



IMAGE AWARENESS WELLNESS INSTITUTE

Macular Degeneration

1271 HIGH STREET, AUBURN, CA 95603 • PHONE (530) 823-7092 • ORDER LINE (800) 359-6091
HOURS: TUES. – FRI. 10 A.M. – 4 P.M. • E-MAIL: MAIL@IMAGEAWARENESS.COM WEB: WWW.IMAGEAWARENESS.COM

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THE CONDITION

Age-related macular degeneration is the most common reason for progressive loss of the vision in the developed nations. One out of ten Americans over 65 and three out of ten over 75 years of age are afflicted with the condition.

The photograph below illustrates normal vision. The photograph on the right illustrates what the scene would look like if one suffered with macular degeneration. The illustration is provided by the National Eye Institute, a division of the National Institutes of Health. The location of the images: <http://www.nei.nih.gov/photo/keyword.asp?narrow=Eye+Disease+Simulation&match=all>.

There are two basic forms of this condition: wet and dry. The wet form is the more dangerous since it can re-

sult in the loss of vision over a period of only a few months. It is characterized by fluid retention in the retina, new formation of blood vessels, and rupture of blood vessels (hemorrhage). Fortunately, only one out of ten cases of the condition is the wet form.

The dry form of macular degeneration results is a slow loss of vision. The deterioration can take place over decades. There is no known effective medication for treating the dry form of age-related macular degeneration.

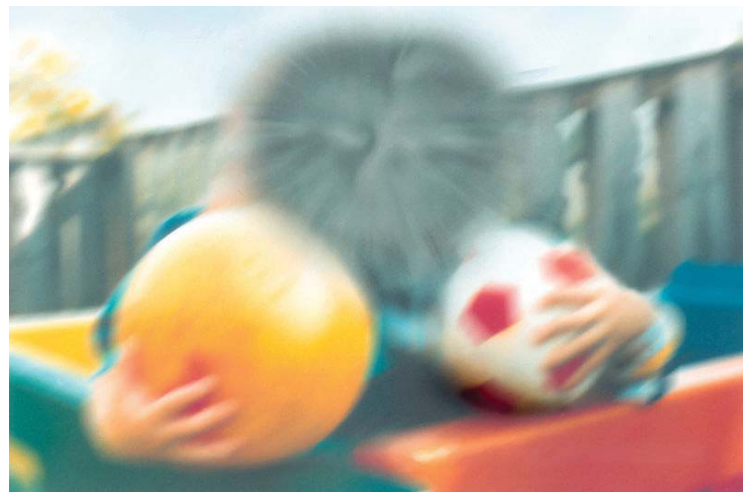
The cause of the disease is believed to be progressive damage to the area in the back of the eye as a result of ultraviolet light or free-radical oxygen exposure. The area most likely to be damaged is the macula lutea where light focuses to create an image in the back of the eye. The term macula lutea if from the Latin and means “spot”

(macula) and “yellow” (lutea). The macula lutea is an oval-shaped highly pigmented yellow spot near the center of the retina of the human eye.

The macula lutea’s yellow color absorbs blue and ultraviolet light entering the eye. This yellow pigment acts as a natural sunblock for the skin or a pair of tinted lenses for the eyes would. The yellow color on the surface of the macula lutea is from the carotenoids lutein and zeaxanthin.

The center of the retina is where we have our sharpest vision. Damage to peripheral vision is not easily detected, but damage to the macula lutea is much more obvious. The hallmark of a serious case of macular degeneration is loss of visual acuteness at the center of the field of vision.

This condition is strongly associated with advancing age. Aging is accompanied with deterioration in di-





gestive and absorptive capacity which may lead to deficiency of the antioxidants which protect the eyes. Cellular uptake of nutrients can also become impaired as we age. Addressing digestive issues should not be overlooked in considering this problem.

