

# VitalNews

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Reading, recognizing faces, and driving are just a few of the tasks that would become very difficult if our central vision were disturbed.

WRITTEN BY LAURA DENSON BAUM, M.D.

This is exactly what happens in a condition known as age-related macular degeneration (AMD)—the leading cause of blindness in persons over age 55. Macular degeneration is an incurable eye disease that causes progressive visual loss as a result of degeneration of the macula. The *macula* is the small central portion of the retina which sits at the back of the eye and receives visual information that is then sent to the brain via the optic nerve. This area includes the *fovea* which is responsible for our fine central vision. When the macula becomes damaged we can no longer distinguish detail, and the damaged parts of the macula can cause localized areas of central vision loss.

Fortunately, peripheral vision remains intact. There are two kinds of macular degeneration. Most common is the “dry” form where the deterioration of the retina is associated with the formation of small yellow deposits known as *drusen*, accumulations of waste products in the tissue beneath the macula. Drusen deposits interfere with the blood flow to the retina, reducing nourishment to the macula and causing the light sensitive cells to atrophy and lose their function. This form of macular degeneration is much more common and tends to progress more slowly than the “wet” type of macular degeneration. In the wet form of macular degeneration, abnormal blood vessels grow under the retina, causing the macula to bulge or lift up, distorting or destroying the central vision. The new blood vessels are extremely fragile and can spontaneously hemorrhage. Under these circumstances, vision loss may be rapid and severe.

Equally devastating as this disease can be, is the fact that there is no known cure and no clear understanding of its cause. While awaiting research that continues to try to shed more light on this condition, we can do our best to maintain some healthful habits and manage some of the known risk factors for macular degeneration. The good news is that beyond age and genetics there are several factors you can control. The bad news is you have to do the work: eat a healthful diet, exercise, limit sun exposure, and stop smoking!

As it has been said, we are what we eat - so choose foods wisely. Avoid trans fat laden, sugary snack foods and choose a diet that would be beneficial for cardiovascular good health – low in saturated fats and high in fruits and vegetables. Some of the most exciting research related to macular degeneration has been in the area of nutrition and has suggested that certain antioxidants including lutein and zeaxanthin may significantly reduce the risk of AMD. The carotenoids lutein, zeaxanthin and meso-zeaxanthin are the main components of the macula’s luteal pigment. This pigment layer protects the retina by absorbing damaging ultraviolet light, particularly blue light, and neutralizing free radicals that can harm the eye. Think of it as sunglasses for the retina. There is ample epidemiological evidence that the amount of macular pigment is inversely associated with the incidence of AMD (more pigment = less AMD). Studies have provided evidence that supplementation with lutein and zeaxanthin is associated with significant improvement in the density of the protective macular pigment. The studies also demonstrated clinical benefits; those who took a 10 mg supplement of lutein every day over a year’s time began to see about one line better on eye charts. Dietary sources of lutein include green leafy vegetables such as spinach, kale and romaine lettuce, plus broccoli, peas, squash, and egg yolk. The best sources of zeaxanthin are egg yolks, corn, orange peppers, orange juice, oranges and honeydew. Beyond these, taking a mixed carotenoid supplement that contains lutein, zeaxanthin and meso-zeaxanthin might also help preserve vision. Once again helpful in disease prevention, this time as pertains to eye health, are the omega-3 fatty acids found in fish oils (see our *VitalNews*, April 2004); DHA accumulates in the eye near light-sensing nerve cells, and EPA also has protective effects.

Proper dietary choices must be combined with regular exercise to prevent disease and better manage other risk factors like obesity, diabetes, elevated cholesterol and high blood pressure. Protect your eyes from exposure to harmful light. Wear good quality sunglasses and a visor: ultraviolet light and blue light can damage your retina and may increase your chances of developing macular degeneration. And finally... that ubiquitous warning: STOP smoking. Studies have found that smokers have lower levels of lutein and are at much greater risk of developing macular degeneration than nonsmokers. New research reported in the British Journal of Ophthalmology just this month warned that even passive smoking almost doubles the risk of age-related macular degeneration.



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# Why Take RetinGuard?

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Are you looking for a nutritional supplement created to support eye health? Go to any super-market or health food store, or do an on-line search and you'll quickly find yourself overwhelmed by choices. Some popular companies even have six or seven of their own products for you to consider. Which one should you choose? On what basis should you make your selection? After all, we're talking about the health of your eyes, your visual well being. This is not a small issue.

As macular degeneration (often referred to as Age-Related Macular Degeneration, or AMD) is the leading cause of blindness in the western world, most ocular formulations focus on this disorder. We at VitalRemedyMD have spent the last two years analyzing the medical literature in order to produce the safest and most scientifically validated formulations for preserving eye health. Though it's been a long process, we do believe the end has justified the means. RetinGuard™ and RetinGuard™ plus Beta-Carotene are now available for your benefit. In order to elucidate why it is we've produced these precise formulations, let me take you through the evolution of our thought processes that led us to create VitalRemedyMD's RetinGuard.

