

Ocular Health and Nutrition

In the past, little attention was given to nutrition and its role in ocular health. Recent clinical studies suggest that a tailored nutritional plan may play a significant role in preventing or retarding the progression of ocular diseases like age-related macular degeneration (ARMD), glaucoma, and cataract.

The reasoning behind this clinical approach stems from the susceptibility of transparent ocular tissues (e.g. cornea, lens, aqueous humor and retina) to oxidative damage. Aging, inflammation, air pollutants, cigarette smoke, and sustained light exposure are all potential sources of oxidative agents. Thus the use of antioxidants, vitamins, trace elements and minerals in the form of nutritional supplements seems an appropriate strategy.

The Age-Related Eye Disease Study (AREDS I) focused on the effect of daily supplements on the incidence and progression of ARMD. It showed that high doses of antioxidants and minerals reduced the risk of developing advanced ARMD by 25% in 5 years in patients with a moderate risk of ARMD. Also the risk of moderate vision loss was reduced by 19% at 5 years. The nutritional formula consisted of vitamin E, beta-carotene, zinc and copper. A new study (AREDS II) will remove beta-carotene because of concern of a link to lung cancer in smokers) and add lutein, zeaxanthium and omega-3 fatty acids. A general recommendation is to eat a balanced diet (especially broccoli, spinach, collard greens, and kale for extra sources of lutein) in addition to daily AREDS supplementation.

Not all diets or supplements are necessarily without risk to eye health. Other studies have suggested that dietary fat intake (e.g. omega 3 fatty acids) may increase the

risk of elevated intraocular pressure or glaucoma. However, vitamin E and glutathione may forestall the onset of glaucoma based on early research but there is insufficient data to recommend daily intake of these supplements to reduce the risk of glaucoma.

Various vitamins and minerals like A, C, E and lutein have been touted for use in the prevention of cataract formation. Unfortunately, conflicting evidence exists for each. In high doses, vitamin A may reduce bone density and should be avoided by pregnant women, liver disease patients and those who consume excess alcohol while vitamin E may increase the tendency to bleed. Supplements such as niacin and the carotenoid, canthaxanthine may cause blurred vision by damaging the retina. Herbs like ginkgo can increase the risk of intraocular hemorrhage.

However simply following the food pyramid (e.g. daily intake of five or more portions of fruits and vegetables) may help patients at risk for cataracts. In fact, increasing the ingestion of lutein-rich foods has been associated with moderate reduction in the risk of cataract.

Regardless of current study results, there is a lack of definitive scientific evidence on how vitamins and minerals work in the eye. Future studies will provide much-needed information. So caution must be exercised in the use of dietary supplements. In particular, it is wise to share your dietary history including any vitamins, minerals, herbals or other supplements as well as prescribed medication you may be taking with your ophthalmologist. Only then, can safe and reliable dietary modifications be made.

For further guidance on recommended daily and maximal levels of vitamins and minerals, please access the Institute of Medicines (IOM) website at www.iom.edu.