

Improve Cardiovascular Health With AstaReal®

Benefits of natural astaxanthin for cardiovascular health



Promising results for the prevention and treatment of cardiovascular disease

Cardiovascular disease (CVD) is a broad term for all diseases that affect the heart or blood vessels. This includes coronary heart disease, heart attack and stroke. According to the World Health Organization, CVDs are the number one cause of death throughout the world. CVDs killed 17.5 million people in 2012; that is 3 in every 10 deaths. Keeping your heart healthy is vital for longevity and quality of life.

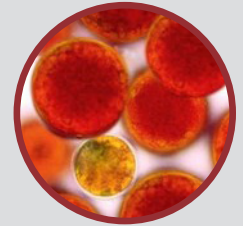
“Atherosclerosis is the main underlying cause of heart attack, stroke and peripheral vascular disease. It is a condition in which fat deposits and becomes oxidized along the inner lining of the artery walls. This results in a dangerous build-up of plaque that narrows the arteries, limiting the flow of oxygen-rich blood to organs and other parts of the body.”

Oxidative stress and inflammation are widely recognized as contributing to CVDs caused by atherosclerosis. The recognition of oxidative stress associated problems has led to the enthusiastic use of antioxidants in the treatment and prevention of heart disease. The use of antioxidants such as vitamin C, E and beta-carotene as preventative therapies for CVDs has yielded mixed results. On the other hand, astaxanthin, which is a powerful antioxidant and potent anti-inflammatory, has shown several positive results and is believed to be a promising compound for protecting against atherosclerotic CVDs.

What is Natural Astaxanthin?

It is a naturally occurring carotenoid which is derived from the microalgae *Haematococcus pluvialis*.

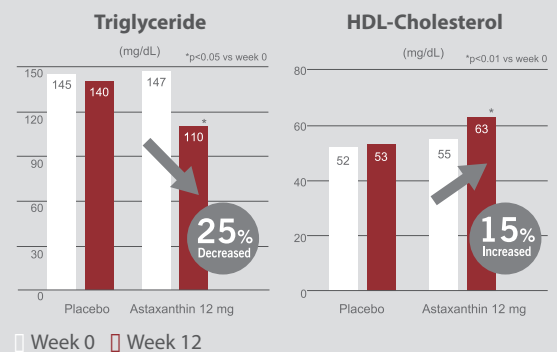
As well as being the most powerful antioxidant known to science, it also has potent anti-inflammatory properties. Natural astaxanthin's distinct advantage in comparison to other antioxidants, is its ability to span the entire lipid bilayer of the cell membrane, thus providing superior protection from the inside out.



Research & Key Findings

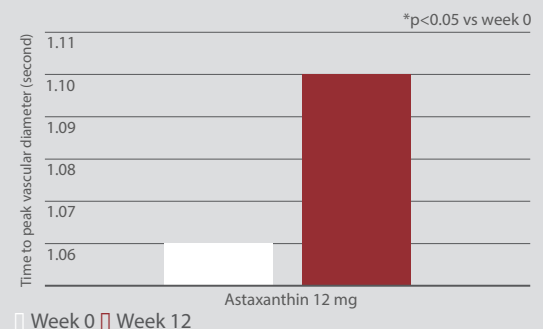
A large body of clinical and experimental research has concluded that natural astaxanthin can contribute to improved cardiovascular health. Studies have shown that natural astaxanthin reduces oxidative stress and inflammation, improves lipid profiles, promotes better blood flow in capillaries and lowers blood pressure in hypertensive individuals. Importantly, no adverse effects have been reported in these studies.

Figure 1. Daily astaxanthin supplementation improves serum lipid levels in middle-aged individuals



Non-obese participants (n=61, 44±8 years old) were randomly divided into 4 groups and received 0, 6, 12 or 18 mg of astaxanthin daily for 12 weeks. This figure shows the changes in serum lipid levels of the 12 mg group (n=15).

Figure 2. Astaxanthin decreases lower limb vascular resistance in healthy postmenopausal women

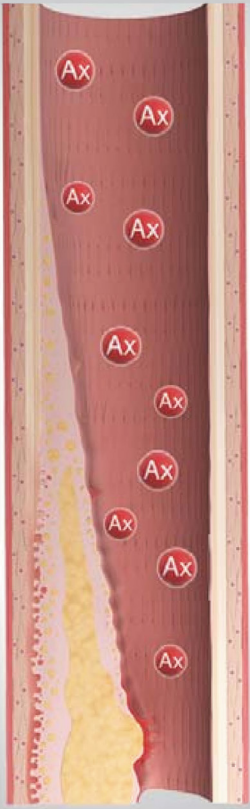


Healthy postmenopausal women (n=20, 55.7±4.8 years old) with high levels of oxidative stress received 12 mg of astaxanthin daily. After 8 weeks, lower limb vascular resistance was significantly decreased.