REFERENCE:

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https://en.wikipedia.org/wiki/Macula_of_retina

CAROTENOIDS

Many years ago Professor Richard W. Young, Ph.D., professor emeritus at UCLA and a member of the Jules Stein Eye Institute, wrote me the following in a personal communication, “lutein and zeaxanthin are found in relatively large amounts (in the human retina), concentrated in the yellow spot (macula lutea) directly in the center of the retina, where visual acuity is greatest. This is precisely the region of degeneration and visual loss in AMD (age-related macular degeneration). The xanthophylls appear to have the triple function of (1) absorbing violet/blue light before it can damage the visual cells and retinal pigment epithelium (the cells which deteriorate in AMD), (2) acting as retinal antioxidants, and (3) being situated in just the right place for protection against AMD—front and center in the retina.”

Xanthophylls are the only carotenoids found in the eye lens and macula. Zeaxanthin is found in maize and lutein in corn. Leafy green vegetables

such as spinach are also very good sources of these carotenoids. Unfortunately, some of the best sources of the xanthophylls are foods like kale and collards which are rarely consumed by most individuals.

Supplementation with lutein and zeaxanthin has been shown to increase blood levels of the nutrients and also to increase macular pigment optical density where it is not optimal.

One study of healthy women under 75 years of age found that stable intake of lutein plus zeaxanthin was associated with substantially lower odds (about a 40% reduced risk) of developing age-related macular degeneration.

A separate study of 398 women 52-74 years of age found that dietary intake of foods rich in carotenoids reduced the risk of “pigmentary abnormalities” of the eye in a dose related manner-- the higher the intake of carotenoid rich and vitamin E rich foods the lower the risk to the eyes. For some reason, in this study intake of foods high in alpha and beta-carotene was more closely associated with reduced risk than was the intake of lutein and zeaxanthin.

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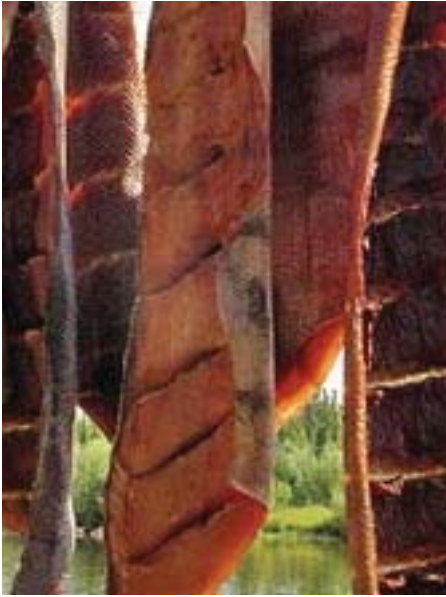
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CAROTENOID COMPLEX

GNLD Carotenoid Complex offers an ideal profile of all the carotenoids important for human health. GNLD pioneered supplementation in this area by first developing the testing which made it possible to identify which carotenoids were found in different foods and in the human body. One must be able to identify a compound’s presence in foods if one wishes to make an extract of the substance from the food. This testing revealed vast differences in the quantity of carotenoids in different foods depending upon how they were grown and the variety of plant involved. For example, some spinach had 100 times more lutein than other spinach. GNLD chose the richest and purest sources of different carotenoid families to produce a supplement with an ideal profile of carotenoids.

Encapsulation of carotenoids proved to be a particularly complex task. Carotenoids function as protectors against free radical oxygen which is abundantly present in the air we breathe. The GNLD scientists developed a technology called the Nutri-Max process to protect the purity and potency of the carotenoids in foods. The technology involves preparing raw ingredients at low temperatures to prevent nutrient loss and encapsulation in an oxygen-free environment to prevent destruction of the carotenoids. The product was protected by





British patent number 2,274,235 in 1996.

The next stage in the development of the carotenoid product was testing to see if the supplement was capable of being absorbed and elevating blood levels of carotenoids. The successful conclusion of this study was presented in a poster or highlighted study before the New York Academy of Sciences. United States Department of Agriculture researchers were present at this meeting and requested samples of the Carotenoid Complex to study.

Independent research by the USDA revealed the potent beneficial effects of GNLD's Carotenoid Complex. A study in the American Journal of Clinical Nutrition in 1997 reported that Carotenoid Complex could boost overall immune function 37% in 20 days. In addition natural killer cells increased in number by 20% in 20 days. Natural killer cells are one of the arms of the body's immune system which protects us from cancer.

USDA researchers also found that Carotenoid Complex prevented oxidation of cholesterol in the body and reduced oxidative damage to cells.