The first area of our attention was the trials. There are many small studies that have evaluated nutrition and supplementation for maintaining eye health, but one that has caught the eyes of many people is AREDS (Age Related Eye Disease Study). This trial was published in 2001, and found that individuals with advanced macular degeneration had a 25% reduction in the progression of disease when taking a high dose antioxidant and mineral formulation. As there were a number of worrisome "issues" with the consumption of such high dose

supplementation, AREDS II, an ongoing re-examination of this matter, has altered the doses of key ingredients in an attempt to establish optimal effective dosage ranges. Thus, in formulating RetinGuard, both AREDS and AREDS II had to be duly thought-out. Another major trial to be considered was LAST (Lutein Antioxidant Supplementation Trial). In this study, lutein (10 mg daily) was found to significantly halt the progression of AMD in study participants. Of course the smaller trials were used to help guide us as well, but a discussion of their findings is beyond the scope of this article. Now let me briefly address each component of RetinGuard, explaining its dose and presence in our formulation.

**Beta-carotene:** This carotenoid was utilized in AREDS at 15 mg daily. Because beta-carotene is found only minimally (if at all) in the normal retina (this finding could be the subject of an entire article unto itself), we opted not to use it in RetinGuard. High dose supplemental beta-carotene has been associated with an increase in lung cancer in smokers. As many patients with macular degeneration continue to use cigarettes, we felt a beta-carotene containing eye formula would put these people at undo risk for developing cancer. Of course we would never advocate the health-defeating habit of tobacco abuse, but we are also realistic. No matter how hard we may try to get patients to quit smoking, our efforts often fail. Acknowledging this fact, we formulated RetinGuard to be able to help even those who smoke maintain better eye health. On the other hand, for the non-smoker, and for those who believe in the eye-protecting value of high dose beta-carotene, we formulated RetinGuard plus Beta-Carotene. In doing this, several factors were considered. First and foremost, this dose has

"...these nutrients are the first effective treatment to slow progression of disease"

## medical news and events

### **Antioxidant Vitamins and Zinc Reduce Risk of Vision Loss from Age-Related Macular Degeneration**

Scientists found that people who were at risk of developing more advanced stages of AMD lowered their risk of disease progression by about 25 % when treated with a high-dose combination of vitamin C, vitamin E, beta-carotene, and zinc. The clinical trial – called the Age-Related Eye Disease Study (AREDS) – was sponsored by the National Eye Institute of the National Institutes of Health (NIH). This was an exciting discovery because these nutrients are the first effective treatment to slow progression of the disease. *Archives of Ophthalmology, October 2001.*

### **Lutein Reverses Vision Loss**

The Lutein Antioxidant Supplementation Trial (LAST study) was conducted at the Veterans Administration Hospital in Chicago from August 1999 to May 2001. Ninety patients with AMD received either (1) 10 mg of lutein, (2) a lutein, antioxidant, vitamin and mineral broad spectrum supplementation formula, or (3) placebo. In both groups one and two, the density of the retina's macular pigment which is thought to protect against AMD improved by 40% and visual function actually improved as well. *Optometry, April 2004.*

been found to be safe in non-smokers. Next, AREDS is considered by most ophthalmologists to be the best trial to date dealing with AMD and we felt it important to recognize and honor the value of this trial. We did lower the dose of beta-carotene to 12 mg, as most excellent daily multiples (such as the DailyMultiple and Daily2Tab) contain 3 mg of beta-carotene (making the total daily intake 15mg, or 25,000 IU, consistent with AREDS).

**Lutein/Zeaxanthin/Meso-Zeaxanthin:** These three carotenoids are found in the normal retina (and the lens as well). In fact, they're felt to be the carotenoids most responsible for protecting our eyes from the damaging effects of sunlight (especially blue light). We have used 10 mg of lutein (to be consistent with the LAST study), 4 mg of zeaxanthin, and 6 mg of meso-zeaxanthin (as lutein and zeaxanthin/meso-zeaxanthin are found naturally in a 1:1 ratio). Although the addition of this patented combination of carotenoids increases the cost of producing RetinGuard, we opted to include it because of the powerful scientific basis for its value. Two of the most prominent researchers in the field of macular degeneration and carotenoids (Drs. Bone and Landrum – who actually discovered lutein and zeaxanthin/meso-zeaxanthin in the retina) have published seminal research demonstrating the eye-protecting benefits of these three carotenoids. Thus, as our goal in formulating RetinGuard was to provide you with an eye formulation that would most greatly enhance your eye health, we included not just lutein and zeaxanthin, but meso-zeaxanthin as well. Interestingly our choice of lutein dosage is exactly what AREDS II has opted to utilize (and we're proud to say that our choice was made based upon our own research prior to learning about AREDS II).

**N-acetyl-cysteine (NAC):** NAC is the precursor for glutathione, the antioxidant known to be responsible for much of our eye's protection from free radicals. As glutathione is very poorly absorbed, we've incorporated 100 mg of NAC to help augment our body's glutathione reserves.

