

## Light, Oxidation and Vision Loss

Due to exposure to light and high oxygen concentration, the oxidative stress burden is higher in the eye than other tissues, which can be further complicated by additional oxidative stressors such as smoke, smog, chemical pollution and chronic “blue light” radiation. (324-327)

## “Blue” Light is Hazardous to Vision

Electronic devices, TVs, computers, laptops, smart phones and tablets, and fluorescent and LED lighting generate high-energy visible (HEV) or “blue light.” A recent Harvard Health Letter warns that chronic exposure to digital “blue” light may lead to macular degeneration, glaucoma, and retinal degenerative diseases which can eventually cause serious vision loss and blindness. (322)

Unlike UV light, blue light penetrates deeper into our eyes, into the macula part of the retina and has the greatest potential for oxidative damage to retinal tissue. Ongoing exposure to blue light is a major risk factor for macular degeneration, glaucoma, and retinal degenerative diseases. Sources include digital devices and artificial lighting so it’s practically impossible to avoid unhealthy levels of exposure.

### How much blue light exposure does it take to cause eye damage?

Research indicates that headache, eye fatigue and strain are linked with daily use of computer monitors and electronic devices, and are more common with three or more hours per day of exposure.

Americans spend more than ten hours a day staring at a digital screen—and 70 percent use two or more digital devices at the same time. The vast majority of adults are unaware of the dangers of blue light to their eyes, but the harm is real and prevalent. (318)

## Flavay® Improves Retinal Health

Licensed in France for use in diabetic retinopathy, many significant studies established the efficacy of Flavay® in protecting retinal cells against oxidative damage, restoring retinal blood flow and in reducing ocular inflammation.

Flavay® is shown to improve retinal health and structure, slow progression of degeneration in retinopathies, and stabilize microcapillaries in the retinal membranes. (69-72,250,373)

There is nothing better than Flavay® for protecting your vision.

**Flavay.com**

**Call: 210-481-0067 or 1-800-200-1203**



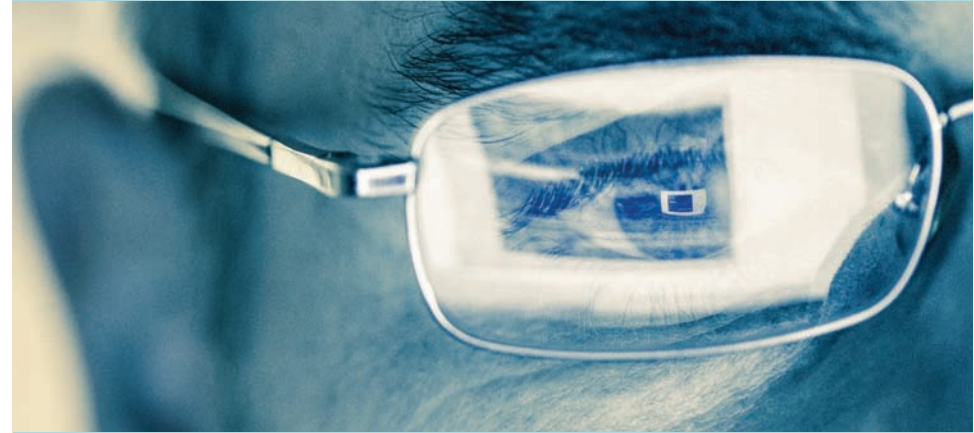
Sources of blue light include digital devices and artificial lighting so it’s practically impossible to avoid unhealthy levels of exposure.



