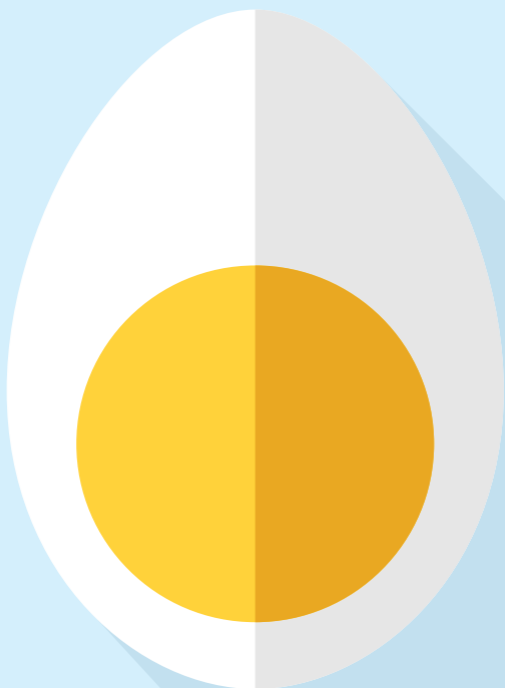


Wise Food & Lifestyle Choices
For Better Overall Health

THE IMPORTANCE OF LUTEIN IN YOUR DIET



FOOD FOR
THOUGHT

WHAT IS LUTEIN?

Have you heard of the antioxidant lutein? Did you know lutein plays an important role in protecting your eye health and vision? Lutein is a natural compound found in foods such as vegetables, fruits and eggs. It belongs to the carotenoid family, a group of antioxidant compounds responsible for many of the colours we see in nature, such as the red in tomatoes, the orange in carrots and the yellow in egg yolks. Your body cannot make lutein, so you must obtain it from your diet.¹⁻³

Lutein plays a specific role in maintaining eye health.



WHERE IS LUTEIN FOUND IN YOUR BODY?

Lutein is found along with zeaxanthin in the macula of your eyes, an area of the retina responsible for central vision. These antioxidant compounds are found in much higher concentrations in the retina and lens of your eyes than in your blood.^{3,4} Lutein and zeaxanthin are also present in smaller amounts in your skin, breast and other tissues.^{3,5}

WHAT IS THE FUNCTION OF LUTEIN?

Research shows that lutein and zeaxanthin play a specific role in maintaining eye health.^{3,6,7} Lutein and zeaxanthin form a very efficient filter for damaging high-energy blue-light that reaches the back of your eyes. They may also act directly as antioxidants to reduce damage to the retina and other tissues.



SAVE YOUR SIGHT:

6 STEPS TO PROTECT YOUR VISION

1 Have your eyes examined regularly by an eye care professional. Serious conditions can be present in your eye without symptoms. Others progress rapidly if left untreated. In general, you should get an eye exam at least every two years.

2 Quit for your eyes. People who smoke are nearly seven times more likely to develop AMD, the number one cause of significant vision loss in Canadians over 50. Quitting now can reduce the risk.

3 Get healthy. Choose foods rich in vitamins C and E, beta carotene, zinc, and lutein (up to 10 mg of lutein per day is a healthy choice). Keep active: excess weight, a sedentary lifestyle, and high blood pressure are risk factors for several eye conditions.

4 Protect your eyes from sunlight. Wear a hat with a brim and choose sunglasses that provide at least 98 per cent protection from UV rays.

5 Wear eye protection. When playing sports or working with power tools, use Canadian Standards Association-approved safety glasses or goggles. Most hardware and sporting goods stores carry a good selection.

6 Consider vitamin supplements. If you are diagnosed with AMD, talk to your eye care professional about using a special formula of high-dosage antioxidant supplements.

FOODS THAT CONTAIN LUTEIN

Lutein is found in high concentrations in dark green vegetables (kale, collard greens, Brussels sprouts, spinach, broccoli, lettuce, beans and peas), starchy vegetables (corn and peas), and fruits (kiwi fruit and oranges).^{1,2,7,8}



Eggs also contain lutein and eggs that are enriched with lutein are a more concentrated source as shown in Table 1.

TABLE 1
SOME KEY SOURCES OF LUTEIN

FOOD	LUTEIN CONTENT
Kale, cooked	20-33 mg*/1 cup
Turnip greens, cooked	18.1 mg/1 cup
Spinach, cooked	12-15 mg*/1 cup
Spinach, raw	6.6 mg/1 cup
Broccoli, cooked	3.4 mg/1 cup
Brussels sprouts, cooked	3.4 mg/1 cup
Green Peas	2.3 mg/1 cup
Naturegg™ Omega Plus™ eggs	1 mg** /2 eggs
Naturegg™ Omega Plus™ liquid eggs	0.8 mg** / 1/3 cup
Corn, cooked	0.6 mg/1 cup
Tangerines	0.3 mg/1 cup
Orange Juice	0.3 mg/1 cup
Regular Eggs	0.2-0.6 mg*/2 eggs

*Depending on Variety. ** Based on lab analysis. Source for lutein values other than Naturegg eggs: Lutein and Zeaxanthin, Alternative Medicine Review (2005) 10: 128-135. Available at: <https://pdfs.semanticscholar.org/9b73/345ed58b0932267860432cd58f9906f04f81.pdf> (Accessed November 27, 2019).

