

Lutein is Naturally "Seen" in Chlorella

We all know that eating well helps keep our bodies healthy and strong – but does our diet actually have an effect on our eyesight? *Absolutely!* Nutrition has been shown to have a much greater impact on our eye health than previously thought. In fact, medical studies in the past few years have linked lutein – a naturally occurring carotenoid found abundantly in fruit, vegetables (especially dark green leafy vegetables), certain flowers, and green superfoods such as chlorella – to the prevention of eye and other serious health disorders.

Lutein: The key to keeping your eyes healthy

Essential for good vision, lutein is the predominant pigment in the macular area of the retina (the light-sensitive layer in the back of the eye), where it functions as a powerful antioxidant and as a blocking agent against damaging ultraviolet light. In a way, lutein appears to act as a natural eyeshade or sunblock for the eye. The macula (part of the retina) has a high concentration of yellow pigments, including the carotenoids lutein and zeaxanthin, and helps produce the sharp central vision needed for activities like reading, sewing and driving. These pigments absorb and filter out blue light and may play a central role in maintaining eye health. (Smokers take note: Cigarette smoking has been inversely related to macular pigment density, meaning that the more you smoke, the less eye-protecting pigment you have!)

Lutein is therefore very important to eye health, but unfortunately, nutritional studies show that the average person consumes less than 1.7 mg of lutein per day. And because the human body does not produce or manufacture lutein, the accumulation in the eye is dependent on dietary intake alone. Deficiency of lutein in the macular areas has been implicated as a risk factor for Age-related Macular Degeneration (AMD), an increasingly common disease that is beginning to receive increased attention in the media as more and more seniors develop the disorder. It turns out that lutein may be one of the most important discoveries in the prevention and treatment of AMD.

Scientific Studies on Age-Related Macular Degeneration (AMD)

AMD is a progressive degeneration of the macula or central region of the retina resulting in irreversible loss of central vision. You may be surprised to know that AMD is the leading cause of blindness in the United States. According to the National Eye Institute, AMD has caused about 100,000 cases of blindness, and about 1.7 million Americans have some form of AMD. Unlike other diseases or disorders, there are no prescription medications to cure or treat AMD, nor are there any surgical procedures to restore functional vision after it is damaged by macular degeneration. That's why early prevention and treatment is so imperative.

Over the years, researchers have been trying to find ways to prevent or minimize the effects of Age-related Macular Degeneration. A recent study published in the December 28, 2005 issue of the *Journal of the American Medical Association* (JAMA) demonstrated that a diet with a high intake of beta-carotene, vitamins C and E, and zinc is associated with a substantially reduced risk of age-related macular degeneration (AMD) in elderly persons.¹ Another new study, published in the *American Journal of Clinical Nutrition* in April 2006, studied the relation of macular degeneration to dietary glycemic index, a measure of the intake of foods likely to promote elevated blood glucose, in 526 women (average age of 62) enrolled in the Nurses' Health Study for over ten years. Researchers found that the development of macular degeneration was effected by the presence of carbohydrate-rich, high glycemic index diets.²

A study published by Dr. Johanna M. Seddon, Principal Investigator of AMD Degeneration Studies and Associate Professor of Ophthalmology of Harvard University School of Medicine, examined the effects of consuming spe-

cific carotenoids and the prevalence of Age-related Macular Degeneration. The study showed the highest correlation of disease prevention was associated with an intake of 6 mg of lutein per day, which led to a 43 percent lower prevalence of AMD.³

Dr. Max Snodderly of Schepens Eye Institute at Harvard University also concluded that lutein blocks harmful ultraviolet light by absorbing the blue light and inhibiting damaging photo-oxidation. Numerous other studies have also shown a connection between lutein supplementation and protected eye health. Another groundbreaking study from the Veterans Lutein Antioxidant Supplementation Trial shows a therapeutic benefit of lutein and healthy eye function.⁴

How much lutein do you need and how to get it!

As we've mentioned, medical studies show dietary supplements containing lutein are helpful in preventing AMD. However, you need to consume appropriate amounts of lutein. Studies range from a recommended 6 mg of lutein a day for prevention of eye disease and maintenance of eye health to 20-40 mg a day for therapeutic use. Be careful of vitamin supplements that claim to provide beneficial amounts of lutein, many really only offer minimal amounts that are not sufficient for protecting your vision. Be sure to read the labels carefully!

As discussed earlier, the human body does not produce its own supply of lutein, so our diet must include supplemental lutein from whole foods such as colorful fruits (especially kiwi, grapes, & oranges), vegetables (especially dark green leafy vegetables like spinach & kale), egg yolks, yellow corn, certain flowers, and the freshwater single-celled green algae, chlorella.

What Is Chlorella...

Chlorella specifically, *Chlorella pyrenoidosa* – a **nutritionally superior species** of freshwater single-celled green algae. *Chlorella pyrenoidosa* has a wide range of potent antioxidants, including chlorophyll, **beta-carotene**, **lutein**, Chlorella Growth Factor (CGF), Vitamin E, Vitamin C, and polyphenolic compounds. This amazing superfood provides such a rich source of antioxidants that may help to enhance several vital aspects of your immune response. Chlorella also naturally provides protein, dietary fiber, B vitamins, omega fatty acids, nucleic acids, essential amino acids, and important minerals including phosphorus, calcium, zinc, iodine, magnesium, iron, and copper.

Lutein - Two servings of Chlorella provides you with 8 mg of lutein, more than the recommended daily allowance (6 mg) for protective eye health.

Lutein is a carotenoid pigment found in many green vegetables, and is usually derived from marigold flower petals. Researchers have found that adults who consume at least 6 mg of lutein daily show a significant decrease in their risk of developing macular degeneration of the eyes. Even normal-sighted people who take lutein supplements report reduced glare and sharper vision. This can be helpful for anyone exposed to brilliant sunlight or computer screens on a daily basis.⁵

Beta-carotene - One serving of Chlorella is equivalent to 4,559 international units of beta-carotene, and the daily recommended allowance is 5,000 IU's (international units).

Beta-carotene is primarily necessary for the growth and repair of body tissue, protection against air pollutants, and reducing susceptibility to germs. And the body uses beta-carotene, the most famous of the carotenes, to create vitamin A, which plays a major role in vision health, bone development, reproductive health, and immune system regulation.⁶

Processing of Chlorella for Optimal Absorption of Environmental Toxins

DYNO[®]-Mill is a distinct method of processing chlorella, engineered by select research scientists. This method was designed to maximize total digestibility of the algae and its cell walls (which, if kept intact, compromise the bio-availability of key purification constituents within the algae). The DYNO[®]-Mill is the only method of processing chlorella that truly functions to maintain the vital properties inherent within chlorella, as it solely uses mechanical means to pulverize the cell wall. This patented DYNO[®]-Mill pulverization process has been the recognized as the industry leader.

1 <http://jama.ama-assn.org/cgi/content/abstract/294/24/3101> Dietary Intake of Antioxidants and Risk of Age-Related Macular Degeneration, JAMA Vol. 294, No. 24, December 2005

2 <http://ajcn.org/misc/release3.shtml>

3 <http://www.meei.harvard.edu/research/labs/epidem.php>

4 <http://www.macular.org/nutrition/>

5 http://www.google.com/search?hl=en&lr=&defl=en&q=define:lutein&sa=X&oi=glossary_definition&ct=title

6 <http://ods.od.nih.gov/factsheets/cc/vita.html>