

25 million people worldwide are affected by age-related macular degeneration (AMD) and cataracts. AMD is the leading cause of blindness in people over 55 in the Western world and the incidence is expected to triple by the year 2025.

Learn more about how
what you see on your plate
affects what you see.



Watch what you eat...

Good reasons: Scientists understand that proper nutrition is critical to eye health. Intensive research has identified five essential nutrients which promote healthy vision and may reduce the risk of eye diseases. In fact, studies have concluded that taking an antioxidant vitamin or mineral supplement reduced the risk of advanced AMD progression by 25% and visual acuity loss by 19% in some subjects.'

Small changes: Little changes in your diet can have a big impact on eye health and improve the quality of life. Eye care professionals know that good eye health is proactive. Our bodies do not create all the nutrients we need, so it's essential to get them through our diet and/or nutritional supplements.

...and see you don't miss anything!



Recommended Nutrients:

Please consider the nutrient list to the right and remember that the recommended daily intake of these essential nutrients typically requires supplementation in addition to your diet.

It is important to consult your eye health professional or physician before beginning any new nutrition regimen, including when it changes your dietary supplement usage.

10

MG/DAY

Lutein

^{2,3,11,14}

with Zeaxanthin **2 MG/DAY**

500

MG/DAY

Vitamin C¹

400

IU/DAY

Vitamin E¹

500

MG/DAY

DHA/EPA^{4,5}

Essential Fatty Acids

40-80

MG/DAY

Zinc^{1,7}

* The 40–80 mg zinc dosage is for people diagnosed as being at high risk for AMD or experiencing early-stage AMD. The recommended dietary allowance (RDA) for zinc is 11 mg for men and 8 mg for women. High doses of zinc may cause stomach upset. **Also, zinc supplementation has been known to interfere with copper absorption, so 2 mg/day of copper is strongly recommended for people supplementing their diet with zinc.**

10

MG/DAY

Lutein with Zeaxanthin

2 MG/DAY

Green leafy vegetables such as spinach, collards or kale; also corn, eggs or lutein supplements

Lutein (LOO-teen) and zeaxanthin are important nutrients naturally found together in vegetables like spinach, kale and corn. Through diet and supplementation, lutein and zeaxanthin are deposited in various tissues of the eye, including the macula, retina and lens. The amount of lutein and zeaxanthin in the macula can be measured as macular pigment optical density (MPOD).

Benefits to Eye Health:¹⁰⁻¹³

- Both nutrients act as antioxidants, helping protect and maintain healthy cells
- They function like an internal pair of sunglasses for the eyes and filter harmful high-energy blue wavelengths of light that can damage cells.
- Studies show that lutein and zeaxanthin supplementation can significantly increase MPOD levels in the eye. Individuals with higher MPOD levels have a greater tolerance for the intensity of glaring light, and recover more quickly from glare. **Shortened recovery time from glare can be critical for night driving.**
- Research findings demonstrate that higher levels of MPOD help increase visual range and visual performance—clear perception of objects and response to changing environmental conditions—as well as promote contrast acuity—enabling individuals to see objects more clearly even in dim light.





Studies show that lutein and zeaxanthin reduce the risk of age-related eye diseases, like AMD and cataracts.^{10,11}

Daily Intake:^{2,3,12}

Our bodies do not create the lutein and zeaxanthin we need, so it's essential to get them through our diet and/or nutritional supplements. While there is no recommended daily intake for lutein and zeaxanthin, many studies show a health benefit for lutein supplementation at **10 mg/day** and zeaxanthin at **2 mg/day**.

FOODS WITH LUTEIN/ZEAXANTHIN⁸

FOOD	SERVING	mg
Kale (cooked)	1 cup	23.8
Spinach (cooked)	1 cup	20.4
Collards (cooked)	1 cup	14.6
Turnip greens (cooked)	1 cup	12.2
Spinach (raw)	1 cup	3.8
Corn (canned or cooked)	1 cup	2.2
Green peas (canned)	1 cup	2.2
Broccoli (cooked)	1 cup	1.6
Romaine lettuce (raw)	1 cup	1.3
Green beans (cooked)	1 cup	0.8
Eggs	2 (large)	0.3
Orange	1 (medium)	0.2

500
MG/DAY

Vitamin C¹

Orange juice, other citrus and fortified juices,
citrus fruits, or Vitamin C supplements

Vitamin C (ascorbic acid) is an antioxidant found in fruits and vegetables. Virtually all cells of the body depend on it, including those of the eye where it is actively concentrated in all tissues.