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## improve light-sensitivity

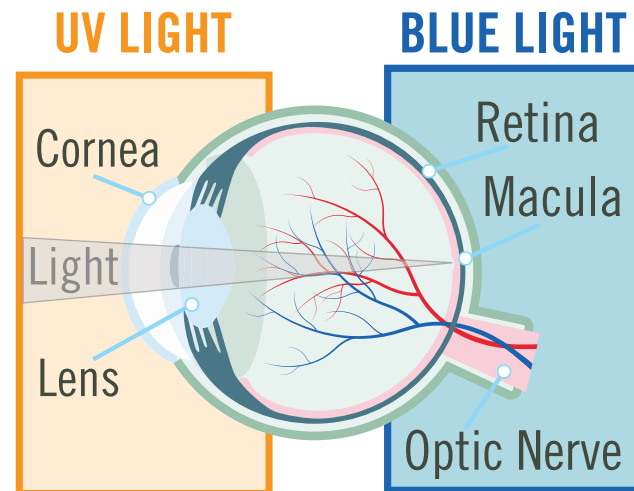


Light-sensitivity · Recovery from glare · Light-dark adaptations  
Driving at Night · Digital eye strain · Computer vision syndrome

## Improve Night Vision and Recovery from Glare and Protect Retinal Cells from Light Oxidation

Clinical studies show taking Flavay® significantly improves (both objectively and subjectively) recovery from glare and sensitivity to light in persons working at computers and driving at night.

Here we review those studies and discuss how Flavay® protects retinal cells from the cause of retinal sensitivity—oxidative stress.

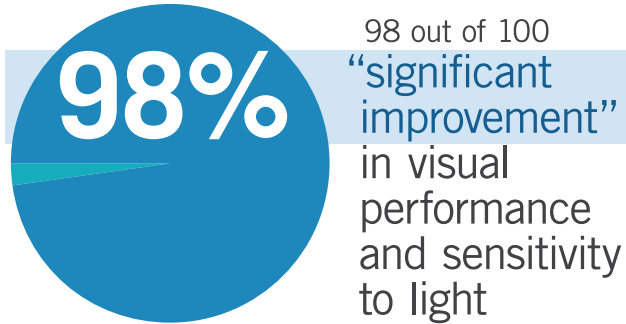


UV light induces oxidative stress to the front of the eye (particularly the cornea and lens), and LED “blue” light reaches deeper into the eye where its cumulative oxidative stress can damage the retina. (320-322,326)

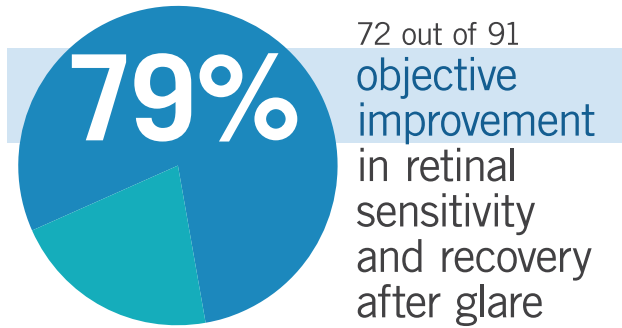
# improves light-sensitivity and light-dark vision

The following human studies found Flavay® increased visual performance in low light and in light-to-dark adaptations by improving antioxidant activity in the retina.

A multi-center study of 100 healthy volunteers who work daily at computer monitors or drive at night. After 5 weeks of Flavay® (200 mg daily), their vision was measured for resistance to blinding light and in dim light. 98% of participants showed “significant improvement” in dark vision and in visual response to glare (63)

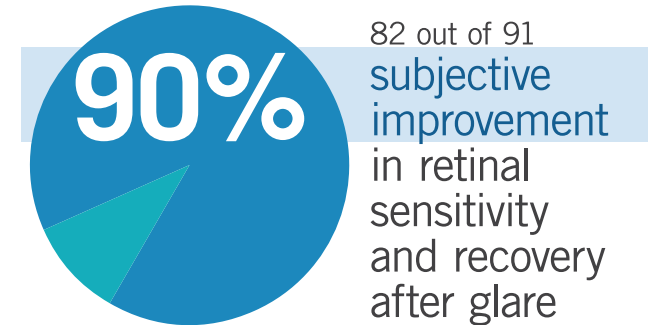


In a study of 91 persons with bilateral myopia and associated ocular disorders, objective testing found taking Flavay® (300 mg daily for 30 days) resulted in improvement in retinal sensitivity and recovery after glare in 72 subjects (79%). (262)



A randomized, double-blind, placebo-controlled study of 75 subjects experiencing visual stress from computer monitors found taking Flavay® (300 mg daily for 60 days) resulted in significant improvement in contrast sensitivity and visual disturbances. (263)

