

## PATIENT INFORMATION

# Nutrition and Age-Related Macular Degeneration - Including Results of the 2013 AREDS2 Study

This leaflet gives you information about what you can do to reduce your risk of wet macular degeneration (AMD) if you have significant dry macular degeneration, or to reduce the risk to your other eye if you have already developed wet AMD in one eye.

Smoking increases the risk of wet AMD by 2-3 fold. Stopping smoking at any stage can be beneficial to your health. Having a healthy lifestyle including a diet rich in antioxidant vitamins, xanthophylls and omega 3 fatty acids is believed to be important.

This leaflet tells you about the major studies which have shown that nutrients are important and explains which foods contain these nutrients and gives you information about suitable supplements available from your chemist for reducing the risk of wet AMD.

These nutrients are not a cure for AMD and they will not restore vision which has been damaged by AMD, but are thought to play a role in reducing the risk of advanced AMD in people with high risk features.

### **The 2001 Age-Related Eye Disease Study (AREDS1) results**

This study, which was sponsored by the National Eye Institute (NEI) and published in October 2001, found that people with the intermediate stage dry AMD reduced their risk of vision loss by 19% and their risk of developing advanced AMD by 25% after taking a supplement which contained: 80mg zinc, 500mg vitamin C, 400IU vitamin E, 2mg copper and 15mg beta-carotene. Copper should always be taken with a zinc supplement as high doses of zinc can reduce the levels of copper in the body.

### **The 2013 Age Related Eye Disease Study (AREDS2) results**

This recently published study (May 2013) showed that the AREDS supplement without beta-carotene was just as effective at lowering the risk of progression to advanced AMD. As beta carotene increases the risk of lung cancer in current and former smokers it is advisable that anybody who has ever smoked avoids supplements with beta carotene.

Participants who took a version of the AREDS formula which contained lutein and zeaxanthin reduced risk of developing advanced AMD by a further 18%. This risk reduction increased to 25% in the group who had a low dietary intake of lutein and zeaxanthin at the start of the study.

Lowering the amount of zinc from 80mg to 25mg did not reduce the effectiveness of the AREDS supplement, which is important as zinc can cause stomach upset and urinary tract problems.

### **New recommended AREDS2 type supplement**

The current recommended supplement doses are therefore:

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

**Ocuvite<sup>®</sup> Complete (Bausch and Lomb), ICAPS<sup>®</sup> Eye Vitamin Lutein & Omega-3 Formula (Alcon) and Viteyes 2 plus Omega-3 (Butterflies Healthcare) are commercially available AREDS2 type supplements available off prescription, but many chemists have own brand product with similar constituents at a lower cost.**

**Please note that it is important that you talk to your doctor before starting these supplements, particularly if you are taking other medications.**

### **Nutrients which are good for your eyes**

Your diet can also be a good natural source of these nutrients.

#### **1. Antioxidant vitamins**

**Vitamin A** is an essential component of rhodopsin, a protein that absorbs light in the cells of the eye. It is available in the diet in two forms: preformed vitamin A and pro vitamin A.

Preformed vitamin A (retinol) is found in foods from animal sources, such **as dairy products, fish, and meat- particularly liver.**

Pro vitamin A (including Beta-carotene), known as the 'carotenoids', are mainly found **in fruits and vegetables (leafy green vegetables, orange and yellow vegetables, tomato products, fruits).**

**Vitamin E** is a group of fat soluble compounds with antioxidant properties in cell membranes in the retina where it protects against free radical damage.

It is found in high amounts in **nuts, seeds, vegetable oils and green leafy vegetables.**

**Vitamin C** (ascorbic acid) is a water-soluble antioxidant. It is needed for repair of tissues in all parts of the body.

Smokers are more likely to be deficient as smoking lowers the amount of vitamin C in the body.

**Fruits and vegetables such as citrus fruits, mango, tomatoes, peppers, grapefruit, broccoli, kiwi, sprouts, berries, and leafy green vegetables (spinach, kale)** are high in vitamin C.

## **2. Yellow Macular Pigments (Xanthophylls) from the diet**

A high concentration of lutein, zeaxanthin, and a related compound meso-zeaxanthin, are found in the macula and protect from damage by blue and ultraviolet light.

Xanthophylls are only obtained from the diet.

Most dietary lutein and zeaxanthin is from eating dark green leafy vegetables, such as **kale and spinach**. **Corn and corn products** are also a major source of zeaxanthin.

**Eggs** also contain high levels of lutein and zeaxanthin, which is more easily absorbed by the body than from vegetables because of the fats they contain.

The list below shows which vegetables have the highest amount of lutein.

### **Lutein mg/100mg**

Kale 21.9

Spinach 12.6

Celery 3.6

Broccoli 1.8

Peas 1.7

Sprouts 1.3

## **3. Omega-3**

Omega-3 fatty acids are found in high concentrations in the retina. Omega-3 from the diet may also help keep the heart healthy.

Omega-3 fatty acids are mainly found **in oily fish such as mackerel, salmon and sardines, but also in walnuts and flax seed**. The department of health recommends that we eat at least 1-2 portions of oily fish per week.

## **4. Zinc**

Zinc is found at high levels in the retina and retinal zinc levels decline with age.

Red meat and shellfish are good food sources of zinc. Small amounts are also found in beans, poultry, nuts, whole grains, and dairy products.

## **5. Flavonoids**

The flavonoids which give bilberry, blueberries and blackberries their colour, are antioxidants which reduce the damage caused by free radicals.

**Ginkgo** supplements contain Flavonoids, but may thin the blood, and should be avoided prior to surgery and should also be avoided by those taking drugs such as warfarin or aspirin.

**It is important that you seek urgent attention if you notice a rapid deterioration in central/reading vision, particularly if associated with increasing distortion or a blind spot. The Amsler grid is a useful way of screening yourself for distortion. As AMD is partly an inherited condition, you could advise your children and grandchildren to have a balanced diet, watch their weight, take regular exercise and not smoke.**

Mr Stephen Turner  
Consultant Ophthalmologist  
Torbay Hospital Eye Department

Mrs Joanna Cullen  
Nutrition Support Dietitian  
Department of Nutrition and Dietetics  
Torbay Hospital

More information is available online from the **MACULAR SOCIETY** at  
[www.macularsociety.org/about-macular-conditions/Nutrition](http://www.macularsociety.org/about-macular-conditions/Nutrition)

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For further assistance or to receive this information in a different format, please contact the department which created this leaflet.