

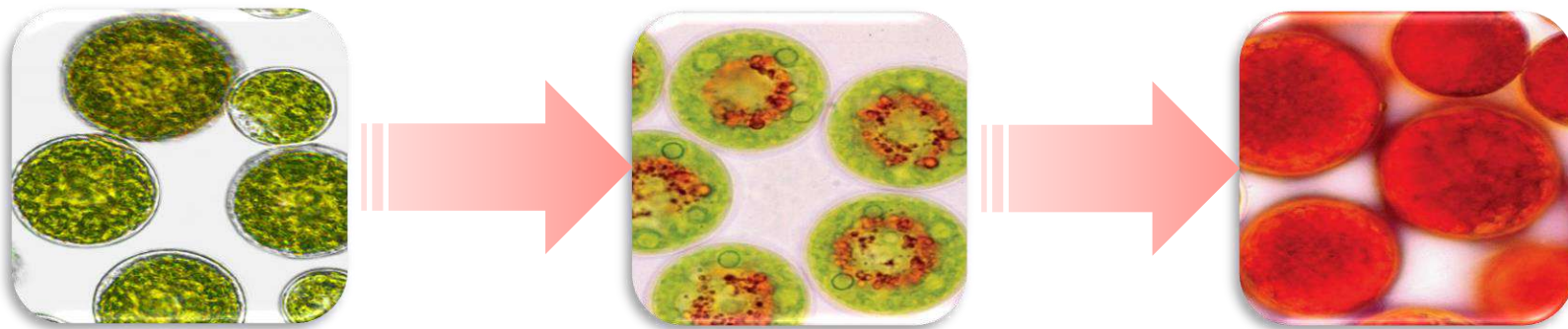
Nature's Most Powerful Antioxidant AstaReal® Astaxanthin



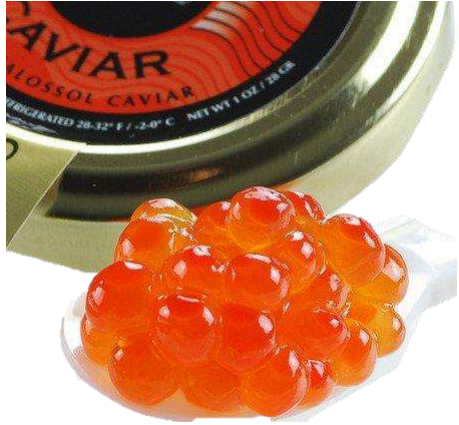
What is AstaReal Astaxanthin?

- Natural astaxanthin belongs to a carotenoid family
- Sourced from green microalgae cultivated in Moses Lake, WA.
- Sustainable ingredient / Plant source
- Backed by 150 published studies including 60 clinical trials
- Nature's most powerful antioxidant available for human consumption
- A.K.A. King of Carotenoid, Mitochondrial Nutrient, Oxicarotenoid, Super Antioxidant

When the algae, *Haematococcus pluvialis*, is under cellular stress, it synthesizes astaxanthin to protect its proteins, DNA, RNA, and lipids from fatal damage. ~Natural Defense Molecule~



Where can you find astaxanthin in nature?



Source: NatuReal Corp, Japan. With Permission.

Natural Astaxanthin is the reason why salmon, shrimp, lobster and flamingo are orange, red, and pink! In the natural environment, animals store astaxanthin in their muscle, shell, and feather to take advantage of great benefits that mother nature provides!

Story of Natural Astaxanthin and Wild Salmon

2. Improves muscle endurance

1. Stores astaxanthin in its fresh

3. Protects against UV light.



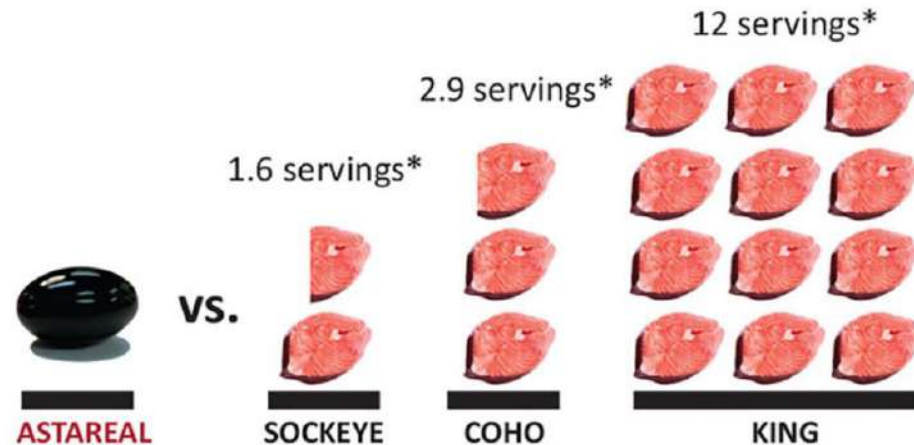
Why salmon flesh is reddish? Actually, salmon is whitefish. They gradually turn reddish when they eat krill and small crabs to store astaxanthin in their flesh before they go up river for migration. Once they start migration, they don't eat and only count on nutrients stored in their bodies. Astaxanthin provides vital endurance while going up the river and also protects roes from UV light. This mighty molecule is the key nutrient for salmon to keep its birth cycle.

The Astaxanthin Gap in Our Diet

So, we can eat salmon to get astaxanthin, right?



Would you eat this much raw wild salmon daily?



* Fillet based on 3.5 oz or 100g serving. Salmon astaxanthin content based on European Food Safety Authority.

