

# Nutrition and eye health

**Support throughout central vision loss**

A healthy diet is an important part of looking after your eyes.

**No one need face macular degeneration alone.  
For information and support call 0300 3030 111.**

While the causes of age-related macular degeneration (AMD) are not fully understood, scientists believe factors responsible include age, genetics, smoking, exposure to sunlight and diet.

## Why diet is important

Diet is thought to be important because certain nutrients protect the body from damaging substances called oxidants.

Oxidants, including free radicals, are thought to be partly responsible for the ageing process. In the eye they may

contribute to the development of AMD by speeding up cell degeneration.

Antioxidants reduce this harmful effect. Vitamins A, C and E are antioxidants. Carotenoids are also effective against oxidants.

Lutein and zeaxanthin are important carotenoids. Many of these substances can only be obtained from food.

Lutein and zeaxanthin are yellow plant pigments which give certain foods their colour. Lutein and

zeaxanthin are found in high concentrations in the macula. Another carotenoid, meso-zeaxanthin, is formed in the body from lutein.

These three carotenoids are known as ‘macular pigment’. They are thought to play an important role in absorbing damaging blue wavelengths of light. They act as a natural sunblock for the macula and can counteract the effects of free radicals.

Some studies have suggested that people with low levels of macular pigment may be more likely to

develop AMD. Some people may have naturally low levels of macular pigment but weight and diet may also be factors.

The human body cannot make lutein or zeaxanthin. They have to be eaten. Several studies suggest that eating at least 10mg of lutein a day has the most beneficial effect on macular pigment levels. The average western diet is thought to contain no more than 3mg of lutein and zeaxanthin a day.

While it is important to eat a wide range of foods, the vegetables

have the highest amount of lutein are:

**Lutein in vegetables milligrams (mg)/100g (fresh)**

Kale	11.4 mg
Red pepper	8.5 mg
Spinach	7.9 mg
Lettuce	4.7 mg
Leek	3.6 mg
Broccoli	3.3 mg
Peas	1.7 mg

Some studies suggest very light cooking may increase the bioavailability of lutein; that is the ease with which the body can absorb the lutein. It is thought too much

cooking may destroy it. Cooking with oil or fat may help with absorption into the body. However, research is ongoing.

Kale is the best source of lutein and has good bioavailability, even when raw.

Eggs contain lutein and zeaxanthin, and these carotenoids may be more easily absorbed by the body because they are eaten with the fat contained in the egg.

Zeaxanthin is also found in orange and yellow fruits and vegetables such as

sweetcorn and orange peppers. Many of these foods also contain vitamins C and E.

### Nutritional supplements

There has been a lot of research into whether nutritional supplements can make up for the lack of lutein, zeaxanthin and other antioxidants in people's diets.

Two large studies, Age-Related Eye Disease Study AREDS1 and AREDS2, suggested that certain nutritional supplements can slow down the progression of AMD by about 25%.

AREDS2 in 2013 tested a modified version of the AREDS1 formula.

#### The AREDS2 formula:

Vitamin C	500mg
Vitamin E	400 IU
Copper	2mg
Lutein	10mg
Zeaxanthin	2mg
Zinc	25mg

Overall the new formula did not seem to reduce the progression of AMD any more than the original. However, some people taking the new formula did show a greater benefit. Studies suggest that you may benefit from an

AREDS2 supplement if:

- Your eye care professional has told you that you have many medium-sized drusen\* or one or more large drusen in one or both eyes (you may have large drusen and still have good vision).
- You have wet AMD in one eye but good vision and dry AMD in the other.
- You have a diet low in fresh green leafy vegetables and fruit.

There is no evidence that a supplement will be beneficial if:

- You have been told you have early signs of AMD in one or both eyes (your eye care professional may say that you several small drusen or a few medium-sized drusen in one or both eyes).
- You have advanced AMD in both eyes.
- You have active wet macular degeneration.

\*Drusen are made up of cellular waste materials that collect under the retina. These white or yellow deposits are a common early sign of AMD.

Talk to your GP before taking supplements or making major changes to your diet, especially if you take other medications.

Some scientists believe that another macular carotenoid, meso-zeaxanthin, is also important for macular health. It is made by the body from lutein.

It was not tested in the AREDS trials and not all scientists agree on its significance. More research is needed in this area.

**It is widely agreed that if you eat a healthy diet including at least five portions of fruit and vegetables a day, you should not need a supplement.**



So, while supplements shouldn't be a substitute for a healthy diet, they may be useful in some circumstances.

Not all supplements have sound clinical research to support their claims. Beware of any which claim to "cure" macular degeneration.

As lutein and zeaxanthin are fat soluble they may be more easily absorbed

when taken as oil capsules rather than tablets.

While we believe that taking supplements containing lutein may be beneficial to eye health, we do not endorse any brand.

People who take warfarin, for example, may need to avoid high doses of omega-3 as it thins the blood. Vitamins E and K may also interact with medicines like warfarin and aspirin.





## Smoking

You should not take any supplement with beta carotene (vitamin A) if you smoke or have smoked as evidence suggests it increases the risk of lung cancer.



Smoking increases the production of the damaging free radicals. People who smoke are up to four times more

likely to develop AMD than those who don't, regardless of genetic risk.

See our Smoking and Sight Loss leaflet for further information. Speak to your GP about stopping smoking.

For research references visit [www.macularsociety.org/references](http://www.macularsociety.org/references)

## How we help

We are the national charity for anyone affected by central vision loss.

We provide free information and support to improve lives today.

We fund research so that one day we can overcome macular disease.

All our services are free to those with macular conditions, their family and friends.

**Make our helpline your first point of contact for your questions about macular disease.**

**0300 3030 111**

**Monday to Friday  
9am – 5pm**

**help@  
macularsociety.org**

**www.macularsociety.  
org**

As well as the helpline, our services include:

**Counselling** – confidential telephone support from a professional counsellor.

**Support groups** – we have over 300 local groups around the UK.

**Telephone befrienders** – particularly helpful for those who find it hard to get out and about.

**Gadget Guides** – tips on using gadgets and technology to help people adapt to living with sight loss.

**Skills for Seeing** – training to help people make best use of remaining sight.

We produce a range of leaflets covering many aspects of macular disease available in large print, audio CD or to read or listen online, including:

- Driving
- Lighting
- Low Vision Aids
- Nutrition and Eye Health
- Protecting Your Eyes
- Registering as Sight Impaired
- Smoking and Sight Loss
- Using Technology

For your copy call our helpline or go to [www.macularsociety.org/resources](http://www.macularsociety.org/resources)

## **Six months free membership**

If you would like to receive regular updates about living with macular conditions, treatments and medical research to find a cure then membership is for you.

Join for free today by calling 01264 350 551 or go to [www.macularsociety.org/6months](http://www.macularsociety.org/6months)



**Macular Society**

**Support throughout central vision loss**

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