

Can your body produce lutein?

No! Lutein can not be produced or manufactured in the body. The concentration of lutein in the eyes is totally dependent on dietary intake. Consumption of either a balanced diet and/or a dietary supplement containing lutein is the only way for your body to obtain it. By eating the recommended intake of 3 to 5 servings of fruits and vegetables per day, you can reduce the risk of developing certain diseases, especially macular degeneration. However, the latest consumer statistics show that less than 23 percent of Americans eat the recommended amounts of fruits and vegetables per day. Therefore, a dietary supplement containing lutein may be used as a complement to the diet to insure adequate amounts.

When should I take lutein?

The best time to take a supplement containing lutein is at the beginning of a meal, that is, with food. Lutein is fat soluble, therefore it will be better absorbed when ingested with food.

Can I protect myself from Age-Related Macular Degeneration?

While there are some factors which you have no control, such as age, heredity and gender, you can control your lifestyle and your diet. Here are some tips: wear sunglasses and brimmed hats that protect you from direct and reflected sunlight, eat a diet rich in fruits and leafy green vegetables, stop smoking and limit your intake of alcohol, saturated fats and cholesterol. Most importantly, be sure your diet contains from 6-20mg of elemental lutein per day; either through food or a quality dietary supplement with lutein from MAXIVISION® (see *MAXIVISION® Product Guide*).

Doctor recommended, **MAXIVISION®** Products have the highest lutein concentration of any supplement on the market.



New generation formulas in response to recent published studies create the most advanced products on the market.

- **MAXIVISION® Whole Body Formula**

Comprehensive daily multivitamin including comprehensive ocular nutrients with 20 mg of elemental lutein (400 mg of FloraGLO Lutein) per dose. No need for another multivitamin. Formulated for prevention and treatment of macular degeneration. Available in Capsule or Liquid. Premier Product.

- **MAXIVISION® Ocular Formula**

Comprehensive ocular supplement with 20 mg of elemental lutein (400 mg FloraGLO Lutein) per dose. May be used alone or in combination with other multivitamins.

- **MAXIVISION® Lutein Supplement**

Contains 10 mg of elemental lutein and 500 mcg of zeaxanthin per capsule. May be used alone or in combination with other products.

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Lutein: Frequently Asked Questions

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MAXI-FACTS CURRENT RESEARCH

Innovative Products For Health & Vision

What is lutein and zeaxanthin?

Lutein and zeaxanthin are carotenoids found in fruits and vegetables. Carotenoids are natural occurring lipid-soluble compounds that provide yellow, orange and red color to many fruits and vegetables. Spinach and kale contain the highest levels of lutein and zeaxanthin, but they are also present in foods such as corn and egg yolks.

What do carotenoids do?

In plants, carotenoids protect plant tissues from photo-oxidation and help trap light which a plant uses in photosynthesis to make its own food. In animals, carotenoids provide protection against photo-oxidation and free radicals. In humans, carotenoids have shown beneficial effects in reducing the risk of cancer, heart disease, eye disease and enhancing the immune system.

How does lutein work?

Lutein works as a powerful antioxidant and has been shown to prevent destructive oxidation reactions by a mechanism known as free radical quenching, preventing free radical damage. In addition, lutein also protects the macular tissue from photo-oxidation by filtering or blocking harmful ultraviolet light. It possesses properties of an ultraviolet (UV) absorber, absorbing damaging UV radiation and dissipating it harmlessly to prevent tissue damage in the delicate macular area of the retina.

Where is lutein in the body?

Lutein and zeaxanthin are the principle components of the macular pigment within the human retina. Lutein is found throughout the retina, ciliary body and lens. It is also found in the skin, cervix, brain, and the breast. **Deficiency of lutein in the macular area has been implicated as a risk factor for Age-related Macular Degeneration, AMD** (see MAXI-FACTS: *Macular Degeneration*).

What eye conditions is lutein an effective treatment for?

