



## The link between Eye disorders and Nutrition



More than 3.3 million Americans, 40 years and older are either legally blind or suffer with some type of vision loss. The leading causes of blindness and low vision in the United States are primarily age-related eye diseases such as age-related macular degeneration, cataracts, diabetic retinopathy, and glaucoma.

**Age-related Macular Degeneration (AMD):** AMD is an eye disorder associated with aging resulting in blurred central vision. AMD affects the macula, the central part of the retina that allows the eye to see fine details. There are two forms of AMD: wet and dry. Wet AMD occurs when abnormal blood vessels behind the retina start to grow under the macula, ultimately leading to blood and fluid leakage. Bleeding, leaking, and scarring from these blood vessels cause damage and lead to rapid central vision loss. An early symptom of wet AMD is that straight lines appear wavy. Dry AMD progresses more slowly. As part of the aging process, the macula thins over time gradually blurring vision and reducing central vision. One of the most common, early signs of dry AMD is drusen (tiny yellow or white deposits under the retina). The presence of small drusen is normal and does not cause vision loss, however, the presence of large and more numerous drusen raises the risk of developing advanced dry or wet AMD.

**Cataracts:** A cataract is a clouding of the lens of the eye, and is the leading cause of blindness worldwide and in the United States. Cataracts can occur at any age for a variety of reasons including gene disorder, aging, hyperglycemia, previous eye surgery, too much sun exposure without eye protection, or long-term use of steroid medication. Cataracts start small and initially may have little effect on your vision. As cataracts advance, they begin to darken with a yellow or brown tinge and also affect night vision.

**Diabetic retinopathy:** Diabetic retinopathy, a common complication of diabetes, is characterized by progressive damage to the blood vessels of the retina, the light-sensitive tissue at the back of the eye necessary for good vision. Diabetic retinopathy progresses through four stages, from microaneurysms, moderate to severe blockage in some retinal vessels, and eventually to proliferative diabetic retinopathy with neovascularization in the retina. The advanced stage of diabetic eye disease can steal both central and peripheral vision.

**Glaucoma:** Glaucoma is an eye disease that can cause vision loss and blindness by damaging the optic nerve in the back of your eye. It occurs when the normal fluid pressure inside the eyes slowly rises, but recent findings also show that glaucoma can even occur with normal eye pressure. At first, glaucoma does not usually present any symptom, making it easy to understand why half of all the people with glaucoma are unaware they have it. Over time, you may slowly lose vision, usually starting with your

side (peripheral) vision — especially the part of your vision closest to your nose.

**There is no substitute for the quality of life good vision offers. Foods rich in antioxidants and omega-3 fatty acids are good for both eye and general health. Choosing healthier foods is a good thing no matter how early or late in life we begin. Adding certain supplements to your daily diet can also help preserve your vision.**



**Lutein & Zeaxanthin:** The macular region of the retina is yellow due to the presence of the macular pigment, composed of two dietary xanthophylls: lutein and zeaxanthin. By absorbing blue-light, the macular pigment protects the underlying photoreceptor cell layer from light damage. There is ample, epidemiological evidence that the amount of macular pigment is inversely associated with the incidence of chronic eye diseases, including age-related macular degeneration and cataracts.



**Vitamin and mineral antioxidants:** The eyes require high amounts of antioxidants — more than many other organs. A prominent Blue Mountain Eye study investigated the relationship between antioxidant nutrient intake measure at baseline and the 10 year incidence of age-related cataracts, and found the following. A higher intake of combined antioxidants ( $\beta$ -carotene, vitamin C and E, and zinc) provides longterm protective associations against cataract development in older populations. Vitamin E is a member of a group of fat-soluble antioxidants that protect fatty acids from harmful oxidation. Since the retina is highly concentrated in fatty acids, adequate vitamin E intake is important for optimal eye health. Zinc plays a vital role in bringing vitamin A from the liver to the retina in order to produce melanin, a protective eye pigment.



**Omega-3 Fatty Acids:** Research shows omega-3 fatty acids are important for proper visual development and retinal function. DHA is found in high amounts in the retina, where it may help maintain eye function. Evidence also shows that taking omega-3 supplements may benefit those with dry eye disease. One study in people with dry eyes showed that taking EPA and DHA supplements daily for three months significantly reduced dry eye symptoms by increasing the formation of tear fluid. Omega-3 fatty acids may also help prevent other eye diseases. A study in middleaged and elderly people with diabetes found that 500 mg of omega-3 fatty acids daily may reduce the risk of diabetic retinopathy.



**Ginkgo Biloba:** According to the Mayo Clinic, some scientific evidence suggests that ginkgo biloba can prevent a worsening in age-related, macular degeneration. One review also showed that people with glaucoma who supplemented with ginkgo experienced an increased blood flow to the eye. The antioxidant effects along with a variety of other effects on blood flow might be responsible for the beneficial effects of supplementation with ginkgo biloba.