Benefits to Eye Health:^{1,6,15}

- Helps promote healthy capillaries, cartilage and iron absorption
- Supports the health of ocular blood vessels
- Evidence suggests Vitamin C lowers the risk of developing cataracts and when taken in combination with other essential nutrients can slow the progression of AMD by 25% and visual acuity loss by 19%.
- Studies show women taking a daily Vitamin C supplement for ten years or more experienced a 64% reduction in the risk to develop nuclear cataracts.

Daily Intake:¹

The recommended dietary allowance (RDA) for Vitamin C is **90 mg/day** for males and **75 mg/day** for females. Science suggests the daily intake for eye health is **500 mg**.

FOODS WITH VITAMIN C⁸

FOOD	SERVING	mg
Orange Juice	1 cup	124.0
Grapefruit Juice	1 cup	93.9
Orange	1 (medium)	69.7
Spinach (cooked)	1 cup	17.6
Tomato (raw)	1 (medium)	15.6
Banana	1 (medium)	10.3
Apple	1 (medium)	8.4
Peach	1 (medium)	9.9

400

IU/DAY

Vitamin E¹

Nuts, salad and vegetable oils, peanut butter, fortified cereals, sweet potatoes, margarine, or Vitamin E supplements

Vitamin E is an antioxidant found in nuts, fortified cereals and sweet potatoes.

Benefits to Eye Health:^{1,16}

- Promotes the health of cell membranes and DNA repair
- Plays a significant role in our immune system
- Evidence suggests Vitamin E in combination with other essential nutrients can slow the progression of AMD by 25% and visual acuity loss by 19%.
- Intakes of lutein, zeaxanthin and Vitamin E have been shown to significantly decrease the risk of cataracts.

Daily Intake:¹

The recommended dietary allowance (RDA) for Vitamin E is **22.5 IU/day** from natural sources for both males and females. Science suggests the daily intake for eye health is **400 IU**.

FOODS WITH VITAMIN E⁸

FOOD	SERVING	IU
Cereal, Wheat Germ*	1 cup	27.0
Almonds	1 oz (23 nuts)	11.0
Sunflower Seeds	1 oz	11.0
Hazelnuts	1 oz (21 nuts)	6.4
Peanut Butter (creamy)	2 tbsp	4.3
Peanuts	1 oz (23 nuts)	3.6
Peanut Butter (chunky)	2 tbsp	3.0
Sweet Potato (baked)	1 (medium)	1.2

*different cereals will have different levels of Vitamin E.

500**MG/DAY**

DHA/EPA^{4,5}

Essential Fatty Acids

Fleshy fish like tuna or salmon, or fish oil supplements

Dietary fat is an important source of energy and a necessary part of the human diet. Fatty acids, such as DHA and EPA, are important parts of fat molecules. DHA and EPA are found in fleshy fish and other marine animals.

Essential Fatty Acids and Eye Health:^{1,4,5}

- Support the cardiovascular, reproductive, immune, and nervous systems
- Intakes have been shown to be important for visual development and retinal function.
- Low levels of DHA/EPA have been linked to dry eye syndrome and associated with eye diseases such as diabetic retinopathy and AMD.
- In its follow-up Age-Related Eye Disease Study 2 (AREDS2), the National Eye Institute is assessing the effects of DHA and EPA supplementation on the progression of AMD.

Daily Intake:^{4,5}

Our bodies do not create all the essential fatty acids we need, so it's essential to get it through our diet and/or nutritional supplements. Science suggests a daily intake of essential fatty acids at **500 mg/day**.

FOODS WITH DHA/EPA⁸

FOOD	SERVING	mg
Salmon (<i>cooked</i>)	3 oz	1800.0
Tuna (<i>cooked</i>)	3 oz	1300.0
Mackerel (<i>cooked</i>)	3 oz	1000.0
Anchovy (<i>canned in oil</i>)	2 oz (1 can)	900.0
Trout (<i>cooked</i>)	3 oz	800.0
Halibut (<i>cooked</i>)	3 oz	400.0
Scallops (<i>cooked</i>)	100 grams	350.0
Snapper (<i>cooked</i>)	3 oz	300.0

40-80
MG/DAY

Zinc^{1,7}

Red meat, poultry, oysters, fortified breakfast cereals, nuts, baked beans, milk, or multivitamin/ mineral supplements

Zinc is an essential trace mineral or “helper molecule” found in oysters, beef and lobster. It is vital to bringing vitamin A from the liver to the retina in order to produce melanin, a protective pigment in the eyes.