Potential Role of Natural Astaxanthin in Atherosclerosis Prevention

Atherosclerosis takes place over a lifetime, with complications tending to occur later in life. Along with maintaining a healthy lifestyle and reducing behavioural risks that contribute to atherosclerosis, AstaReal® natural astaxanthin can provide extra support for a healthy heart.

PROGRESSION	ASTAXANTHIN	
<p>Monocyte Migration/Infiltration:</p> <p>Monocytes infiltrate the arterial wall and differentiate into macrophages. Scavenger receptors cause the macrophages to selectively take in large amounts of oxidized LDL resulting in the formation of foam cells.</p>		
<p>Early Lesion:</p> <p>Foam cells release ROS, cytokines or MMPs that cause smooth muscle cell proliferation. Some macrophages can die in advancing lesions by apoptosis.</p>		<ul style="list-style-type: none"> ✓ Increases HDL cholesterol level ✓ Reduces triglycerides level ✓ Decreases lipid peroxidation ✓ Reduces plaque formation
<p>Complication of Atherosclerosis:</p> <p>Disruption of unstable plaques and thrombosis occurs as platelets and fibrin try to cap the rupture, where it can block blood flow.</p>		<ul style="list-style-type: none"> ✓ Improves vascular tone ✓ Increases plaque stability ✓ Decreases foam cell formation ✓ Reduces blood pressure ✓ Reduces plaque rupture ✓ Improves blood flow

©AstaReal 2014

Benefits of Natural Astaxanthin for Cardiovascular Health:

- 1 Improves blood lipid profile
- 2 Reduces oxidative stress
- 3 Enhances capillary circulation
- 4 Reduces LDL oxidation and decreases plaque formation

AstaReal® – The Most Studied Brand

The AstaReal Group is recognized as an authority in natural astaxanthin science and research. AstaReal's high quality natural astaxanthin is the most studied form of the nutrient worldwide. The clinical database for AstaReal® includes 60+ clinical trials with more than 1400 participants undergoing treatments lasting from 2 weeks to 6 months.

Superior Product Range

AstaReal AB offers a range of bulk products to fit different formats, allowing for the development of innovative products that add astaxanthin's unsurpassed antioxidant power.

In addition, AstaReal AB has developed a range of finished formulations containing AstaReal® natural astaxanthin, each expertly developed to support a number of health areas.



References & Selected Publications

1. Augusti PR *et al.*, Astaxanthin prevents changes in the activities of thioredoxin reductase and paraoxonase in hypercholesterolemic rabbits. *J Clin Biochem Nutr.* 2012;51(1):42-49.
2. Choi HD *et al.*, Effects of astaxanthin on oxidative stress in overweight and obese adults. *Phytother Res: PTR.* 2011;25(12):1813-18.
3. Yoshida H *et al.*, Administration of natural astaxanthin increases serum HDL-cholesterol and adiponectin in subjects with mild hyperlipidemia. *Atherosclerosis.* 2010;209(2):520-23.
4. Iwabayashi M *et al.*, Efficacy and safety of eight-week treatment with astaxanthin in individuals screened for increased oxidative stress burden. *Anti-aging medicine.* 2009;6(4):15-21.
5. Miyawaki H *et al.*, Effects of astaxanthin on human blood. *J Clin Biochem Nutr.* 2008;43(2):69-74.
6. Hussein G *et al.*, Astaxanthin ameliorates features of metabolic syndrome in SHR/NDmcr-cp. *Life sciences.* *Life Sci.* 2007;80(6):522-29.
7. Hussein G *et al.*, Antihypertensive potential and mechanism of action of astaxanthin: II. vascular reactivity and hemorheology in spontaneously hypertensive. *Biol Pharm Bull.* 2005;28(6):967-71.
8. Kim KY *et al.*, The effects of astaxanthin supplements on lipid peroxidation and antioxidant status in postmenopausal women. *Nutritional Sciences.* 2004;7(1):41-46.