

## Eye Health – Does Diet Really Matter?

A rapidly growing body of evidence indicates that eating certain foods can help to safeguard your vision. It is true that people fear losing their sight more than any other sense so just as with other areas of disease prevention, learning about how diet can play a role in protecting eye health is important to safeguard this precious commodity.

### Understanding vision

The two major causes of visual impairment are cataracts and age-related macular degeneration (AMD). Oxidative damage is a major risk factor in both conditions. It makes sense—the tissues of the eyes are susceptible to oxidative damage, just like tissues elsewhere in the body. And sunlight causes oxidative damage to the eye. There is increasing evidence that a diet rich in nutrients that have antioxidant and anti-inflammatory properties may help offset the potential threat to vision that oxidation can trigger. Antioxidant nutrients, particularly vitamins A, C and E, along with the carotenoid pigments, lutein and zeaxanthin, (found in fruits and vegetables), and omega 3 fatty acids have all been associated with a potential to help prevent or delay the onset of these forms of vision impairment.

#### - Cataracts

Cataracts are characterised by a clouding of the eye lens, which is made up of water and protein and is normally transparent. As cataracts develop, some of the protein clumps together, causing the lens to fog up preventing light rays from passing through. It is unclear what causes cataracts however there appears to be a connection between changes in the chemical composition of the lens with aging. As part of their normal function, body cells, including those in the eye, produce substances called free radicals. Over time, free radicals can damage tissues and organs and it is thought they may be associated with cataracts.



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## - Age-related macular degeneration

Age-related macular degeneration (AMD) is a chronic progressive disease that occurs when the tissue in the macula (the central part of the retina) deteriorates. The macula is the size of a pinhead and is responsible for what we see straight ahead of us and for our sharpest vision, which is necessary for reading, writing, driving at night and our ability to see colour. In AMD, this central vision becomes blurred, straight lines become wavy and colours hard to distinguish. Researchers are uncertain as to why AMD occurs. Aging and a family history are two of the main risk factors. Other factors that may be associated with an increased risk include:

- ⌚ long term exposure to sunlight
- ⌚ low blood levels of minerals and antioxidant vitamins such as vitamins A, C and E
- ⌚ cigarette smoking
- ⌚ certain circulatory problems such as high blood pressure

## Dietary Components

A recent Harvard study provided some important evidence of the protective benefits of antioxidants, particularly lutein and zeaxanthin in promoting good eye health and clearly demonstrated a link between diet, smoking, BMI (body mass index) and overall eye health.

## - Lutein and zeaxanthin

Lutein and zeaxanthin are from the carotenoid family that are deposited in the eyes and act as antioxidants, "mopping up" the free radicals which can cause damage. One cause of free radical oxidative damage is overexposure to the sun's UV radiation. There are also indications that one or both of these substances can act like natural sunglasses, physically helping to filter out harmful blue light and stopping it from reaching and damaging the back of the retina. In one new study published in the Archives of Ophthalmology, a team at Harvard Medical School found that women who consumed higher levels of lutein and zeaxanthin (6.7 milligrams per day) were 18% less likely to develop cataracts than those who consumed lower levels of the antioxidants (2.1 milligrams per day). Another study reported by University of Sydney in the Journal Ophthalmology, found similar results linking higher lutein and zeaxanthin consumption to lower risk for age-related macular degeneration. Equally a National Institute of Health study found that



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people eating the highest amounts of these carotenoids have a 43% lower risk of developing macular degeneration, compared to those who eat the least.

### ► Sources in the diet

Lutein and zeaxanthin are often found together in many colourful fruit and vegetables. They include:

spinach	squash	sweetcorn
kale	broccoli	green beans
Brussels sprouts		peas
kiwi fruit	grapes	oranges
mango	papaya	peppers
prunes	pumpkin	sweet potatoes
melon	zucchini	romaine lettuce

**Nutrition Tip:** Eating lightly cooked vegetables are better than eating them raw, as cooking breaks cells down, making it easier for the body to absorb the lutein or zeaxanthin. *Overcooking*, however, can sap the vegetables of their goodness (lutein, zeaxanthin *and* vitamins).

### ► Recommended Intake

There is currently no recommended daily intake allowance of lutein and zeaxanthin, but it's thought that we should eat about 6mg each day - aim for two to four (or more!) servings of fruit and vegetables from the list above. If you find it hard to increase your intake to the recommended levels, there are eye health supplements available that will help you meet the recommended amounts.



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## - Vitamin A

The advice to eat plenty of carrots to see well in the dark may not be just an old wives tale afterall! Carrots contain beta-carotene, which is converted into vitamin A by the body. In the retina, a form of vitamin A, retinol, is part of the visual pigment in the human eye which acts as the light-gathering part of the visual pigments and an early sign of deficiency is night blindness. Because the pigment is made up of components of dietary origin, eating more plant foods including yellow or orange coloured fruit, spinach, broccoli and corn or supplements containing the antioxidant nutrient beta-carotene may improve vision and colour perception throughout life and reduce the risk of visual loss in old age.

## - Omega 3 fatty acids

Recently studies have examined the link between omega 3 fatty acid intake and eye health. A study conducted by the University of Melbourne found that eating fish containing omega 3 fatty acids twice a week was linked to a reduced risk of AMD while a 38% reduction in risk was found when those eating the most omega 3 fatty acids were compared with those eating the least. The brain and eye are highly enriched with omega 3 fatty acids and very high levels of omega 3 fatty acids are present in the retina. While the mechanism of protection is not well understood it is thought that omega 3 fatty acids may be involved in the development and proper function of blood vessels in the eye as well as helping to reduce inflammation.