Subjective improvement in retinal sensitivity and recovery after glare was even greater, with 90% of subjects reporting improvement in retinal sensitivity and recovery after glare with taking Flavay®. (262)



A double-blind study of 40 myopic subjects found those taking Flavay® (150 mg per day for 30 days) demonstrated significant improvement in retinal sensitivity and recovery after glare compared to the placebo group. Significant electro-retinographic improvements were noted in 40% of those taking Flavay® and none in the placebo group. (65)

# protects retinal cells from oxidation

Our eyes rely on specialized lipid (fat) and aqueous (water) barriers for protection from oxidation but these antioxidant mechanisms become progressively less effective with chronic exposure and age. (243,324-327)

Human trials discovered Flavay® increases visual acuity in light-dark adaptations by increasing the rate of rhodopsin regeneration which is the photopigment found in rods within the retina that enable vision in low-light conditions. Thus, Flavay® enhances an important antioxidant function of vitamin A (precursor of rhodopsin) thereby improving visual performance in low light and in light-to-dark adaptations. (63-65,71,262,263)

Human studies also show taking Flavay® significantly increases serum total antioxidant activity in both lipid (fat) and aqueous (water) phases of oxidation. Flavay® increases intracellular antioxidant activities of vitamins C and E, catalase, superoxide dismutase (SOD) and glutathione peroxidase (GPx), boosting the body's endogenous antioxidants. (33,83,274,369,371)

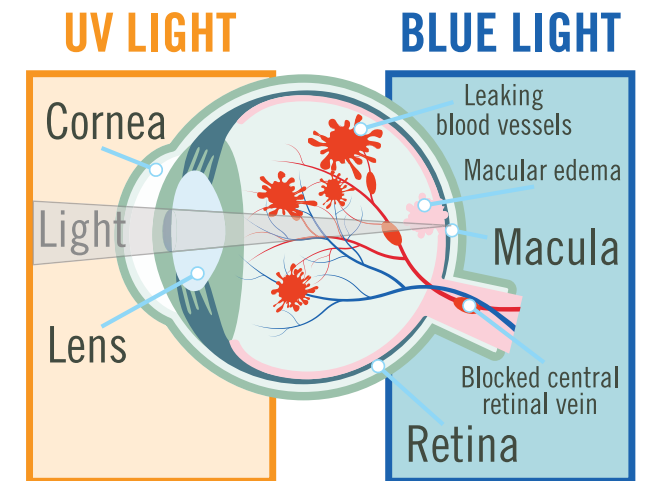
Patented as a strong antioxidant, Flavay® protects collagen, elastin and hyaluronic acid against over-crosslinking and inhibits destructive pro-inflammatory enzymes. (18,25,61,74,81,391,185,230,387,388)

Flavay® reinforces collagen structures of the retina (which is 80% collagen). Flavay® is clinically proven to improve strength and tone of vessels and improve circulation and reduce leakage. (47,48,82,205)

The hallmark of optic neurodegenerative diseases (including retinopathy and glaucoma) is retinal ganglion cell-death. Studies show Flavay® protects oxidative stress-injured retinal ganglion cells by inhibiting apoptosis (cell-death). (257-259,299)

A number of epidemiologic studies show that persons with diabetes and age-related eye diseases have significantly lower levels of antioxidants. Licensed in France for use in diabetic retinopathy, many significant studies established the efficacy of Flavay® in protecting retinal cells against oxidative damage, restoring retinal blood flow and in reducing ocular inflammation.

In clinical trials, Flavay® slows progression of retina degeneration and stabilizes microcapillaries in retinal membranes. (69-72,250,373)



Oxidation damages collagen in vessels so the vessels become brittle and fragile. Bleeding, leaking, and scarring from the damaged vessels eventually causes vision loss.

Extensive studies show Flavay® strengthens collagen proteins and seals leaky capillaries, strengthens vessels and prevents outflow of blood or liquid. Microbleedings in retinal tissue are reduced when taking Flavay®. (249,250)