

# Treating Glaucoma with Nutrition

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## Omega-3 Essential Fatty Acids

The Eskimos, whose diet is high in fish (a rich source of omega-3 fatty acids) have a low incidence of open-angle glaucoma (Prasad). Furthermore, in studies on rabbits, cod liver oil supplementation was found to lower intraocular pressure dramatically, while lard and safflower oil had no effect (Mancio).

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More information on the influence of nutrition on glaucoma can be found in the second edition of Dr. Werbach's classic SourceBook, *Nutritional Influences on Illness* - and in his updated and expanded CD-ROM with the same title. A free brochure on his books is available from Third Line Press Inc., 4751 Viviana Drive, Tarzana, California 91356, USA. (Phone: 800-916-0076; 818-996-0076; Fax: 818-774-1575; e-mail: tlp@third-line.com; Internet: www.third-line.com).



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## Nutritional Influences on Illness

by Melvyn R. Werbach, MD

4751 Viviana Drive • Tarzana, California 91356 USA

Phone 818-996-0076 • Fax 818-774-1575

### Treating Glaucoma with Nutrition

#### Vitamins

##### Thiamine Deficiency

There is preliminary evidence that patients with chronic open-angle glaucoma may have impaired absorption of thiamine, causing reduced blood thiamine levels (*Asregadoo*).

It has been theorized that thiamine deficiency, which is associated with degeneration of the ganglion cells of the brain and spinal cord in experimental animals, may also be associated with degeneration of the ganglion cells of the optic nerve. Also, chronic open angle glaucoma may be more common in populations suffering from thiamine deficiency. In such a population, treatment with thiamine along with vitamin B complex improves optic atrophy and, to a lesser extent, glaucoma (*Asregadoo*).

##### Vitamin A Deficiency

A deficiency of vitamin A is known to be associated with night blindness and loss of color vision. Although it has not been shown to produce glaucoma, one researcher found normalization of intraocular tension in several patients (believed to be vitamin A-deficient due to objective loss of color vision) following supplementation (*Todd*).

##### Vitamin B12

While a deficiency of vitamin B12 does not cause glaucoma, it may cause visual field defects and optic atrophy (the end-stage appearance of glaucoma).

In an open trial, glaucoma patients were supplemented with high doses of the vitamin. Even though intraocular fluid pressure was not reduced, progression of peripheral vision loss did not occur during 5 years of follow-up (*Sakai*).

##### Vitamin C

A lower vitamin C intake has been associated with significantly higher intraocular pressure (*Lane*). Moreover, one study found that primary open-angle glaucoma was strongly associated with an inadequate daily ascorbic acid intake (*Lane*) – although another investigator failed to confirm this finding (*Asregadoo*).

In primary open-angle glaucoma, there is evidence that ascorbic acid may be decreased in the aqueous humor, while secondary products of lipid peroxidation may be increased. In fact, in patients whose glaucoma was in stages III or IV, these two changes were correlated, suggesting that primary glaucoma may be caused by lipid peroxidation fostered by inadequate ascorbate (*Aleksidze*).

Supplementation with vitamin C is believed to increase aqueous humor drainage by reducing the viscosity of hyaluronic acid (*Liu*). Most studies, some of which were controlled, have found the supplement to successfully reduce intraocular pressure.

In one report, a single dose of 500 mg/kg ascorbic acid reduced intraocular pressure in all of 39 patients with chronic open-angle glaucoma by an average of 16 mm Hg – although it usually caused gastrointestinal symptoms. Also, ascorbic acid 100 to 150 mg/kg 3 to 5 times daily resulted in almost normal intraocular pressures in 15 out of 16 patients by 45 days, some of whom were uncontrollable with acetazolamide and 2% pilocarpine, with only 3 to 4 days of gastrointestinal symptoms initially (*Virno*).

Vitamin C has also been found to be effective in reducing intraocular pressure when administered by topical application in a 10% aqueous solution, thus avoiding gastrointestinal side-effects (*Linner*).

#### Minerals

##### Chromium Deficiency

Chromium is a glucose-uptake insulin-receptor potentiator which is thought to enable sustained strong ciliary-muscle eye-focusing activity. A deficiency is associated with elevated intraocular pressure which tends to stretch the eye to reduce the need for focusing power (*Lane*).

Primary open-angle glaucoma appears to be strongly associated with erythrocyte chromium deficiency. In fact, erythrocyte chromium is the most significant biochemical differentiator between normals and persons with primary open-angle glaucoma (*Lane*).

Clinically it appears that patients who are likely to respond to chromium repletion are likely to have undrugged intraocular pressures of more than 20 mm Hg as well as erythrocyte chromium levels of no more than 150 ng/ml (*Lane*).

#### Other Nutritional Factors

##### Alpha-lipoic Acid

In a controlled study, supplementation improved visual function in patients with stage I or II open-angle glaucoma (*Filina*).

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