**Vitamin E:** This antioxidant was used in AREDS at a dose of 400 IU. Unfortunately, since 2001 (when AREDS was published) a number of trials have reported on potentially negative effects of high dose vitamin E. We understand the importance of E for eye health so we've used it at a lower dose, 100 IU. Natural mixed tocopherols, now known to be even better than simple vitamin E, are used in RetinGuard as well. Please note that many of the commercially available eye formulations use synthetic vitamin E, a form of E that (though much less expensive than natural E) can counteract some of natural vitamin E's benefits. We never use synthetic E in any of our formulations.

**Vitamin C:** This water soluble antioxidant is recognized as a major resource for regenerating ocular antioxidants back to their beneficial forms. Just like in AREDS, we've opted to use 500 mg of C in RetinGuard.

**Vitamin B2: Riboflavin (B2)** is felt to be the most important B vitamin for maintaining eye health. Excessive doses, however, may produce a paradoxically negative effect on our eyes. Thus we

have chosen 3.4 mg for RetinGuard. This dose allows patients to consume other B2-containing products (like a good daily multiple) without putting their eyes in danger.

**Zinc/Copper:** Zinc is a mineral known to be important for maintaining eye health. For this reason, it was used in AREDS, but at an extremely high dose. In fact, the 80 mg of zinc used in AREDS was felt to cause an increase in urinary-related hospitalizations in study patients. High dose zinc can also predispose to Alzheimer's, hair loss, cholesterol problems and prostate cancer. Thus we opted to cut the zinc dose to 25 mg (a dose that's consistent with AREDS II when taking a daily multiple as well). We've also included copper at 2 mg. The optimal zinc to copper ratio is felt to be 10:1. Acknowledging the importance of a great daily multiple (and understanding that such a product would contain 15 mg of zinc and 2 mg of copper – 100% of the RDV) we've used 2 mg of copper in RetinGuard. In this way, we can maintain the 10:1 ratio of zinc to copper; 40 mg of zinc and 4 mg of copper.

Finally, though we did not include omega-3 oils in RetinGuard (it would have increased the number of pills to 4 a day), because of their contribution to eye health we do recommend that patients with AMD take 1,000 mg of EPA/DHA daily. This dose is the same as that which is recommended for patients with cardiovascular disease and is provided by taking two of our VitalOils enteric coated soft gels. This is also the dose that AREDS II is currently studying.

## intelligent indulgences

### Kale

I must confess that it wasn't until recently that I considered preparing kale myself. I'd tasted it prepared by the local health food store and knew it was nutritious, but beyond that it remained quite foreign to me. Having done the research for this newsletter, I became committed to learning more about it and incorporating it into my diet. First I learned that there are several varieties of kale. As I searched the produce wall at Whole Foods looking for the large green wavy leaves I had encountered before, I learned it comes in different colors, from green to red to purple and even black. I then went home to read about it in my text book of vegetables by James Peterson. I learned a few more interesting things. When shopping for kale look for the smaller, more tender leaves, and avoid kale that looks limp. Kale wilts quickly but can be stored for a day or two, wrapped in a plastic bag, in the refrigerator.

To prepare kale, pull the stems off by holding the two sides of the leaf forward with one hand and then peeling back the stem with the other hand so that it is removed even where it goes up into the leaf. Then wash and cut into smaller pieces. If you're serving kale as a vegetable, first plunge it into boiling salted water to soften it, and then drain in a colander. If you're adding kale to a soup or vegetable stew, pre-boiling won't be necessary.

I decided to try something simple and sauté the kale with garlic and olive oil. Once the kale became just tender I added fresh baby spinach leaves and turned off the heat. The spinach leaves wilt quickly, but retain their bright green color if added last and gently stirred into the mix. This is an easy vegetable side dish that is packed with lutein and can be served hot or cold. If you don't like the kale on its own, try combining it with other vegetables and spices you enjoy or make it the addition to a favorite soup or stew.



# q&a

## patient queries

### our MISSION

is to enable your doctor to provide you with the best and most appropriate nutritional supplements.

#### **Q] How do I know if I have macular degeneration?**

**A]** Symptoms of macular degeneration include the following: straight lines look wavy, distinct shapes are blurry, colors appear dim, words appear blurred or difficult to read, dark or blank areas block the center of your vision. Always report new visual changes to your doctor and have a yearly eye examination during which the pupil is dilated and the retina can be directly observed with an ophthalmoscope.

#### **Q] What will AREDS II investigate?**

**A]** AREDS II is a follow-up to the original AREDS trial (see our "medical news") demonstrating that high-dose antioxidant vitamins and minerals had a positive effect on limiting the progression of macular degeneration. The primary objective of AREDS II is to determine whether progression to advanced AMD will decrease with oral supplementation of lutein and omega-3 fatty acids. Lutein and the omega-3s are of particular importance because of mounting epidemiologic data that suggest that these nutrients are associated with a decreased risk of AMD. AREDS II will also attempt to refine the AREDS formulation by removing beta-carotene from the regimen and by using lower zinc levels. These two nutrients have some associated risk in high doses in some patients. It is interesting to note that beta-carotene is not found in the macula; the main components of the macular pigment being lutein, zeaxanthin, and meso-zeaxanthin.

To learn more about our products please ask your physician, or visit our website at [www.vitalremedymd.com](http://www.vitalremedymd.com).

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