

## Aunt Cathy's Guide to: Nutrition and Eye Health



**Aunt Cathy**

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**Your mother said carrots are good the eyes, and she was right. There are other foods and nutrients that are important for eye health as well. Here are a few in the news:**

### CATARACT

One threat to vision is cataract, a clouding of the lens. In some studies, a generous intake of **antioxidant vitamins like vitamins E and C** can decrease the likelihood of cataract formation. Other studies have not shown a protective effect in terms of cataract prevention, but they did show benefits in other aspects of general health, and in eye health in particular. Certain other vitamins, such as **vitamins B-2 (riboflavin) and B-6 (pyridoxine)** can decrease the likelihood of cataract formation. Adequate **selenium (a mineral)** also has a role in protecting against cataract. **Smoking** increases risk of cataract. Recently, research has suggested that supplementation of substances called "**carnitine**" and "**alpha-lipoic acid**" (which one's body normally makes) may be a factor in cataract production. It is also looking interesting in diabetes, macular degeneration and other eye health problems. They are also found in certain foods, but the amount being used in the research trials is more than one would normally take in from food.

**Because many of these issue are so new, I have attached a few references for health professionals from the scientific literature at the end of this paper.**

### DIABETES

Diabetes is the **major cause of blindness** in American adults, **and good control of blood sugar** significantly reduces the risk of this complication. People with diabetes have a **higher need for antioxidant** protection, so antioxidant nutrients are extremely important to people with diabetes. There is evidence that a generous intake of **vitamins E and C** and assuring adequacy of the **minerals selenium and zinc** may be especially helpful in helping people with diabetes experience fewer or milder health complications from the disease, including its effects on vision. **Vitamin B-6** may be especially important in people with diabetes, along with **alpha-lipoic acid**, a B-vitamin-like substance that is a very potent antioxidant. Many other antioxidant substances in plants are being explored, such as "**pycnogenol**," a pine bark extract.

## MACULAR DEGENERATION

The **other major cause of blindness** in adults in this country is macular degeneration. A part of the retina, in the back of the eye where incoming light and visual images are received, gradually becomes less able to do its job. This appears as a central "blind spot" in one's field of vision. A number of **antioxidants** may protect against the development of macular degeneration, but the emphasis here is on prevention, since nutrients do not appear to correct the damage once it has occurred. However, good nutrition can decrease the progression of the condition. The nutrition of children and younger adults will help determine whether they develop this condition in later life. Recent research suggests that **combinations of several of the substances described earlier may be much more effective than any one supplement alone**. For example, this year a study reported that a **blend of acetyl-carnitine, omega-3 fats, and the antioxidants CoQ10 and vitamin E** may improve retinal functions in early macular degeneration.

**"Phytochemicals"** are naturally occurring chemical compounds in plants that have important health effects. Many are natural antioxidants. A substance called **lutein in dark leafy green vegetables seems to be especially protective against macular degeneration**. Lutein is a cousin of beta-carotene (the coloring agent in carrots that can be converted to vitamin A.) Lutein apparently filters out damaging light rays that otherwise injure the retina. It also acts as an antioxidant. Interestingly, lutein is not in carrots. So Mom was right, but so was Shirley Temple when she sang "You gotta eat your spinach, baby." The **richest source of lutein is kale**, which has 10 times more lutein than **spinach**, the second best source. Spinach has about 10 times more lutein than **romaine lettuce** (the next best).

**Eating Kale:** Traditionally, kale is made into soup and served in salads, but for some people it tastes bitter. People often send me recipes for their mother's delicious kale soup, but unfortunately the recipes often start out with "Fry a pound of bacon, retaining the bacon fat. Add kale.") Hmm . . . maybe not a good approach to a healthy diet. Instead, try experimenting with adding kale to less traditional foods – I dry it in a food dehydrator and crumble it into a jar in the refrigerator. Then I add a Tablespoon here and there in highly flavored foods like spaghetti sauce, chili, meatloaf, etc. I even sneak a little finely ground kale into brownie mix! We want to teach children to eat greens (and model "good kale-eating behavior") but while we are waiting for them to decide that kale is yummy, it is reasonable to try to slide some by them. These are not mutually exclusive goals!

Another potentially helpful phytochemical antioxidant that has a role in filtering blue light waves in the retina is called **zeaxanthin** (zee-a-ZAN-thin.) Like lutein, this yellowish pigment is found in the dark leafy greens, and it is also in corn.

**Other rich food sources of powerful antioxidant phytochemicals** are tomatoes and watermelon (**lycopene**), tea (**polyphenols**), strawberries, blueberries, red grapes (**antho-cyanins**), and many others. The lycopene in tomatoes is especially helpful and it has also been shown to decrease risk of prostate cancer and heart disease. **Cooking these foods does NOT destroy these beneficial substances**. In fact, MORE lycopene is

obtained from tomatoes when they are cooked because it becomes easier to absorb. Enjoy a great variety of fruits and vegetables and you will be getting lots of terrific substances that we may not have even learned about yet! A good rule is to try to **eat a variety of lots of highly colored vegetables and fruits**, because many important protective phytochemicals are actually the naturally occurring pigments that color the food. Even “white” foods like garlic, onions and mushrooms have useful phytochemicals. After all, in the fruit and veggie world, white counts as a color too!

