# Astaxanthin

The most powerful antioxidant

## [ASTAXANTHIN](file:///C:\Users\cloudconvert\server\files\117\124\20\D17pCvTEHQfs96KnYANc\astaxanthin)

Astaxanthin is the most powerful natural antioxidant that is ever discovered. It has a unique molecular structure that makes it is one of the very few supplements that can cross the blood-brain barrier. The antioxidant power of Astaxanthin is 6000 times stronger than vitamin C, 550-1000 times than vitamin E, 10 times than beta-carotene, 60 times than grape seeds, 200 times than tea polyphenols, and 150 times more effective than anthocyanin, 75 times than lipoic acid, 800 times than coenzyme Q10, and 7 times than lycopene. This special compound is found commonly in red-colored marine inhabitants such as wild salmon, trout, krill, shrimp, lobster, crab, and algae.

The concentration of astaxanthin in microalgae cells is several orders of magnitude higher than that in aquatic animals. This special microalgae *Haematococcus pluvialis* is the primary industrial source of natural astaxanthin. It produces large amounts of astaxanthin for self-preservation purposes to protect their cell DNA to huge oxidative stress from UV radiation and free radicals.

Astaxanthin has several essential biological functions including protection against oxidation of essential polyunsaturated fatty acids; protection against UV light effects; immune response; pigmentation; communication; reproductive behavior and improved reproduction.

## [HEALTH BENEFITS](file:///C:\Users\cloudconvert\server\files\117\124\20\D17pCvTEHQfs96KnYANc\astaxanthin-health-benefits)

#### ANTIOXIDANT EFFECTS

Free radicals can damage DNA, proteins and lipid membranes. Astaxanthin provides cell membranes with potent protection against free radical and other oxidative attacks. The unique chemical structure of astaxanthin precisely positions it within cell membranes and circulating lipoproteins, thereby preventing the degradation of lipid membranes and other molecules or tissues from being damaged.

#### ANTI-INFLAMMATORY

Chronic inflammation is believed to be the silent disease at the heart of most degenerative conditions and lifestyle-related diseases. Astaxanthin has been reported to have anti-inflammatory effects as it can significantly lower the concentration of biomarkers of systemic inflammation. It was also reported to benefit many chronic inflammatory conditions such as Crohn’s disease and ulcer disease.

#### VISION AND EYE

Astaxanthin has been extensively researched for its benefits for vision in terms of visual sharpness improvement, relieve eye fatigue and mitigate the age-related macular degeneration (AMD). Astaxanthin with strong antioxidant activity and UV-light protection effect reduced the risk for both nuclear cataracts and AMD.

#### IMMUNE SYSTEM BENEFITS

Immune system cells are very sensitive to free radical damages. Astaxanthin offers great protection against free radical damage to preserve immune-system defenses. The immuno-modulating capacity of astaxanthin has been found to be superior to that of b-carotene and canthaxanthin. Astaxanthin has shown significant effect on immune function in a number of invitro and in vivo assays using both animal models and humans.

[CLICK FOR MORE HEALTH BENEFITS](C:\\Users\\cloudconvert\\server\\files\\117\\124\\20\\D17pCvTEHQfs96KnYANc\\astaxanthin-health-benefits)

## [ASTAXANTHIN](file:///C:\Users\cloudconvert\server\files\117\124\20\D17pCvTEHQfs96KnYANc\astaxanthin)

>>>> HOW DOES ASTAXANTHIN WORK?  
>>>> SYNTHETIC VS. NATURAL ASTAXANTHIN

##### How does Astaxanthin work?

##### Synthetic Vs. Natural Astaxanthin

## HOW DOES ASTAXANTHIN WORK?

Astaxanthin (3,3’-dihydroxy-beta,beta-carotene-4,4’-dione) belongs to the xanthophyll subclass of carotenoids. The astaxanthin molecule has an extended shape, with a polar structure at both ends of the molecule and a nonpolar zone in the middle. The polar structures are ionone rings that have the potent capacity for quenching free radicals or other oxidants, primarily in an aqueous environment, but possibly also in the absence of water. This polar-nonpolar-polar layout also allows the astaxanthin molecule to take a transmembrane orientation, making a precise fit into the polar-nonpolar-polar span of the cell membrane. The nonpolar middle segment of the astaxanthin molecule is a series of carbon-carbon double bonds, which alternate with carbon-carbon single bonds – termed “conjugated.” This series of conjugated double bonds gives the molecule a further antioxidant dimension, with a capacity to remove high-energy electrons from free radicals and “delocalize” their electronic energy via the carbon-carbon chain – analogous to a lightning rod on the molecular level.

## SYNTHETIC VS. NATURAL ASTAXANTHIN

Virtually all commercially available natural astaxanthin is predominantly in the all-trans geometric form 3S,3S’ Astaxanthin, as occurs in microalgae *H. pluvialis* which is also the predominant natural astaxanthin used in all clinical trials to date. Synthetic astaxanthin is not certified as a dietary supplement due to different chemical compositions and safety concerns.