

## The visionary wonder for optic health...

# EYE TABS

*All too many factors plague our lives that contribute to the gradual loss or quality of vision. Although much of our blurred vision, glaucoma, cataracts, etc are generous recessive gifts from our lineage, many optical degenerative diseases birth themselves from environmental factors and not necessarily from grandma and grandpa. Assuming genetics and our atmosphere can be cruel sometimes, Mother Nature can offer a touch of kindness through her vast inventory of sight preserving/enhancing nutrients. Viva Vitamins has taken a "closer look" into this notion and developed a combination of ingredients that takes advantage of what nature has to offer.*

---

### Eye physiology (how we see stuff)

The human eye is a very complex and fascinating piece of machinery. We perceive objects and their spacial positions by light bouncing off of them and entering into our eyes. Once refracted by the lense of our eyes, the beam of photons streamline into the retina, where the magic and complexity of the eye really begins to unfold. Our retina contains two major types of photoreceptive cells used to perceive light: rod cells and cone cells. Rod cells are responsible for the black and white scotopic vision. They help us see dim light such as at night time or in dark rooms. They contain pigments that are sensitive to low light intensities, but saturate at high photopic intensities. Rod cells are found throughout the entire retina, except for the foveal region and the blind spot of the eye. The most dense regions of rod cells are in the periphery of the retina. This is why we can see dimly lit objects better out of the corner of our eyes than looking straight at them.

On the opposite side, cone cells are responsible for our eyes to perceive color. They require a much larger concentration of light than do rod cells. There are three types of cone cells that are sensitive to various wavelengths:  $\lambda_{short}$ ,  $\lambda_{medium}$ ,  $\lambda_{long}$ . When we see color, it is actually the combined effect of stimuli to, and responses from these three types of cone cells working in concert. The foveal region of the eye is where cones are found to be most dense. Very few are found in the periphery. This is why we perceive color and more focused objects when looked at directly. When photoreception ensues within rods and cones, impulses are sent via intermediate cells within the retina to the optic nerve. These signals are then shot over to the region of the brain that constructs these nerve impulses into an image. All these mechanisms (and more) are just one of the examples that demonstrate the beauty and complexity of the

human eye.

### Improving vision with Eye Tabs

Eye Tabs starts off its formula with the obvious vitamin A. Much can be said about the obvious roles vitamin A plays in human vision. Vitamin A, in its 11-*cis*-retin(al) form isomerizes to its all-*trans*-retinal form when light enters the eye. As this beam of photons hits the retinal/opsin complex, the vitamin A moiety dissociates from the giant opsin protein and induces a nerve signal along the optic nerve to the visual center of the brain. It is because of the importance of vitamin A in the stepwise process of vision, that without it we would be blind. More than just the physiological requirement for the presence of vitamin A in vision, beta carotene (Eye Tabs' source of vitamin A) is one of the carotenoid isoforms that has been shown in studies to reduce the risk of cataracts (Dherani M et al., 2008). Above and beyond the incredible antioxidant activity of vitamin C (along with its many other wonders), great advancements in ocular research have put vitamin C in the spotlight suggesting its deficiency or absence in the aqueous humour of the eye playing a role in the pathophysiology of both primary open angle glaucoma and cataracts (Ferreira SM et al., 2008). Likewise to vitamins A and C, vitamin E needs no introduction. While a superb antioxidant and inflammation reducer,  $\alpha$ -tocopherol has a unique involvement, when combined with C and zinc, in the prevention of age-related macular degeneration (van ALeeuwe R et al., 2005) as well as helping protect the retina from glaucomatous damage (Engin KN et al., 2007). The Proprietary Eye Support Blend contains first and foremost, Bilberry extract. Besides its famous stories of how it was used to enhance night vision in the WWII RAF pilots, Bilberry extract has been shown (due to its dense anthocyanin content) to lower the risk of various eye diseases (Fursova Azh et al., 2005)

such as macular degeneration and cataracts. Eyebright extract has been added into the blend due to its ability to reduce ocular allergies (Bielory L, Heimall J, 2003). The N-acetylcysteine in the blend greatly aids in the prevention of macular degeneration and reduction of oxidized membranous discs within retinal pigment epithelium due to its antioxidant capabilities (Schütt F et al., 2007). Rutin, a popular citrus flavonoid glycoside, has been shown in studies to reduce retinal vein occlusion, macular degeneration and edema, and increase retinal circulation (Glacet-Bernard A et al., 1994). The ever so popular grape seed extract has also been included due to the ability of its oligomeric proanthocyanadin content to decrease the progress of diabetic retinopathy (Li M et al., 2008).

Bielory L, Heimall J; *Review of complementary and alternative medicine in treatment of ocular allergies*. *Curr Opin Allergy Clin Immunol*. 2003 Oct;3(5):395-9.

Schütt F, Völcker HE, Dithmar S; *N-acetylcysteine improves lysosomal function and enhances the degradation of photoreceptor outer segments in cultured RPE cells*. *Klin Monatsbl Augenheilkd*. 2007 Jul;224(7):580-4.

Glacet-Bernard A, Coscas G, Chabanel A, Zourhani A, Lelong F, Samama MM; *A randomized, double-masked study on the treatment of retinal vein occlusion with troxerutin*. *Am J Ophthalmol*. 1994 Oct 15;118(4):421-9

Li M, Ma YB, Gao HQ, Li BY, Cheng M, Xu L, Li XL, Li XH; *A novel approach of proteomics to study the mechanism of action of grape seed proanthocyanidin extracts on diabetic retinopathy in rats*. *Chin Med J (Engl)*. 2008 Dec 20;121(24):2544-52

## Purpose

Viva Vitamins' Eye Tabs is a uniquely designed formula engineered for the primary purpose of not only potentially improving eye sight, but slowing down the degradation of certain parts of the eye and prevention of various ocular disorders. Eye Tabs takes advantage of modern scientific discoveries and incorporates them into a team of nutrients designed to optimize optical health.

---

## References

Dherani M, Murthy GV, Gupta SK, Young IS, Maraini G, Camparini M, Price GM, John N, Chakravarthy U, Fletcher AE; *Blood levels of vitamin C, carotenoids and retinol are inversely associated with cataract in a North Indian population*. *Invest Ophthalmol Vis Sci*. 2008 Aug;49(8):3328-35.

Ferreira SM, Lerner SF, Brunzini R, Evelson PA, Llesuy SF; *Antioxidant status in the aqueous humour of patients with glaucoma associated with exfoliation syndrome*. *Eye*. 2008 Nov 21

van Leeuwen R, Boekhoorn S, Vingerling J, Witteman J, Klaver C, Hofman A, de Jong P (2005). *Dietary intake of antioxidants and risk of age-related macular degeneration*. *JAMA* 294 (24): 3101–7

Engin KN, Engin G, Kucuksahin H, Oncu M, Engin G, Guvener B (2007). *Clinical evaluation of the neuroprotective effect of alpha-tocopherol against glaucomatous damage*. *European journal of ophthalmology* 17 (4): 528–33

Fursova AZh, Gesarevich OG, Gonchar AM, Trofimova NA, Kolosova NG. *Dietary supplementation with bilberry extract prevents macular degeneration and cataracts in senesce-accelerated OXYS rats*. *Adv Gerontol*. 2005;16:76-9.