**What is Astaxanthin?**

Astaxanthin is related to other colorful members of the carotenoid family such as lutein, zeaxanthin, beta-carotene, and lycopene, but that is where the similarity ends.

Astaxanthin’s chemical structure allows it to uniquely span and protect cell membranes and other similar structures against lipid attack by quickly neutralizing Reactive Oxygen Species (a.k.a. active oxygen).

Astaxanthin is documented with high potencies for neutralizing oxygen radicals. Furthermore, astaxanthin has been classified as a “pure anti-oxidant” unlike other popular carotenoids which may show “pro-oxidative” characteristics under certain conditions.

Astaxanthin’s potent antioxidant properties give rise to a number of health related benefits. Randomized, double-blind placebo controlled studies using astaxanthin on human health are rapidly gaining worldwide interest. These include improvements to visual health, muscle performance, skin health and many more.

**Astaxanthin’s Superior Antioxidant Power**

How does Astaxanthin compare to other antioxidants?
All antioxidants have the same action - neutralizing harmful ROS by quenching or scavenging action. The potency determined by in-vitro tests can indicate the antioxidant capacity.

<table>
<thead>
<tr>
<th>Antioxidant</th>
<th>Astaxanthin</th>
<th>Alpha-lipoic acid</th>
<th>Vitamin E</th>
<th>Green tea catechins</th>
<th>CoQ10</th>
<th>Vitamin C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astaxanthin is</td>
<td>75 times stronger</td>
<td>100 times stronger</td>
<td>550 times stronger</td>
<td>800 times stronger</td>
<td>5,000 times stronger</td>
<td></td>
</tr>
</tbody>
</table>

Astaxanthin is 75 times stronger than Alpha-lipoic acid 100 times stronger than Vitamin E 550 times stronger than Green tea catechins 800 times stronger than CoQ10 5,000 times stronger than Vitamin C

**Further Reading**


**Are you suffering from eye fatigue?**

**Total Singlet Oxygen Quenching Constants kT (10^9 M^-1 s^-1)**

Astaxanthin and Eye Fatigue

Astaxanthin supplementation improves accommodation function, retinal capillary blood flow and inflammation. This helps tired eyes recover and prevents further fatigue.

Improves Accommodative Function*

Astaxanthin supplementation showed significant improvement in accommodation response.

*Ability of the eye to focus from far to near or near to far objects which is controlled by the ciliary muscle.

Improves Retinal Capillary Blood Flow

Astaxanthin supplementation improved retinal blood flow. Increased blood flow via the optic nerves brings nourishment to the tired eyes and reduces eye fatigue. The results also showed an improvement in accommodation amplitude.

Suppresses Inflammation

Astaxanthin supplementation suppressed inflammation of the eye.

<Study Method>
In a randomized double blind placebo controlled study, 40 healthy subjects (age 24~38), took 6 mg of astaxanthin daily for 4 weeks. Accommodation amplitude and rate of change of accommodation was calculated.


<Study Method>
Inflammation was induced by foot pad injection of bacterial endotoxin in rats. Astaxanthin was injected intravenously at 1, 10 or 100 mg/ Kg immediately after endotoxin stimulations. Number of cells that showed inflammation was measured.