

# A Silent Thief of Sight: Are You at Risk?

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✓ Fact Checked

May 03, 2023

## STORY AT-A-GLANCE

- › Glaucoma is the second leading cause of blindness in the world. Worldwide, an estimated 80 million people are affected, and prevalence is on the rise
- › Glaucoma develops when high pressure in your eye (ocular hypertension) damages the optic nerve. Peripheral vision is impacted first, followed by central vision. Vision loss is usually the only symptom
- › Intraocular pressure is a modifiable risk factor of glaucoma
- › Aside from high eye pressure, other factors that influence your risk include old age, thin cornea, large optic nerve cup size and low peripheral vision test score. These factors can help your ophthalmologist determine your glaucoma risk
- › Treatment options include eye pressure-lowering eye drops, oral medication and selective laser trabeculoplasty. Certain supplements can also be helpful, including melatonin, lutein (ideally from food), ginkgo biloba, Chinese skullcap, bilberry, green tea, curcumin and nicotinamide (B3)

**Glaucoma is the second leading cause of blindness in the world. Worldwide, an estimated 80 million people are affected, and prevalence is rising.<sup>1</sup> Glaucoma develops when high pressure in your eye (ocular hypertension<sup>2</sup>) damages the optic nerve. Peripheral vision is impacted first, followed by central vision.**

**Ocular hypertension occurs when the front of your eye fails to drain fluid properly, thereby causing pressure to build and put pressure on the optic nerve. Factors that raise**

your risk for ocular hypertension include:

Family history of ocular hypertension or glaucoma	Diabetics and those with high blood pressure
People over 40	Blacks and Hispanics
Myopia (nearsightedness)	Long-term steroid use
Previous eye injuries or eye surgeries	Those with pigment dispersion syndrome or pseudoexfoliation syndrome

The only known way to prevent and/or stop the progression of glaucoma is to lower the pressure in the eye. Treatment options include drugs, lasers, laceration surgery, oral medications, nutritional supplements, herbs and other plant remedies, several of which I'll review below.

Keep in mind that loss of vision is usually the first and only symptom of glaucoma, so it's important to get a thorough eye exam by an ophthalmologist to determine if your ocular pressure is elevated, which could make you a candidate for glaucoma. Once vision loss occurs, the damage to your optic nerve is irreversible.

## **The Ocular Hypertension Treatment Study (OHTS)**

Being diagnosed with ocular hypertension does not mean you're destined to develop glaucoma, but it does significantly raise your risk, as it's the primary underlying cause. The Ocular Hypertension Treatment Study (OHTS), which began in 1994, has also identified other risk factors that can help determine your risk for glaucoma. As reported by Harvard Health:<sup>3</sup>

*"The researchers enrolled a diverse group of 1,636 participants with ocular hypertension from 22 sites across the US. To study glaucoma prevention,*

*participants were randomly assigned to start either early eye pressure-lowering eye drops (medication group) or close observation (control group).*

*At five years the data showed that 4.4% of participants developed glaucoma in the medication group, compared to 9.5% in the control group. This tells us that early use of medicated eye drops helps delay over 50% of glaucoma cases in people with ocular hypertension.*

*During later phases of the study, the control group could receive eye pressure-lowering medications to see whether starting medication later could still delay glaucoma; it did.*

*At 20 years, about 49% of those in the control group and 42% of those in the medication group developed glaucoma. However, since the study was no longer randomized, the researchers were unable to compare the 20-year risk reduction between the initial starting groups ...*

*Glaucoma risk, it turned out, did not depend solely on eye pressure and race, but on a combination of exam findings. This information helps guide clinicians in determining whether a person with ocular hypertension is at a low, medium, or higher risk for developing glaucoma. Having such information could help people decide when to begin using medicated eye drops to prevent vision loss or slow its progress."*

Aside from high eye pressure, other factors that influence an individual's risk for developing glaucoma were found to include:

- Older age
- Thinner corneas
- Larger optic nerve cup sizes
- Low initial peripheral vision test scores

## **Treatment Alternatives**

If you're diagnosed with ocular hypertension, particularly if you also have other risk factors listed above, your ophthalmologist may prescribe eye pressure-lowering eye drops, oral medication and/or selective laser trabeculoplasty (SLT).<sup>4</sup>

SLT is a five-minute procedure performed at your ophthalmologist's office, where a low-energy laser is pulsed into specific cells in your eye. Your body's natural healing response then does the rest by rebuilding these cells. The rebuilding process automatically reduces the intraocular pressure and improves drainage.

Studies have also shown that certain herbal remedies, plant extracts<sup>5</sup> and nutritional supplements can be helpful, although most conventional doctors know very little, if anything, about these products.

## **Melatonin Lowers Intraocular Pressure**

**Melatonin**, for example, has been shown to lower intraocular pressure in patients with glaucoma. Subjects who took 2 mg of melatonin daily at 10:30 p.m. for 90 days, experienced several benefits, including:<sup>6</sup>

- Increased stability of systemic circadian rhythm via improved phase alignment and alignment with intraocular pressure
- Decreased intraocular pressure
- Improved function of retinal ganglion cells in those with advanced glaucoma
- Improvements to sleep and mood, particularly in those with advanced glaucoma

Interestingly, these researchers<sup>7</sup> suggested that glaucoma may, in fact, be a type of neurodegenerative disease, and damage to retinal ganglion cells affects not only vision but also circadian rhythms and sleep, which melatonin helps regulate.

**“ Melatonin receptors exist in several areas of your eyes, including the retina, lens, and cornea. This hints at melatonin's importance for regulating eye**

**processes, particularly when pressure homeostasis is involved.”**

Its beneficial effects on the eyes can perhaps be explained best by the fact that melatonin receptors exist in several areas of your eyes, including the retina, lens and cornea.<sup>8</sup> This hints at melatonin’s importance for regulating eye processes, particularly when pressure homeostasis is involved. As explained in a March 2020 paper published in *Progress in Retinal and Eye Research*:<sup>9</sup>

*“Glaucoma, the most prevalent eye disease, also known as the silent thief of vision, is a multifactorial pathology that is associated to age and, often, to intraocular hypertension (IOP). Indeed IOP is the only modifiable risk factor ...*

*Melatonin and analogues decrease IOP in both normotensive and hypertensive eyes. Melatonin activates its cognate membrane receptors, MT1 and MT2, which are present in numerous ocular tissues, including the aqueous-humor-producing ciliary processes.*

*Melatonin receptors belong to the superfamily of G-protein-coupled receptors and their activation would lead to different signaling pathways depending on the tissue ... The current work highlights the important role of melatonin and its analogues in the healthy and in the glaucomatous eyes, with special attention to the control of intraocular pressure.”*

Personally, I question the timing of the melatonin in the above study at 10:30 p.m. In my view that is far from an ideal time to sleep and about two hours later than I personally do. The other issue of concern is that it is unclear if these authors were aware that the greatest production of melatonin is not the pineal, but the mitochondria, when exposed to infrared light.

It would be interesting to compare the results of their 2 mg 10:30 p.m. protocol versus one hour of sunshine around solar noon in a warm climate.

## Melatonin's Effects Have Been Known for Decades

The effect of melatonin on intraocular pressure has been known for decades, yet most conventional doctors are still groping in the dark. In 1988, researchers with Oregon Health Sciences University exposed subjects to bright light to suppress serum melatonin levels, and then supplemented with melatonin to gauge its effect on intraocular pressure.<sup>10</sup> A significant connection was found:<sup>11</sup>

*"Our data suggests that during the period of melatonin's greatest levels in the serum, IOP is lowest. All subjects had maximum pressures from 4 p.m. to 6 p.m. and most subjects had minimums from 2 a.m. to 5 a.m.*

