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Astaxanthin is an extremely powerful carotenoid from the microalgae *haematococcus pluvialis*, one of the richest sources of natural astaxanthin. It is reddish in pigment and is what gives crustaceans such as krill, lobster, and shrimp their vibrant pink color. Astaxanthin is considered to be substantially stronger than all other well-researched antioxidants, including vitamin C, vitamin E, CoQ10, lipoic acid, and beta carotene.

This product offers 6 mg of astaxanthin per softgel from AstaREAL®, a registered brand of astaxanthin. This carotenoid needs to be carefully extracted and processed into a form which allows for optimal bioavailability and stability. AstaREAL's astaxanthin is extracted directly from microalgae using a solvent-free technology that ensures maximum control and purity. It is the most studied form of astaxanthin in the world with over 40 clinical studies, both animal and human.

Oxidative Stress and Inflammation

Astaxanthin is a uniquely structured molecule and, unlike other antioxidants, it is fat-soluble. Astaxanthin contains oxygen, which sets it apart from other members of the carotenoid family and it also has a more polar configuration than other carotenoids. Astaxanthin is a long-chain structure consisting of a non-polar (hydrophobic) middle zone along with a polar (hydrophilic) structure at both ends which carry with them a great capacity for quenching free radicals. Its non-polar mid-section is comprised of a series of carbon-carbon double bonds alternated with single-bonds. This 'conjugated' carbon chain configuration allows for an extremely rigid backbone and is what gives astaxanthin additional antioxidant properties, enabling it to remove high energy electrons from damaging free radicals.

Because of this arrangement (length and conjugation), astaxanthin provides superior membrane protection, as it is able to span a cell's bilayer membrane and shield against oxidative stress. Its structure allows it to trap radicals both at the phospholipid membrane surface as well as inside the membrane.¹ Oxidative stress, which is caused by an imbalance between antioxidant capacity and free radical activity, results in damage to cells or tissues and is involved in aging, obesity, and many other diseases.

Inflammation is also known to be a causative factor of most degenerative diseases. Research shows that astaxanthin possesses anti-inflammatory properties, most likely due to its antioxidant activities, as it helps to inhibit the formation of the pro-inflammatory mediators nitric oxide (NO), prostaglandin E2 (PGE2), and tumor necrosis factor (TNF)-alpha.^{2,3}

Cardiovascular and Neuroprotective Properties

Both oxidative stress and inflammation are implicated as pathophysiological factors associated with cardiovascular disease. Multiple studies support the effectiveness of astaxanthin in various manifestations of cardiovascular issues. The carotenoid was shown to have a positive effect on cholesterol and lipid metabolism, as it helps to inhibit the progression of atherosclerosis.^{4,5} In mild hyperlipidemia, 12 and 18 mg/day doses were shown to significantly reduce triglycerides, while 6 and 12 mg doses significantly increased HDL-cholesterol.⁶ In addition, astaxanthin helps to protect against hypertension and stroke, inducing vasorelaxation through a nitric oxide-related mechanism.⁷

Metabolic Syndrome

Animal studies show that astaxanthin supports insulin sensitivity, as it works by increasing glucose uptake, thus reducing fasting blood glucose levels (the homeostatic index of insulin resistance).⁸ Lipid and glucose parameters are important factors in the progression of metabolic syndrome along with insulin resistance - one of the syndrome's most significant features. Therefore, astaxanthin's positive effects on both of these parameters make it a valuable nutrient in combating the factors associated with metabolic syndrome.

Benefits:

- Anti-aging properties
- Reduces oxidative stress
- Supports cardiovascular health
- Metabolic syndrome
- Supports eye and gastrointestinal health
- Sports nutrition and physical endurance

Supplement Facts

Serving Size 1 softgel

Amount Per Serving	% Daily Value
Natural Astaxanthin (as AstaREAL®) (from <i>Haematococcus pluvialis</i> algae extract)	6 mg *

*Daily Value not established.

Other Ingredients: Olive oil, bovine gelatin, glycerine, purified water.

Eye Health

The increased use of screen-based technology – computers, tablets, smart phones – has led to a greater incidence of asthenopia or eye strain. Symptoms include headaches, sensitivity to glare, sore eyes, and even blurred vision. At 6 mg per day, astaxanthin has been shown to help lessen eye strain by reducing inflammation, improving accommodation (the ability of the eye to automatically adjust its focal length) and increasing blood flow.⁹

Diabetic retinopathy is an eye disease commonly seen in patients with diabetes and is caused by changes in retinal ganglion cells (RGCs). These RGCs are the nerve cells located near the ganglion cell layer (inner surface) of the retina which receive visual information from photoreceptors. Astaxanthin was shown to have neuroprotective effects against retinal damage in-vitro and in-vivo. By protecting cells from oxidative stress, astaxanthin was shown to reduce the apoptosis of RGCs.¹⁰

Skin Health

The ultraviolet radiation (UVR) from sunlight consists of two types, UVA and UVB, both of which have skin-damaging effects. UVB rays, which are only partially blocked by clouds and fog, are shorter than UVA rays and have the most energy. They are the primary factor in skin inflammation and melanin production. UVA rays are less powerful than UVB, but because of their longer wavelength they penetrate deeper into the skin where they can damage collagen fibers. Thus, they are responsible for long-term skin injury and most damage associated with aging (i.e., wrinkles, skin sagging). Astaxanthin helps protect against UVA-induced aging, helping to maintain a healthy appearance and defend against premature signs of aging.¹³

Sports Performance

Strenuous exercise generates oxidative stress, which in turn can hinder muscle and lipid metabolism. Due to its antioxidative properties, astaxanthin may help improve muscle performance and physical endurance. It has been shown to help reduce exercise-induced damage in skeletal and heart muscle,¹¹ and also to improve endurance by increasing the use of fatty acids as an energy source.¹²

As our primary source of energy, healthy mitochondria are vital to optimum physical performance. Oxidative stress, however, can cause damage to the mitochondria and lead to mitochondrial dysfunction. Astaxanthin has been shown to improve mitochondrial function, most likely by attenuating oxidative damage.^{14,15}

Gastric Health Support

Astaxanthin may be useful in various gastrointestinal conditions, in particular with *H. pylori*, where symptoms of this infection include high levels of oxidative stress and inflammation in the stomach lining accompanied by gastric pain and reflux. In cases of *H. pylori*, research shows that astaxanthin helps to reduce bacterial load, gastric inflammation, and reflux symptoms, once again through its strong ability to fight oxidative stress.^{16,17}

How to take:

- Take one softgel per day, or as directed by your health care practitioner.

For a list of references cited in this document, please visit:

https://www.designsforhealth.com/techsheet-references/Astaxanthin_References.pdf

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*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

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