

Nutraceutical Newsletter

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What We Know About AstaReal® Astaxanthin and Dry Eye.

Where do we find astaxanthin in the eye?

Astaxanthin crosses the blood retinal barrier and has been detected in the retina and in ciliary muscles. There are 10+ human clinical studies demonstrating the effect of astaxanthin in supporting ciliary muscles for dynamic focus, accommodative function, and fighting digital eye strain. Some studies suggest that astaxanthin may also affect dry eye symptoms and tear production, making astaxanthin a good candidate for dry eye formulations.

AstaReal® Astaxanthin & Dry Eye Symptoms.

Dry eye symptoms can arise with age, frequent use of digital devices, or after cataract surgery. Symptoms of dry eye may include blurred vision, eye fatigue, eye redness, and sensitivity to light. These symptoms often overlap with eye strain and fatigue associated with digital device usage. Prolonged screen time causes reduced blinking frequency, which exposes the ocular surface to desiccation stress or dryness. Normally, the lacrimal gland kicks in to produce more tears to resolve dryness. However, tear production may lessen with age, or when eyes are stressed by chronic digital device use, or by eye surgery. These stressors trigger inflammation and free radical buildup in the eye, exacerbating dry eye symptoms. In these conditions, astaxanthin may help by reducing oxidative stress, downregulating pro-inflammatory factors, and supporting lacrimal gland function.

In a 4 weeks study, in which 22 participants (ages 45-65) supplemented with 6 mg/day AstaReal® Astaxanthin, 46% reported feeling improvement from ocular pain, 19% experienced less eye redness, and 15% said they had improved lacrimation.

Improved Lacrimal Gland Function

Prolonged use of digital devices is associated with tear film instability despite normal tear production. This type of dry eye is also known as short tear Break-Up Time (BUT) Dry Eye. A randomized, double-blind, placebo-controlled

study examined tear production in 43 participants (ages 20-75). The study showed that a daily supplement, including 4 mg astaxanthin, improved tear film breakup time in 8 weeks ($p < 0.05$). Schirmer's test without topical anesthesia (measuring reflex tears from the main lacrimal gland) also significantly improved in the supplement group compared to placebo ($p < 0.05$). Levels of Reactive Oxygen Species (ROS) in tears decreased after treatment in the supplement group only ($p < 0.05$), and subjective improvement of dry eye was reported in the treatment group only ($p < 0.05$).

Turning On the Water Works with AQP-5.

Water used to make tears and saliva is transported by a protein called aquaporin 5 (AQP-5). Levels of this water transported decrease with age, making it difficult to produce tears. In a pre-clinical study, aging mice fed astaxanthin had higher levels of AQP-5 in their salivary glands compared to the control group. This suggests that astaxanthin may support lacrimal gland function by promoting AQP-5-mediated hydration.

Dry Eye After Cataract Surgery.

Cataract surgery can trigger oxidative stress, inflammation, and is commonly associated with dry eye post-operatively. A total of 177 individuals, in six separate studies, took 6 mg/day AstaReal® Astaxanthin for 2 weeks prior to cataract surgery. Aqueous humor from these individuals was tested for antioxidant status and inflammation during surgery. Astaxanthin improved aqueous humor antioxidant capacity, reduced oxidative stress markers, and reduced aqueous flare (a sign of inflammation). These studies suggest that AstaReal® Astaxanthin may help promote healthy eyes in preparation for cataract surgery.

References

1. Kajita, M. et al., 2009. Medical Consultation & New Remedies. 46(3):89-93.
2. Huang, J.Y. et al., 2016. Clin Ophthalmol. 10:813-820.
3. Kuraji M. et al. 2016. Journal of Clinical Biochemistry and Nutrition. Vol 59(2): 79-85.
4. Hashimoto H. et al. 2016. Journal of Clinical Biochemistry and Nutrition 59(1):10-15.
4. Hashimoto, H. et al. 2007. J of the Eye. 24(10):1357-60.