*In experiment one, bright light suppression of melatonin secretion attenuated the early morning fall IOP. This was statistically significant at suggesting that melatonin is involved in lowering early morning IOP.*

*In experiment one, there was only partial suppression of melatonin production with bright light and consequently there was no significant difference in IOP between subjects exposed to dim light and bright light.*

*However, administering 200 micrograms (one-fifth of 1 mg) of melatonin orally caused a significant decrease in IOP. Intraocular pressure remained low for approximately four hours after the last dose."*

## Lutein Protects Against Glaucoma and Other Eye Diseases

**Lutein** is another nutrient that is really important for eye health and helps to protect against age-related macular degeneration, cataracts, glaucoma and other eye diseases.

Lutein concentrates in your macula, which is the part of your retina responsible for central vision. Along with zeaxanthin and meso-zeaxanthin (a metabolite of lutein), these three carotenoids form the retinal macular pigment, which not only is responsible for optimizing your visual performance but also serves as a biomarker for the risk of macular diseases.<sup>12</sup>

Lutein is also found in the lens, where it helps protect against cataracts and other age-related eye diseases. Among carotenoids, lutein is the most efficient at filtering out blue light – the type that comes from cellphones, computers, tablets and LED lights. Blue light induces oxidative stress in your eyes, which increases the risk of cataracts and macular diseases. Lutein, however, acts as a shield against it.

Your body cannot make lutein, so you must get it from your diet. Following are 10 foods that are particularly rich sources of lutein.

Dark leafy greens	Carrots
Broccoli	Egg yolks
Red and yellow peppers	Sweet corn
Avocados	Raspberries
Cherries	Paprika

Lutein and other carotenoids are fat-soluble, so to optimize absorption be sure to consume it along with a source of healthy fat, such as coconut oil or grass-fed butter. Because organic, pastured egg yolks contain fat, they're among the healthiest sources of lutein.

## Other Helpful Remedies

Certain herbs, plant extracts and vitamins have also shown promise in the treatment of glaucoma, including:<sup>13</sup>

**Ginkgo biloba** – A 2013 study<sup>14</sup> highlighted the benefits of ginkgo biloba, finding it slowed the progression of glaucoma. Forty-two patients with normal tension glaucoma received 80 mg of ginkgo biloba extract twice a day and underwent five or more visual field tests over the course of at least four years.

Mean follow-up was 12.3 years. While intraocular pressures remained largely the same after treatment, the visual field index significantly improved, especially central field vision.

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**Chinese skullcap** – A 2021 study<sup>15</sup> concluded that baicalein, a flavone found in skullcap root, effectively improved symptoms of glaucoma and reduced retinal ganglion cell apoptosis.

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**Bilberry** – In animal research,<sup>16</sup> bilberry extract was shown to prevent the death of retinal ganglion cells in mice whose optic nerves were crushed. The dosages given were 100 mg per kilo of bodyweight per day and 500 mg/kg/day.

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**Green tea** – A 2019 animal study found green tea extract helped protect retinal ganglion cells during ischemic conditions (i.e., when blood flow is restricted). As such, green tea extract may be a viable therapeutic approach for glaucoma and optic neuropathies.

A more recent report,<sup>17</sup> published in 2022, proposed that moderate consumption of green tea or 400 mg of concentrated green tea extract per day might benefit individuals with elevated intraocular pressure and those at risk for glaucoma.

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**Curcumin** – According to animal research<sup>18</sup> published in 2014, curcumin, a polyphenol found in the spice turmeric, can help treat glaucoma by limiting oxidative damage in the eye and lowering intraocular pressure.

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**Vitamin B3 (nicotinamide)** – Research<sup>19</sup> published in 2020 reported that glaucoma patients who took oral vitamin B3 experienced significant improvement in retinal function. Patients in the treatment group received 1.5 grams of nicotinamide per day for six weeks, followed by 3 grams a day for another six weeks.

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