

Nutrition for AMD: An Executive Summary

The largest study of nutritional treatment for AMD was concluded in the late 1990s. The Age-Related Eye Disease Study or AREDS used a supplement that the study participants took was a combination of beta carotene (15mg); Vitamin C (500mg); Vitamin E (400 IU); Zinc Oxide (80 mg) and Copper Oxide (2 mg). The result showed that while there was no preventive effect nor was there any reversal of AMD, there was a slowing of the progression from stage III to stage IV (the most advanced stages).

As of 2006, a follow-up study was begun to fine-tune these results and see what effect lutein and zeaxanthin have on AMD (called AREDS2). Results were released in 2013 and found a moderate effect from adding lutein and zeaxanthin, while removing beta-carotene. The AREDS2 formula is better than doing nothing but it is not the final product to help forestall the development of AMD. The study was designed to slow progression in late-stage disease. There are many more nutrients that can affect macular function which will be detailed below.

While we cannot change our age, gender, or family tree, there are some lifestyle changes that patients can adopt to help protect their eyes. First, wear sunglasses or a brimmed hat whenever exposed to large amounts of UV light. Moderate amounts of UV light are good for the human body, but overexposure can cause ocular damage.

Anything that prevents clogging of your arteries may help to prevent macular degeneration (as well as the degeneration of the rest of your body). Therefore, watching dietary fat and cholesterol, exercising regularly, not smoking, and watching weight and blood pressure are wise moves. Limit intake of alcohol to a maximum of six drinks per week for a man and three per week for a woman.

Recent peer-reviewed studies strongly suggest that Acetyl-L-Carnitine and Lipoic Acid greatly enhance nutrient cellular delivery, while providing increased ATP energy and a sense of well-being in most people. This data was confirmed in an Italian study that found a combination of Acetyl-L-Carnitine, CoQ10 and Fish Oils actually reversed some of the physical manifestations of AMD.

Quality formulations include a more bioavailable form of zinc than the formulation used in the ARED study. Zinc monomethionine is appropriately balanced with the scientific standard ratios of both copper and manganese to stimulate manganese super-oxide dismutase (MnSOD), which is required to neutralize both singlet oxygen and super-oxide free radicals. The 80 mg of zinc used in the ARED formulation was based on a single nutrient study published more than 15 years ago. The Institute of Medicines' upper limit for daily zinc supplementation is 40 mg per day. Given the opinion of a large number of PhD nutrition researchers, we believe 50 mg is the maximum amount of zinc safe for daily consumption. We now understand that supplemental minerals are most effective when presented in properly balanced formulations.

Lutein provides extra support for the macula, extra support for breast tissue and to further help prevent UV skin damage. The ARED study formulation does not include lutein. New science strongly suggests a central macula preference for zeaxanthin over lutein. A quality supplement should contain at least 4 mg of zeaxanthin.

The AREDS study formulation also used beta carotene as the Vitamin A source. Unfortunately, excessive amounts of beta-carotene interferes with xanthophyll absorption, as in lutein and zeaxanthin. Beta-carotene is also linked to increased rates of lung cancer in smokers who also use alcohol. Given the high rate of smokers in the AMD population, we would not feel safe recommending more than 3000 IUs of beta carotene in multiple formulations.

The antioxidant anthocyanidins increase intracellular vitamin C levels, improve ocular microcirculation and protect the vascular endothelium, as well as inhibit collagen destruction and decrease capillary fragility. Also, antioxidant bioflavonoids further prevent the oxidation of LDL. Oxidized LDL plays a key role in vascular damage. Bioflavonoids work synergistically with vitamin E to protect the purified rod outer segments (ROS) and retinal pigment epithelium (RPE) in the eye from free-radical induced membrane lipoperoxidation and damage. Bioflavonoids also support the capillaries stability.

Lipoic acid synergistically regenerates other protective antioxidant nutrients that cross the blood/brain/eye barrier. Lipoic acid, in concert with acetyl-l-carnitine increases ATP cellular energy at the mitochondria level. Impressive amounts of research show that the most important factor in aging is the decay of the mitochondria. The effect is that our bodies operate at one-half to one-fourth the energy we had in our youth.

Coenzyme Q10 regenerates circulating antioxidants and to provide nutritional support for the vascular system. It is also essential for ATP energy production from the mitochondria in our cells. If your patients are taking a statin (e.g., Lipitor, Zocor, etc.), then they are likely deficient in this enzyme.

There have been reports that the amount of body fat a person has affects the amount of lutein and zeaxanthin in the retina. What this means is that the higher amount of body fat you have, the less is available for the retina. It seems that these nutrients are stored in fat tissue and are not available to the eye, even when needed.

Finally, most doctors recommend that their older patients take antioxidant supplements to prevent or halt the progress of macular degeneration. Recent studies indicate that a well-rounded combination of antioxidants can slow macular degenerative changes. It is prudent to offer a multiple for the AMD patients that contains potent amounts of full-spectrum supplemental nutrients and antioxidants.

The mission of the Ocular Nutrition Society is to promote excellence in the care of patients through nutritional support for eye diseases and disorders through professional education and scientific investigation. Go to: www.ocularnutritionociety.org for more information.