The real power of Carotenoid Complex was revealed when compared to supplements of Vitamin E and Vitamin C. One Carotenoid Com-

plex tablet had the Total Antioxidant Potential (TAP) of four 200 IU capsules of vitamin E or two 200 mg tablets of vitamin C.

One bottle of Carotenoid Complex will deliver the carotenoid power of consuming 250 or more pounds of raw fruits and vegetables since the body only absorbs 5-10% of the carotenoids in raw foods. Another advantage is that the carotenoids are provided in a form which is separated from the sugars which are abundant in many of the fruit sources of carotenoids.

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OMEGA-3 OIL

The Blue Mountains Eye Study found that consumption of fish was associated with decreased risk of macular degeneration. A follow-up study of 72,489 subjects found that those who consumed 4 or more servings of fish per week had a 35% reduced risk of age-related macular degeneration when compared with those who consumed fish only 3 times per month. Total fat intake increased risk.

While intake of fish oil decreases the risk of AMD, intake of unsaturated trans fatty acids as commonly found in highly refined vegetable oils increases the risk of the problem.

Those consuming fish more than once per week were only half as likely to develop macular degeneration than those consuming it less than once per month. Those consuming the high-

est amount of cholesterol in their diet were 2.7 times more likely to develop advanced macular degeneration.

GNLD Salmon Oil Plus is an excellent means of improving the body's supply of the important omega-3 family of nutrients. Salmon Oil Plus is tested for over 200 potential contaminants with a standard of none detectable. The supplement is standardized for its content of all 8 master molecules of the omega-3 family rather than just one or two.

Salmon Oil Plus is made with molecular differentiation technology. This allows for the removal of specific items like rancidity factors and fishy taste as well as concentration of the active components.

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CRUCIFEROUS VEGETABLES

Sulforaphane in cruciferous vegetables such as broccoli protects the retina from degeneration in a dose-related manner. Cruciferous vegetables are named after the cross-shaped flower which they produce.

GNLD Cruciferous Plus provides





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the spectrum of protective factors found in cruciferous vegetables. The supplement was tested by the Southern Research Institute and shown to slow the growth rate of breast cancer cells in culture by 37% at the highest doses.

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Gao, Xiangqun et al, "Induction of phase 2 genes by sulforaphane protects retinal pigment epithelial cells against photooxidative damage," *Proceedings of the National Academy of Sciences*, July 13, 2004, Vol. 101, No. 28, 10446-10451.

ANTACIDS

Use of antacids is an unexpected risk factor for the development of macular degeneration.

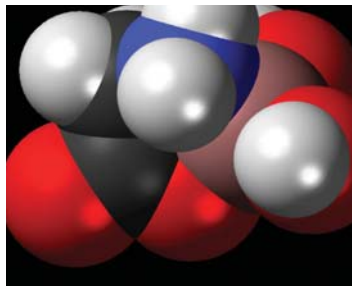
Low stomach acid would tend to impair absorption of fat soluble nutrients (carotenoids including lutein, omega-3 oils, vitamin E) and minerals (zinc, selenium, copper, and manganese).

The fact that antacids increase the risk of macular degeneration suggests that a decline in stomach acid production which is a frequent condition associated with the normal aging process may increase the risk of the condition. Stomach acid can decline rather dramatically after 30 years of age.

Many antacids contain aluminum which is probably not the best substance to be putting into the human body. The graphic below is a model of the aluminium glycinate complex, an antacid.

Use of antacids is associated with deficiency of a number of nutrients. Many minerals and vitamin B12 rely upon adequate stomach acid for proper absorption. Use of antacids can also increase the likelihood of developing allergic responses to foods or intensification of existing allergic responses.

GNLD Betagest is a supplement designed to support the body's production of hydrochloric acid. The supplement is derived from beet stems and beet roots. The product is designed to release slowly so it does not irritate the delicate stomach lining. Betagest is also designed with GNLD's Targeted Delivery Technology which sends it to the proper location for maximum



effectiveness.

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Wright, Jonathan, "Macular Degeneration: another Link to Digestion," *Nutrition & Healing*, Vol. 8, Issue 3, March 2001, p.8. *Ophthalmology* 2000; 107(12):2224-2232, 2000.

WEB RESOURCES

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