

# Keep Your Eyes Healthy

a **DSM** Product



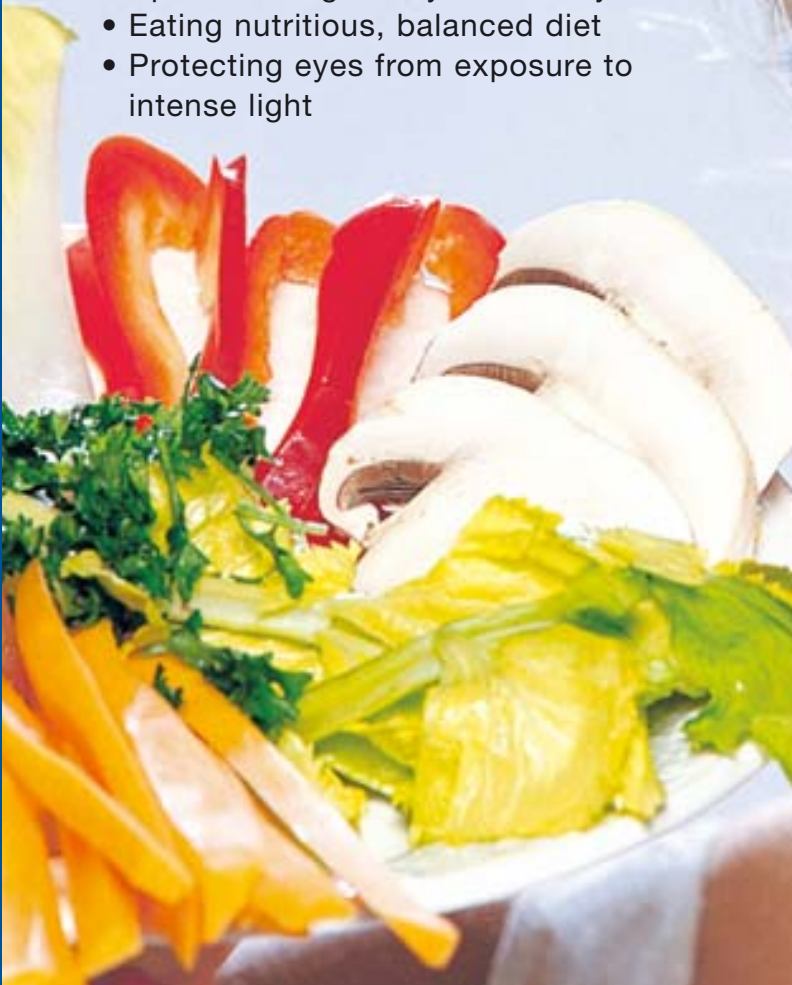
DSM Nutritional Products

Unlimited. **DSM**

Eye Health is not just the «Luck of the draw» – to a large extent good eye health is under your control.

Help maintain good eye health by:

- Eating nutritious, balanced diet
- Protecting eyes from exposure to intense light



## Your nutrition choice guide

NUTRIENT/ VITAMIN	EYE HEALTH FUNCTION	BENEFICIAL LEVEL (according to recent science)
A	Visual pigment	400 – 800 RE
C	Antioxidant in cytosol and extracellular fluids; regenerates Vitamin E	100 – 1000 mg/d
E	Antioxidant in membranes (lipoproteines)	20 – 300 mg/d
Beta- carotene	} Quencher of singlet oxygen	2 – 6 mg/d
Lutein		2 – 6 mg
Zeaxanthin		
B <sub>1</sub>	} Cofactor	2 – 5 mg
B <sub>2</sub>		2 – 5 mg
B <sub>6</sub>		2 – 5 mg
B <sub>12</sub>		2 – 5 µg
Niacin	Cofactor	20 – 40 mg
Zinc	Essential constituent of SOD	15 – 20 mg
Selenium	Essential constituent of glutathione peroxidase	50 – 100 µg

### EYE HEALTH FACTORS

### NUTRITIONAL LINKS

Cataract	Antioxidants (mainly Vitamin C), Vitamin E, Vitamin B <sub>2</sub> , Niacin, Selenium, Zinc
AMD (Age related macular degeneration)	Lutein, Zeaxanthin (carotenoids), Vitamin E
Night blindness	Vitamin A, Provitamin A (beta-carotene)
Optic nerve (Energy supply)	Vitamin B complex (B <sub>1</sub> , B <sub>2</sub> , B <sub>6</sub> , Niacin, B <sub>12</sub> , Folic acid, Panthothenate, Biotin)
Impact of diabetes	Vitamin E, Vitamin C

# Good Nutrition and Activity for Life

Helping to maintain healthy eyes

A balanced diet containing a wide range of vitamins and trace elements is essential for good vision and for maintaining healthy eyes in children and adults.