Studies suggest a relationship between lutein and macular degeneration, cataracts and retinitis pigmentosa. Dr. Johanna Seddon of Harvard University School of Medicine published a study in the Journal of the American Medical Association examining the effects of consumption of specific carotenoids and the prevalence of Age-related Macular Degeneration (AMD). **The study found the highest correlation of disease prevention was associated with an intake of 6mg per day of lutein, which led to a 43% lower prevalence of AMD.** In a similar study, Dr. Seddon found a 22% lower prevalence of cataracts in women and a 19% lower prevalence of cataracts in men who were consuming approximately 6mg of lutein per day.

In another important publication, Dr. Gislin Dagnelie of John Hopkins University School of Medicine published a study in The Journal of the American Optometric Association examining the effects of lutein supplementation on visual acuity, central visual field area, and subjective visual disturbances in retinitis pigmentosa (RP) and related retinal degenerations. A 26 week study of lutein supplementation with a loading dose of 40mg/day for 9 weeks and 20mg/day thereafter found: **“Vision improvement after lutein supplementation-**

tation- previously reported in age-related macular degeneration – also occurs in retinitis pigmentosa (RP), especially in blue-eyed individuals.”

A recent landmark study involving lutein, *The Veterans Lutein Antioxidant Supplementation Trial (LAST Study)*, showed a therapeutic benefit in all stages of dry macular degeneration using 10 mg of elemental lutein per day. This is the first conclusive study showing lutein may improve visual function in all stages of dry macular degeneration. **This is extremely important information for patients with macular degeneration and will certainly influence what doctors recommend.**

Where does lutein come from?

Lutein is abundant in nature, particularly in green leafy vegetables such as spinach and kale. Other sources are Brussels sprouts, green beans, corn, leaf lettuces, green peas, summer squash and egg yolks. FloraGLO Lutein, which is used in supplements, comes from the flowers of the Marigold plant.

How much raw spinach do I need to consume to get 6mg of lutein?

You need to eat at least two ounces or 58 grams of fresh spinach to achieve the minimum suggested daily dose of 6mg/day. This is equivalent to at least two salad bowls of spinach per day. Only a very small percentage of people consume 6mg or more of lutein per day.

How much lutein do I need?

According to current research, the recommended daily amount ranges from 6-20mg of elemental lutein per day. Minimum preventive and maintenance dosage is approximately 6mg per day. Therapeutic dosage is approximately 10 to 20mg per day. Studies show the average person consumes about 1.5mg of lutein per day. Studies also show a decreasing macular pigment density upon discontinuance of supplements with lutein, there-

fore, lutein needs to be consumed on a daily basis. Consult with your doctor to determine your specific needs. ***Caution must be exercised when choosing a supplement, check the label! Based on current research, some products do not contain adequate amounts of lutein and will not provide any preventive or therapeutic effects. The Centrum product line falls into this group of products.***

What is a better source of lutein, cooked or raw vegetables?

Cooked vegetables are better. In raw vegetables, lutein is locked within the vegetable's cellular structure. Cooking unlocks the cell walls and releases lutein. In this way, cooked foods provide a higher “bioavailability” of lutein.

Can lutein from a supplement be absorbed into the body?

Yes! Landrum, Bone, Joa, Kilburn, Moore and Sprague of Florida International University published a study involving patients taking a daily supplement with 30mg of lutein. They found a ten-fold increase in blood serum concentration and a corresponding daily increase in macular pigment density. They also noted upon discontinuance of the lutein supplement the serum levels and macular pigment density levels declined back to pre-treatment levels.

Is lutein safe?

Yes! In the recommended dose range of 6-20mg per day there are no known precautions at this time. There have been no reported safety complaints. A study conducted by Le Marchand, et al. (1995) showed that the natural consumption of lutein in the Fiji Islands is between 18-23mg per day. Studies have used as high as 40mg per day with no side effects observed.