**Adequacy of selenium and zinc** is important in macular degeneration (and in a number of health conditions). Both minerals are important as components of antioxidants, and both have other roles as well. **Selenium** intake can be low in the diets of some people because certain areas of the country have selenium-poor soil. Other places have a very high selenium level in the soil. Meats and oysters are the best-absorbed sources of **zinc** in the diet, and some people obtain too little zinc from food. Both of these nutrients can cause problems in high doses (well above the usual recommended level). **Do not take "megadoses" of these nutrients — more is not better. Specific recommendations will be summarized at the end of this article.**

## **Vitamin A and Beta-Carotene**

Vitamin A and beta-carotene are critical for eye health. Beta-carotene is a phytochemical, too. It is a pigment in dark orange and green colored fruits and vegetables that your body can convert to vitamin A. Serious inadequacy of vitamin A is a major cause of blindness in children around the world, causing a dry-eye condition called “xerophthalmia”. Without normal eye moisture to bathe the surface of the eye, it can thicken, and eyes can become infected, resulting in blindness. Inadequacy is usually not that severe in the USA, but at low intakes people experience “**night blindness**,” a condition in which the ability to recover vision after seeing a flash of light is too slow.

Vitamin A is critical for the entire immune system and the ability to fight infections, but too much can be toxic. **The plant form (beta-carotene) is NOT toxic**; if you eat a lot of carotene-rich plants your skin may have an orange tint, but no harm is done. In fact, where I live up north, this can even pass as a tan! **The form of vitamin A that can become toxic in high doses is called “retinol” and it appears on the labels of foods and vitamin pills as the word “retinylpalmitate” or “retinylacetate.”** Taking too much in this form may cause some problems with bone health. Many products are now combining the retinyl forms with the safer beta-carotene form of vitamin A, so check the label. The combination is a good idea. **Other than taking too many vitamin pills, there is little danger of overdose.** The only way to take in too much vitamin A from food would be to eat a great deal of liver. One food is so high in vitamin A that it is actually poisonous . . . so don't buy polar bear liver even if it IS on sale! ☺

### **Choosing a multivitamin/mineral supplement:**

An inexpensive generic product may cost only a few pennies a day. Highly priced supplements sold in specialty stores or by neighbors are often very good products. But in spite of the claims of people trying to sell things to you, they are not significantly better than the standard (cheaper) products available everywhere. In addition, they are often extremely expensive and overpriced. Men and postmenopausal women may want to look for a product with 10 mg iron or less (the "silver" type) because they do not need as much iron as young women need. Some vitamin products now contain very small amounts of one or more of the plant antioxidants discussed earlier, like lutein or lycopene.

Unfortunately, the amount is usually very small, and while not at all harmful, in no way does including them in the vitamin pill replace the need to eat brightly colored fruits and vegetables.

## **RECOMMENDATIONS**

- **Adequacy of all nutrients** supports eye health, so the best course of action is that same old advice: eat a balanced diet with a wide variety of foods. All the food groups are important, because they all contain critical nutrients for overall health.
- **Eat lots of fruits and vegetables, and especially look for those leafy greens and bright colors.** This practice appears to have MANY health benefits.
- **Take a general multivitamin with minerals** (choose one with zinc, selenium and chromium in the amounts near the RDA, RDI or "safe and adequate range" on the product label). This practice alone is associated with better eye health and it has many other health benefits as well. **Treat the vitamin pill as if it were a prescribed medicine** . . . a product that you don't "forget" to take, or one that you skip because "it's just one more pill" and you already take plenty of pills. Do not take more than one standard multivitamin with minerals daily unless told to do so by your physician.
- The amount of **selenium** in a multivitamin product varies from none to as high as 200 mcg. The standard amount recommended "for healthy people" is about 60–70 mcg day. However, **for people with diabetes, cancer and diseases of the eye, a level of 150 to 200 mcg may be helpful.** Selenium is also available separately in small 50 mcg pills. **Selenium can be toxic when long-term intake levels are around 800 mcg/day, so most experts recommend staying well below 600 mcg.** Since some selenium is in food, a 150-200 mcg daily intake in supplement form may be a good goal for people with eye diseases and for most people it is well within the safe range. The selenium in foods varies with where it was grown. As a general rule, **if you live in a very high selenium region, limit supplemental selenium intake to the 60-70 mcg** "normal level" unless advised differently by your physician.
- **An additional 250 - 500 mg of vitamin C and 200 iu vitamin E may be helpful.** This is a safe level for which there is evidence of a number of health benefits. **Do not take more than this without first checking with your physician.**

- **Zinc** is most abundant and well absorbed into the body from **meats**. Standard multi-vitamins vary from providing 0 to 20 mg (check the label). The usual recommended intake amount for adults is about 12 mg daily. **In diabetes and macular degeneration, research suggests that a more generous intake may be helpful. Recent studies of macular degeneration showed some promise in slowing its progression with a product that contained 50mg zinc day.** This intake level is often used to treat certain conditions in which extra zinc is needed, but **for some people it may be too high.**
- **If 20-50mg zinc is taken in supplement form, be sure that supplemental copper is also provided** because high supplemental zinc intakes can interfere with absorption of copper, increasing requirements. The resultant copper inadequacy can contribute to anemia, heart disease and poor wound healing. Zinc supplementation at 50 mg daily has also been found to cause some problems in the cholesterol levels of some people in a study. **This is just one more reminder that it can be dangerous to “self-medicate” with anything – medications, nutrients, or herbal products – in excessive amounts.**
- **Be sure to tell your physician if you are taking nutritional supplements, and to get her/his approval before using the higher dosages. Also, report all over-the-counter and prescription medications or herbal products that you take.** Some can interfere with other prescription medications or cause other harm. The doctor will need to see the whole picture to provide the best treatment for you.
- And finally, for general eye health. . . **Don't play with sharp sticks!** As Mom ALSO said, "You could put somebody's eye out with that!"

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**Some references from the scientific literature  
(primarily of interest to health professionals):**

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