## **How nutritional factors may help maintain healthy eyes:**

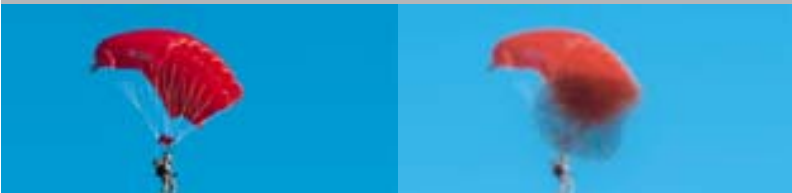
- Protect your eyes against oxidative damage
- Maintain the function of the optic nerve
- Reduce the risk of night blindness

Studies suggest that a balance of the relevant active nutrients (vitamins, carotenoids, and minerals) may play an important role in good eye health. They must be obtained from food as they cannot be manufactured in the body.

Fortified foods and supplements can be a useful additional source of these nutrients in the diet.

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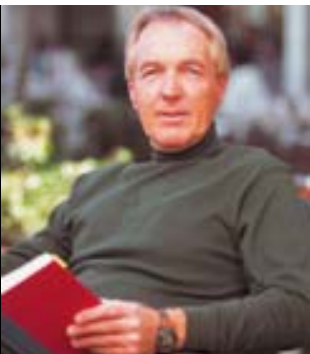


### **Age related Macular Degeneration (AMD)**

Age-related Macular Degeneration is a progressive disease which can ultimately lead to blindness. The disease affects the macula, the center of straight vision in the background of the eye, leading to deposits of cell debris. These can be seen by the ophthalmologist as small spots appearing on the macula and retina.

The causes of AMD are not well understood although a few risk factors have been identified, including a family history of the disease, a light iris colour, smoking, excessive sun exposure and cardiovascular disease.

The macula contains a high concentration of two pigments, lutein and zeaxanthin. These carotenoid pigments have the property to quench blue light which, in excess, can damage the macula and retina. The higher the pigment density, the better the protection.



### **Cataract**

Cataract is a leading cause of blindness in elderly people. A cataract is formed when oxidation of proteins in the eye causes the lens to lose its transparency. In advanced cases the lens is extracted and replaced by an artificial lens or special spectacles.

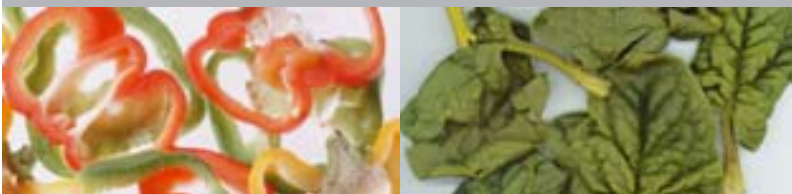


Certain lifestyle factors have been identified as potentially increasing the risk of cataract formation. Among them are diabetes, smoking, exposure to excessive UV radiation and air pollutants.

More recent data suggest that supplementation with antioxidant vitamins such as vitamin C and vitamin E may delay or prevent the onset of cataract by protecting against peroxidative damage to the lens. Data from epidemiological studies also suggest that intake of the carotenoids lutein and zeaxanthin (found in vegetables such as spinach, corn and cabbage) may be protective against cataract.

### **Night blindness**

Night blindness is usually the first sign of mild vitamin A deficiency and is common in malnourished women and children in developing countries. Vitamin A and beta-carotene (provitamin A) supplementation restores normal vision. If night blindness is not immediately diagnosed and cured, further progression of vitamin A deficiency can lead to blindness. According to estimates made by the World Health Organisation, more than 200 million people in developing countries are at risk of night blindness and vitamin A deficiency.



### **Optic nerve and energy**

Vitamins of the B-complex are essential for correct function of the optic nerve (and nerves in general). Mild deficiency of B-vitamins, along with other factors such as tobacco and alcohol abuse, can lead to impairment of nerve function which, in the eye, is known as optic neuropathy. The B-vitamins (B<sub>1</sub>, B<sub>2</sub>, B<sub>6</sub>, niacin, B<sub>12</sub>, folic acid, panthothenate and biotin) are therefore important for healthy vision.



### **Diabetic Retinopathy**

Diabetes – if not controlled – can lead to diabetic retinopathy, a leading cause of blindness in patients in the 25 to 75 age range. This is caused by long term exposure of the retina and macula to high glucose levels which can damage macular capillaries and small blood vessels. Another potential cause of damage is oxidative stress which can lead to a build up of fluid and to leakage and rupture of small blood vessels. Research suggests that supplementation with vitamin E and C may help to reduce the amount of potentially harmful oxidation products in the blood.

# Interested in this Vitality Concept?

Contact us for more information and project support!

We offer:

- Expertise and advice on the latest science
- Marketing data, consumer trends
- Concept development, product launch support
- Technical and product-form excellence
- Comprehensive regulatory support

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