

# Macular Degeneration

This disease is the leading cause of blindness for those over 60 in Europe and America. It can present with gradual blurring and distortion of vision and spots in the visual field. Ultimately the macula can be irreversibly damaged causing loss of central vision so that a person cannot read or see faces. It can develop over one to ten years.

There are two types: dry and wet, the first accounts for 90% of cases and develops slowly. Wet macular degeneration is more aggressive. A warning symptom of “wet” macular degeneration is when straight or parallel lines become wavy. This needs checking urgently as treatment needs to be started within 3 months to make a difference.

## Conventional Treatment

Treatment is difficult. Wet macular degeneration may respond to laser treatment or photodynamic treatment (a drug is injected into a vein and then a laser is used) but only a small number of people are helped and vision rarely improves though it may prevent the disease worsening.

New treatments include Macugen and Lucentis which block new vessel formation. This method involves monthly injections into the eye and the treatment is very expensive. Unpublished evidence suggests that visual deterioration is stopped in 95% of cases and about 20-40% get visual improvement. Complications are rare but can be serious including loss of the eye. Thrombosis occurs in 8% of people treated.

## Prevention

The single most important step is to **stop smoking** if you are a smoker.

The second important step is to **increase your supply of anti-oxidants**. The retina has more anti-oxidants such as Vitamin C than in any other part of the body. Anti-oxidants are obtained from fruit and vegetables, especially those that are highly coloured.

There have been many studies of anti-oxidants. The biggest trial of anti-oxidants in macular degeneration, in America, showed that a supplement, Ocuvite, protected vision (at least when the other eye had already been lost to macular degeneration). Another trial, the Lutein anti-oxidant trial showed that those taking lutein had better vision than those who didn't. Another study showed that those with high intake of lutein and zeaxanthin (two anti-oxidants) were 50% less likely to get visual loss. A meta-analysis of 8 studies found lutein could reverse macular degeneration. The recommended dose is 20mg twice daily. Another trial showed zinc (45mg/daily) reduced visual loss in animals. An amino-acid, taurine, is also important for visual function, and this tends to be low in diabetes. Moderate wine drinkers (wine is high in anti-oxidants) have 20% less macular degeneration than non drinkers. The Nurse's Health study and the Health Professional's follow-up study found eating more than 4 servings of fish a week lowers the risk of macular degeneration by 35%. Researchers from Australia found eating between 100 and 142 grams of vegetable nitrate (leafy greens and beets - equivalent to 3 cups of spinach daily) reduced the risk of macular degeneration by 35%. Eating a single

carrot a day can reduce the risk of macular degeneration by 40%.

Studies in the USA of practitioners who give intravenous anti-oxidants including zinc and selenium to patients with macular degeneration show that about half the patients have a sustained improvement of vision. Those that only took supplements by mouth had poorer results but this treatment still prevented progression of the disease in the majority. Response was better in those starting treatment earlier in the course of the disease.

The third important step is to **avoid hydrogenated fats**, as these can worsen macular degeneration.

Key sources of hydrogenated fats are cooking oils and margarines but they can also be found in a wide range of processed foods such as biscuits, mayonnaise, pastries, pies, crisps and cakes. Any food sitting on a supermarket shelf with a long shelf-life is likely to contain hydrogenated fats. These fats are not always easy to spot. Look for the following on labels: trans fats, partially hydrogenated vegetable oils, shortenings or vegetable fats - these are all hydrogenated fats. Emulsifiers typically contain mono- and diglycerides, which are forms of trans fats, but products containing these can be labelled as free of trans fats. Avoid hydrogenated fats and avoid re-using oils. When cooking, use butter, lard, animal fats and coconut oil as they are more heat resistant. Olive oil is not so good as its smoking point is 300 degrees, giving it the potential to produce hydrogenated fats, but it is preferable to vegetable oils.

Calcium can make macular degeneration worse. Avoid calcium supplements. Calcium is often added to foods like orange juice so check labels.

The fourth important step is to reduce your exposure to the blue light from computers and phones. The University of Toledo discovered that this light can kill cells in the retina.

## What Should I Do

If no conventional treatment is available (this applies to most people) and you are not a smoker then the next step is to increase the anti-oxidants in your body to a maximum.

**A general principle here is that the best source of anti-oxidants is from food rather than from supplements.** One reason for this is that many of the anti-oxidants in food have yet to be discovered so cannot be supplemented. The richest source of anti-oxidants is **bilberries** but eat all coloured fruit and vegetables, with as many colours as you can find. One study found that **oranges** were more effective than other fruits and vegetables. Kale and spinach have been shown to benefit macular degeneration as have oily fish (mackerels, herrings, sardines). Avoid margarine as this can worsen macular degeneration (probable as it contains harmful trans fatty acids).

Results from the USA suggest intravenous supplements are better than those taken by mouth. Although this treatment is not available in the UK there is a method which would be expected to give much the same benefits. This is to **use a juicer**. Drinking freshly juiced fruit and vegetables is like having an infusion of anti-oxidants. Use organic where possible because juicing not only concentrates the anti-oxidants but also concentrates pesticides. Add parsley to whatever you are juicing as it is especially high in lutein and zeoxanthin.

In addition it takes little effort to make a big bowl full of bilberries, blackberries, strawberries, raspberries, oranges, grapes and other coloured fruit which can be kept in the fridge and eaten each day.

Supplements are available from health food shops. These include Vitamin C 1000-3000mg daily, zinc 30-50mg daily (before bedtime), lutein 5-20mg daily, Vitamin E 400-800iu/daily, taurine 500-1500mg daily. Astaxanthin is a supplement that improves blood supply to the retina. Aim for 4mg daily. There are many combination formulas now available. However remember the supplements are less important than the food but can add to the benefits obtained from the foods.

Absorption of nutrients from the stomach decreases as you get older. It is therefore important to avoid tablets which block stomach acid (omeprazole, lansopazole, ranitidine) as these further reduce absorption of nutrients.

## Blue Light

Research from the University of Toledo has found that blue light from computers and mobile phones can kill cells in the retina and worsen macular degeneration. It makes sense to limit screen time or have breaks when using these screens for long.

## Eccentric Viewing

In macular degeneration the central part of vision is lost. However it is possible to train the eye to see with the non central part of the eye where vision remains unaffected. This means training the eye to see in a different way. This technique requires

persistence but can be learned in a few weeks. The Macular Degeneration Society teach this in three day courses.

## Melatonin

In a cutting-edge study published in 2005 one hundred patients were given 3mg melatonin at night. They found that in 93% their macular degeneration was either arrested or improved and none had any side-effects. This was a remarkable result for a disease which normally progresses over time. Melatonin acts as an anti-oxidant and is thought to block new vessel formation.