BENEFITS OF LUTEIN

Research suggests that higher intakes of lutein may help protect against age-related macular degeneration (AMD), cataracts, certain types of cancer, heart disease and stroke. Lutein has been found in breast milk and the umbilical cord, suggesting that this beneficial antioxidant may also play a role in pregnancy and breastfeeding.^{9,10}

Experts believe that a daily lutein intake of about 6 mg may benefit eye health.¹¹ A Canadian survey found on average, daily intakes of lutein were only 1.413 mg in adults and 0.574 mg in adolescents (13-17 years).¹² Eating 5 to 10 servings of vegetables and fruits each day provides between 3 and 6 mg of lutein. Eggs, especially lutein enriched eggs, also make an important contribution to lutein intakes.

AGE-RELATED MACULAR DEGENERATION (AMD)

AMD, a degradation of the centre of the retina including the macula, is the leading cause of vision loss and blindness in Western countries. As many as 15% of Canadians over 50 years and 30% of those over 75 years have some degree of AMD.¹³ The burden of this disease is on the rise with our aging population. The number of Canadians affected by AMD is expected to double to 2 million by the year 2031. Risk factors for AMD include age, gender, genetics, smoking, heart health and nutrition.

A number of observational studies have found that higher dietary intakes of lutein are associated with a lower risk of AMD, especially advanced AMD.^{7,14,15} A large long-term study found that a higher intake of bioavailable lutein and zeaxanthin was associated with a lower risk of advanced AMD in men and women over a period of 20 years.¹⁶



Lutein may help protect against age-related macular degeneration (AMD), cataracts, certain types of cancer and heart disease.

CATARACTS

Cataracts are one of the major causes of preventable blindness around the world. Cataracts are characterized by opaque areas on or within the lens of the eye. Lutein has been associated with a decreased risk of cataract formation in some, but not all, observational studies.^{15,17-19} Overall the research suggests lutein may play a role in the prevention of cataract progression.¹⁵



CANCER

A number of studies have shown that higher intakes of vegetables and fruits rich in carotenoids are associated with a lower risk of certain types of cancer, including lung, colon, breast and skin cancer.⁷ One study that examined people's past food intake reported significantly lower rates of colon cancer in men and women who consumed more lutein.²⁰ The major sources of lutein included spinach, broccoli, lettuce, tomatoes, carrots and eggs. Another large study found that the risk of lung cancer was significantly reduced in people with higher lutein and zeaxanthin intakes.²¹ A lower risk of breast cancer has also been observed in women with higher lutein and zeaxanthin intakes.^{22,23} An analysis of seven studies found lower breast cancer risk in women with higher blood levels of lutein.²⁴

HEART DISEASE AND STROKE



Research indicates that higher dietary intake and higher lutein levels in the blood are generally associated with better cardiovascular health.²⁵

Large population studies have also found that foods rich in carotenoids are associated with a lower risk of heart disease and stroke.¹ Harvard researchers found that each additional daily serving of vegetables and fruits was associated with a 4% lower risk of heart disease.²⁶ Green, leafy vegetables rich in lutein had the most protective effect. Another study found that men with higher lutein intakes had a lower risk of stroke.⁷ Eating one egg a day has been shown to significantly increase blood lutein and zeaxanthin levels without increasing blood cholesterol or triglyceride levels in older adults.²⁷

WHY EGGS MAKE SENSE AS A SOURCE OF LUTEIN

The bioavailability of lutein (the amount absorbed by your body) depends on a variety of factors including the makeup of the food itself, the interaction of lutein with fat, fibre, other carotenoids, your nutritional status and age.²⁸

While leafy green vegetables are generally the most concentrated sources of lutein, studies have found the lutein in eggs is more bioavailable.²⁹⁻³⁰ The lipids in egg yolks allow your body to absorb the lutein from eggs much more efficiently than the lutein in plant sources.

One study found that eating an average of 1.3 regular eggs daily (providing 0.38 mg of lutein) increased blood lutein levels by almost 30% over

the course of a month.²⁹ Researchers at Tufts University showed that the lutein in eggs was more readily absorbed than that in spinach or lutein supplements.³⁰ Lutein enriched eggs are a more concentrated source of highly bioavailable lutein. Eating cooked eggs along with vegetables has also been found to increase the absorption of carotenoids such as lutein from the vegetables.³¹ Eggs make sense as part of a balanced diet with plenty of vegetables and fruit as recommended by Canada's Food Guide.



Good food choices for lutein include dark green and starchy vegetables, fruits and eggs.

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