of zinc, such as the iCaps AREDS2 formulation which contains 25mg of zinc compared to the 80mg in PreserVision. Other products such as Viteyes have a completely zinc free formulation.



For early AMD in which the AREDS formulation showed no benefit, your doctor may suggest a daily multivitamin or a lower dose antioxidant supplement such as OcuVite.



Smoking:

You should not take any supplement with beta carotene (vitamin A) if you smoke or have smoked as evidence suggests it increases the risk of lung cancer. Smoking increases the production of the damaging free radicals. Smoking is the biggest risk factor for developing macular degeneration. People who smoke are up to four times more likely to develop AMD than those who don't, regardless of genetic risk. In diabetics, smoking increases the risk of developing diabetic retinopathy and it has also been linked to glaucoma, cataracts and dry eye.



The Mediterranean Diet:

Studies show the plant- and seafood-based diet may reduce your risk of heart disease and age-related macular degeneration (AMD). The Mediterranean diet includes:

- Green leafy vegetables and colorful fruits
- Tree nuts like almonds, cashews and walnuts
- Seafood as your primary meat source
- Healthy fats. Choose olive oil over butter
- Whole grain bread, cereal, and pasta
- Lots of herbs and spices added to your food to lower your salt intake
- Moderate amount of dairy (yogurt and cheese) and egg



Researchers found lower rates of macular degeneration among people who ate more vegetables, beans, fish, cereals, and especially fruits. In fact, one study showed that people who ate at least 150 grams of fruits per day lowered their risk of developing AMD by 15 percent.

Low-glycemic Index Diet:

People who have or at risk for diabetes or age-related macular degeneration (AMD) can benefit by following a low-glycemic index (low-GI) diet.

With diabetes, blood sugar levels can get too high, which causes serious health problems and can lead to vision loss. In fact, it is the number one cause of vision loss in adults aged 20-74, and the CDC states about 90% of vision loss from diabetes can be prevented.

Some foods cause rapid spikes in blood sugar (high-GI) and others raise blood sugar more moderately (low-GI). You can avoid quick blood sugar spikes with low-GI food swaps:

- Oatmeal or muesli over sweetened breakfast cereal
- Brown rice over white rice
- Whole-grain bread over white bread
- Durum wheat pasta or sweet potato over a baked potato
- Nuts over potato chips

Healthy Fats for Healthy Eyes:

Omega-3 fatty acids are found in oily fish (like salmon, trout and sardines). Nuts and oils like walnuts and sunflower oil are great natural sources of omega-6 fatty acids. Adding omega-3 fatty acids to your diet may provide relief from dry eye as well as other eye health benefits. High quality supplements such as Carlson's or Nordic Naturals are great choices and are available in both pill or liquid form. The World Health Organization recommends a daily amount for adults of at least 200-500mg of EPA and DHA, which are the biologically active forms of omega-3. Your doctor may recommend higher doses for certain inflammatory conditions, but as a rule of thumb, you should not exceed 3000mg of EPA/DHA daily. Be careful of misleading labels, no matter how much omega-3 the product states it contains, you want to look at the amount of EPA and DHA.



Flaxseed oil has been shown to not be as effective as fish oil, it contains ALA which is the non-active form of omega 3 and must be converted to EPA and DHA. 1000mg of flaxseed oil contains only 600mg of ALA, meaning that you only get 108mg of EPA and DHA out of 1000mg of flaxseed oil.

Although the AREDS study found no benefit of fish oil, other studies have shown that women who ate fish high in omega-3 fatty acids at least twice a week were less likely to get age-related macular degeneration (AMD). The American Heart Association also recommends that healthy adults eat fish at least twice a week. Other studies have shown a decrease in intraocular pressure with EPA and DHA. Some fish contain high mercury levels and should be eaten sparingly or avoided completely during pregnancy.

Additional Tips for Reducing the Risk of Macular Degeneration:

- Avoid processed snack foods such as cakes, cookies, potato chips, candy, and soft drinks as a higher intake of specific types of fat, including vegetable, monounsaturated and polyunsaturated fats and linoleic acid may be associated with a greater risk for advanced AMD.
- Maintain a healthy weight, normal blood pressure, blood sugar, and cholesterol levels.
- Exercise. Walk half an hour every day, or participate in more strenuous activities, if possible, like yoga, aerobic activities, or sports.
- Wear sunglasses and a hat with a visor in bright sunlight to protect your eyes from potentially harmful ultra-violet (UV) light and blue light.

It is important to remember that neither diet nor nutritional supplements can cure any eye disease or restore vision that you may have already lost. But healthy eating habits and good nutrition along with frequent eye health exams play a role in maintaining healthy eyes and vision.

The information contained herein was obtained from multiple reputable sources including the American Academy of Ophthalmology, Macularsociety.org and The American Macular Degeneration Foundation. Dr. Flebotte does not have a financial interest in any of the products mentioned.