Zinc and Eye Health:¹

- Recommended for individuals diagnosed high-risk for AMD
- Deficiencies have been linked to impaired vision, poor night vision, and cloudy cataracts.
- Evidence suggests zinc taken in combination with other essential nutrients can slow the progression of AMD by 25% and visual acuity loss by 19%.

Daily Intake:¹

Daily intake of **40-80 mg** zinc dosage is for people diagnosed as being at high risk for AMD or experiencing early-stage AMD. The recommended dietary allowance (RDA) for zinc is **11 mg** for men and **8 mg** for women. High doses of zinc may cause stomach upset. Also, zinc supplementation has been known to interfere with copper absorption, so **2 mg/day** of copper is strongly recommended for people supplementing their diet with zinc.

FOODS WITH ZINC⁸

FOOD	SERVING	mg
Oysters (raw)	6 (medium)	76.3
Beef (cooked)	3 oz	5.2
Lobster (cooked)	3 oz	2.5
Pork (cooked)	3 oz	2.4
Bran Flakes*	1 cup	2.0
Yogurt	1 cup	1.5
Salmon (cooked)	1/2 fillet	1.3
Milk (2% milkfat)	1 cup	1.0
Egg (hard-boiled)	1 (large)	0.5

*different cereals will have different levels of zinc.



Emerging Science

Over the past two decades, research on eye health has exploded, linking diet and nutrition with a decreased risk of Age-Related Macular Degeneration (AMD). These findings should be considered in the prevention of this disease.

AREDS Made it Clear¹

The Age-Related Eye Disease Study (AREDS) was a major clinical trial sponsored by the National Eye Institute that enrolled a total of 3640 subjects, 55 to 80 years old. Released in October 2001, this landmark study provided strong evidence that nutritional intervention in the form of supplements could delay the progression of AMD. The study concluded that taking an antioxidant vitamin or mineral supplement reduced the risk of advanced AMD progression by 25% and showed a 19% reduction in visual acuity loss.

Report No. 22 Made the Case for Lutein and Zeaxanthin¹⁴

The original AREDS report was not clear which single vitamin or mineral or combination of nutrients was responsible for the risk reduction of AMD. When the study was planned, lutein and zeaxanthin were not assessed as they were not commercially available for inclusion. Since then, several studies have provided a growing body of evidence specific to the beneficial role of lutein and zeaxanthin intake in MPOD, and their positive effect on eye health and AMD risk reduction. The AREDS Report No. 22, published in 2007, described the relationship between dietary intake of various nutrients and AMD among the AREDS subjects. This report concluded that high dietary intake of lutein and zeaxanthin is associated with a reduction in the risk of geographic atrophy, advanced AMD and large or extensive intermediate drusen (accumulation of extracellular material that builds up in the retina).

AREDS2 Builds on the Long Term Benefits of Lutein, Zeaxanthin and Omega-3 Fatty Acids¹⁷

The AREDS2 study, a follow-up to the original trial, began in June 2008. This multi-center, five-year study builds on a multitude of existing science supporting lutein and zeaxanthin's role in maintaining healthy eyes. It is the largest human clinical trial to evaluate lutein, zeaxanthin, and omega-3 fatty acids supplementation and includes 4,000 patients at high risk for AMD. The study is focusing on the protective effects that lutein (10 mg/day), zeaxanthin (2 mg/day), and omega-3 fatty acids (1 g/day) may have against AMD as well as the link between nutrition and macular pigment optical density (MPOD), cataract development and visual function.





See the whole picture

There's more you can do to help keep eyes healthy and reduce risk of chronic eye diseases like AMD and cataracts.

Improving Eye Health:

- Eat a balanced, nutritious diet
- Get regular eye exams
- Do not smoke
- Wear sunglasses and hat when in sunlight
- Watch your weight
- Limit alcohol intake

Learn more about Ocular Nutrition

visit www.aoa.org or www.luteininfo.com

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