An important study published in the Archives of Ophthalmology found that intake of omega-3 fatty acids (DHA) was associated with a 46% reduction in AMD. While much research is still required to examine this link it appears the advice to consume at least one portion of oily fish a week may also be important in promoting eye health. This is equal to about 3 grams of EPA/DHA.

### Bilberries

Bilberries are found in damp, acidic soils throughout the temperate and subarctic regions of the world and are closely related to blueberries. They have been linked with improvement of night vision, and it is said that World War II pilots consumed bilberries to improve night vision when fighting at night. Bilberries contain important antioxidants known as anthocyanins which can play a role in the reduction of certain diseases such as cancer and heart disease. Although more research needs to be done to confirm bilberries' role in eye health, they are still a useful addition to any healthy eating plan due to the presence of powerful anthocyanins



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## Conclusion

So while it has been said that the eyes are the windows to the soul it appears that they also may be a view into one's health. By incorporating eye-protective carotenoid antioxidants, beta-carotene and omega 3 fatty acids as well as managing our weight and not smoking, we can go a long way to promoting positive eye health and ensuring we protect our eyesight as we age.

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## Understanding antioxidants and why everyone's talking about them!

We have all heard of the term antioxidants but what are they and why might they be important in preventing many of today's lifestyle diseases including helping you to turn back that aging clock?

Antioxidants are substances that may protect cells from the damage caused by unstable molecules known as free radicals. Free radicals are produced when your body breaks down food, or by certain environmental exposures such as cigarette smoke and radiation. Antioxidants interact with and neutralise these free radicals, helping prevent some of the damage they might otherwise cause. It is thought that such free radical damage can contribute to the development of certain cancers, heart disease and the aging process.

The simplest way to consider the action of antioxidants is to examine the process of an apple browning. Once you cut an apple it will begin to discolour, but if you place it in orange juice, which contains Vitamin C, it stays white i.e. it is protected from environmental damage through the presence of the antioxidant Vitamin C.

Examples of antioxidants include beta-carotene, lycopene, carotenoids, vitamins C, E, and A. The following list describes food sources of the most commonly known antioxidants.

- ⌚ **Beta-carotene** - found in many foods that are orange in color, including sweet potatoes, carrots, squash, apricots, pumpkin, and mangos. Some green leafy vegetables including spinach and bai chai are also rich in beta-carotene.
- ⌚ **Lutein** - best known for its association with healthy eyes, is abundant in green, leafy vegetables such as spinach, green cabbage and bai chai.
- ⌚ **Lycopene** - a potent antioxidant found in tomatoes, watermelon, guava, papaya, apricots, and pink grapefruit.
- ⌚ **Selenium** - Plant foods like rice and wheat are the major dietary sources of selenium in most countries. The amount of selenium in soil, which varies by region, determines the amount of selenium in the foods grown in that soil. Animals that eat grains or plants grown in selenium-rich soil have higher levels of selenium in their muscle. Meats and bread are common sources of dietary selenium and brazil nuts also contain large quantities of selenium.



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- ⌚ Vitamin A - Foods rich in vitamin A include liver, sweet potatoes, carrots, milk, egg yolks and mozzarella cheese.
- ⌚ Vitamin C - found in high abundance in many fruits and vegetables.
- ⌚ Vitamin E - found in almonds, in many oils including wheat germ, safflower, corn and soybean oils, and also found in mangos, nuts, broccoli and other foods.

## Recipe

Why not try the following recipe which is sure to boost your antioxidant intake!  
Berry Burst

Ingredients

1 cup of soy milk or dairy milk

1 cup of mixed berries

1 banana

1/3 cup plain yoghurt

1 tablespoon of ground flaxseed (optional)

Method

Mix all ingredients in a blender

Blend until desired consistency is reached

Pour into a glass and add in ground flaxseed

Enjoy!



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## Q & A Corner

### Q.1 How do I take care of my eyes and vision as I age?

To keep your eyes healthy as you age consider the following:

- ⌚ Eat a diet containing plenty of fruits and vegetables. Choose deep green and dark yellow fruits and vegetables. Vegetables from the cabbage family, including cauliflower, brussel sprouts and broccoli, are also good choices. Lutein and zeaxanthin are found in high levels in egg yolks, corn and spinach.
- ⌚ Wear sunglasses to protect the eyes from the sun's damaging rays
- ⌚ Control other diseases that increase the risk of degenerative eye disease such as high blood pressure.
- ⌚ Don't smoke
- ⌚ Maintain a healthy weight
- ⌚ Get regular eye check-ups

### Q2. My job requires me to look at the computer most of the day, and I usually feel tired and have dry eyes. What can I do to alleviate the problem?

Dry eyes are caused by a lack of tears. Tears are necessary for the normal lubrication of your eyes and to wash away particles and foreign bodies. Dry eyes can also result in tired eyes so the two are properly connected in your case. Having dry eyes for a while can lead to tiny abrasions on the surface of your eyes. There are many reasons for tired dry eyes including aging, a dry environment at work (i.e. air conditioning), sun exposure and smoking or a smoky environment. Some simple steps that may help are to try artificial tears, available as either drops or ointment, avoid smoke and air conditioning if possible and rest your eyes regularly. If it persists it is better to talk to your doctor or optometrist who may be able to prescribe a suitable

While much research on the health promoting properties of antioxidants continues to be explored the advice to consume lots of fruits and vegetables, wholegrain foods and nuts will help provide a variety of antioxidants in the diet and ensure that you are reaping the benefits of these important substances.