



## Nutraceutical Newsletter

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### AstaReal® Astaxanthin Supports Near Focus.

Reading fine print becomes difficult with age because of a progressive loss of near vision known as presbyopia. Presbyopia usually occurs in those 40 years and older, and it is a natural part of the aging process of the lens. Protein deposition in the lens occurs throughout a person's lifetime, and those proteins become oxidized over time, which results in the lens hardening and becoming less flexible. Flexibility is needed in order to change the shape of the lens and allow it to adjust for near vision in a process called, positive accommodation.

The lens is framed by ciliary muscles attached to the lens by suspensory ligaments. The contraction of ciliary muscles rounds out the lens for near focus and the iris contract to adjust intake of light. As the lens diameter gradually grows with age due to protein deposition in the lens, the suspensory ligaments slacken, and ciliary muscles lose their power to re-shape the hardening lens. The extra effort required to focus on near objects under these conditions can lead to eye strain, eye fatigue, blurred vision, and headaches.

AstaReal® Astaxanthin deposits in ciliary muscles, and has been shown to improve positive accommodation speed, amplitude of accommodation, and near point of focus. AstaReal® Astaxanthin has also been shown to reduce subjective symptoms of eye strain and fatigue associated with prolonged near focus. Symptoms of eye strain, fatigue, and temporarily blurred vision are characteristic in presbyopia and in computer vision syndrome, which results from extended digital screen time.

AstaReal® Astaxanthin is an ocular nutrient addressing the symptoms of eye strain, and supporting accommodation in computer users. The studies described below suggest that AstaReal® Astaxanthin can continue to support accommodation function in individuals of age for presbyopia, whose difficulty with near focus can also cause eye strain and fatigue.

### Accommodation in 45-65 year olds with AstaReal® Astaxanthin

Kajita *et al.* reported a study on 22 healthy male subjects between the ages of 45 and 65 (average 54 y.o.) who complained of eye strain, and difficulty seeing near objects. Subjects were given a daily supplement containing 6 mg AstaReal® Astaxanthin for 4 weeks. Near focus response was measured using TrilRIS 9000 in the form of pupillary constriction ratio before and after adjusting focus from a far point to a near point. In both the right eye and the left eye, pupillary constriction ratio increased after supplementation ( $p < 0.01$ ). These results suggest that positive accommodation range was improved after supplementation.

The study also assessed subjective symptoms of accommodative strain after supplementation, and found that 77% of subjects reported reduced symptoms of eye strain, 65% of subjects said they felt an improvement in their ability to see near objects, 63% reported reduced symptoms of shoulder and lower back stiffness, and 61% reported experiencing less blurred vision.

### Accommodation in 30-45 year old with AstaReal® Astaxanthin

Although functional presbyopia usually occurs in those aged 40 and above, premature presbyopia has been found to occur in those aged 25-40. Nagaki *et al.* 2006 published a double blind randomized placebo-controlled study in which 48 computer workers experiencing eye strain on a daily basis (ages 30-45) supplemented with 6 mg/day AstaReal® (n=25) or placebo softgels (n=23) for 4 weeks. The amplitude of accommodation of the participants was measured at 0 weeks and 4 weeks of supplementation using binocular opening constant point refraction near point ruler (D'Acomo, Wold Optical Corp.). The AstaReal® group had a significant increase in amplitude of accommodation ( $4.69 \pm 1.17$  D) after 4 weeks of supplementation compared to the placebo group ( $4.03 \pm 1.12$  D) as measured by D'Acomo ( $p < 0.05$ ).

Nagaki *et al.* 2010 reported a double blind randomized placebo-controlled study, in which 82 computer workers (ages 30-45) supplemented with 9 mg/day AstaReal® (n=42), or placebo softgels (n=40) for 4 weeks. Of all participants reporting moderate to severe eye strain before supplementation, 62% in the AstaReal® group and only 15% in the placebo group said their symptoms improved after 4 weeks. This result represented a significant improvement in the AstaReal® group as compared to the placebo group ( $p < 0.05$ ).

### Prebyopia Formulation with Natural Astaxanthin

Kono *et al.* tested the effect of 4 mg natural astaxanthin together with 10 mg of lutein, 20 mg of bilberry extract and 26.5 mg of black soybean hull extract, and 50 mg of DHA on accommodation in a randomized double-blind placebo-controlled parallel group comparison study. A total of 48 participants with eye strain, aged 45-64 received test supplement or placebo for 4 weeks. Near-point accommodation (NPA) and subjective symptoms were evaluated. The test supplement group significantly improved their near vision ( $1.321 \pm 0.394$  D) compared to the control group ( $0.108 \pm 0.336$  D) after 4 weeks ( $p = 0.023$ ). The test group also reported significant improvement in subjective symptoms of "stiff shoulders or neck" and "blurred vision" compared to placebo ( $p < 0.05$ ).

### Look Closer at AstaReal® Astaxanthin

Good near vision is important for reading, writing, and many other near tasks associated with productivity and leisure. Presbyopia increases the incidence of eye strain, fatigue, blurred vision and headaches. Nutritional support for aging eyes with AstaReal® Astaxanthin may support both visual function and comfort as we age.

Astaxanthin is available for use in both traditional and innovative formats, including softgels, tablets, ready-to-mix, ready-to-drink, and gummy applications. Visit [www.AstaRealUSA.com](http://www.AstaRealUSA.com) and [www.astaxanthin.net](http://www.astaxanthin.net) to learn more.