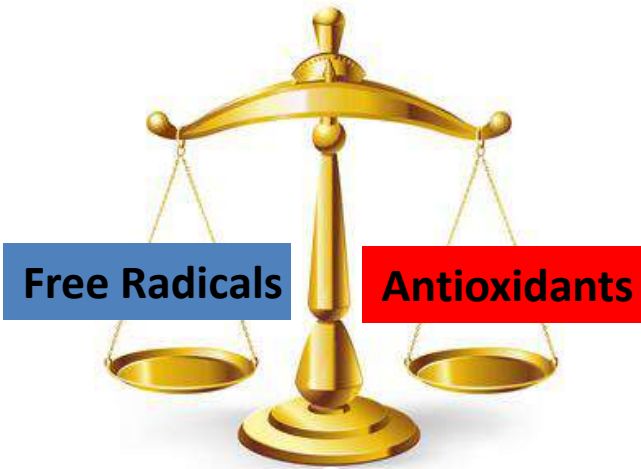
Not so easy! It makes more sense to take astaxanthin supplement than eating salmon every day!

Why You Should Take Anti-Oxidant SPCLY AstaReal® Astaxanthin



Oxidation in progress!!!

Antioxidant and Your Health



In your normal day, you maintain the balance between antioxidant and free radicals caused by oxidation. When they are in good balance, you are healthy, but when you experience strenuous activities and you are in certain environmental conditions, the free radicals over power antioxidant activities and make your cells unhealthy. The effect of this imbalance can cause serious issues to you and your loved ones health.

Antioxidant and Your Health

“Oxidative stress may play a part in development of many different diseases, *Mayo Clinic*.”

- Cancer
- Cardiovascular diseases
- Diabetes
- Alzheimer’s disease
- Parkinson’s disease
- Eye diseases, including cataracts and age-related macular degeneration

Taking the very best antioxidant is crucial to sustain your health in a long run. **Then why natural astaxanthin?**

3 Reasons Why Astaxanthin is Antioxidant of Choice

1. Nature's most powerful antioxidant

Strongest antioxidant available in nature

Grape Seed Extract



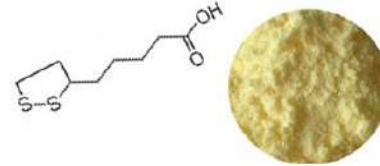
17times

Beta Carotene



40times

Alpha lipoic acid



75times

Vitamin E



100times

Green Tea



560times

CoQ10



800times

Vitamin C



6000times

Nishida et al (2007). Carotenoid Science. Vol.11:16-20.

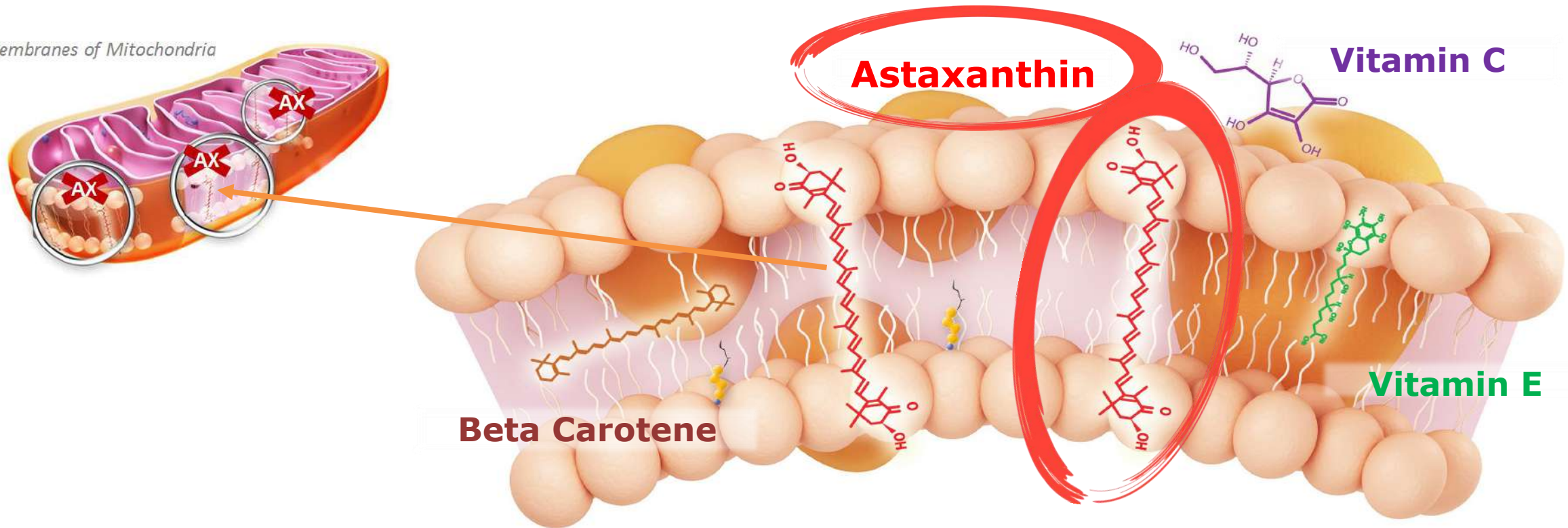
Natural astaxanthin is the most powerful antioxidant against singlet oxygen species.

3 Reasons Why Astaxanthin is Antioxidant of Choice

2. Improves efficiency of your energy production

Provides the best coverage for better cell efficiency

Membranes of Mitochondria



Astaxanthin is a fat soluble nutrient, which means it can be stored in the body for a period of time instead of being quickly eliminated as water soluble nutrients are. Moreover, only astaxanthin is able to fully span the membrane from end-to-end, providing complete coverage both inside the membrane and on either side of the membrane. This structure helps improve efficiency of mitochondrial function to produce more energy while it fights against oxidative stress that slows down energy production.

More ATP and Less ROS and Lactic Acids Accumulation

Fuel Sources

Fatty Acids

Amino Acid

Glucose



ATP

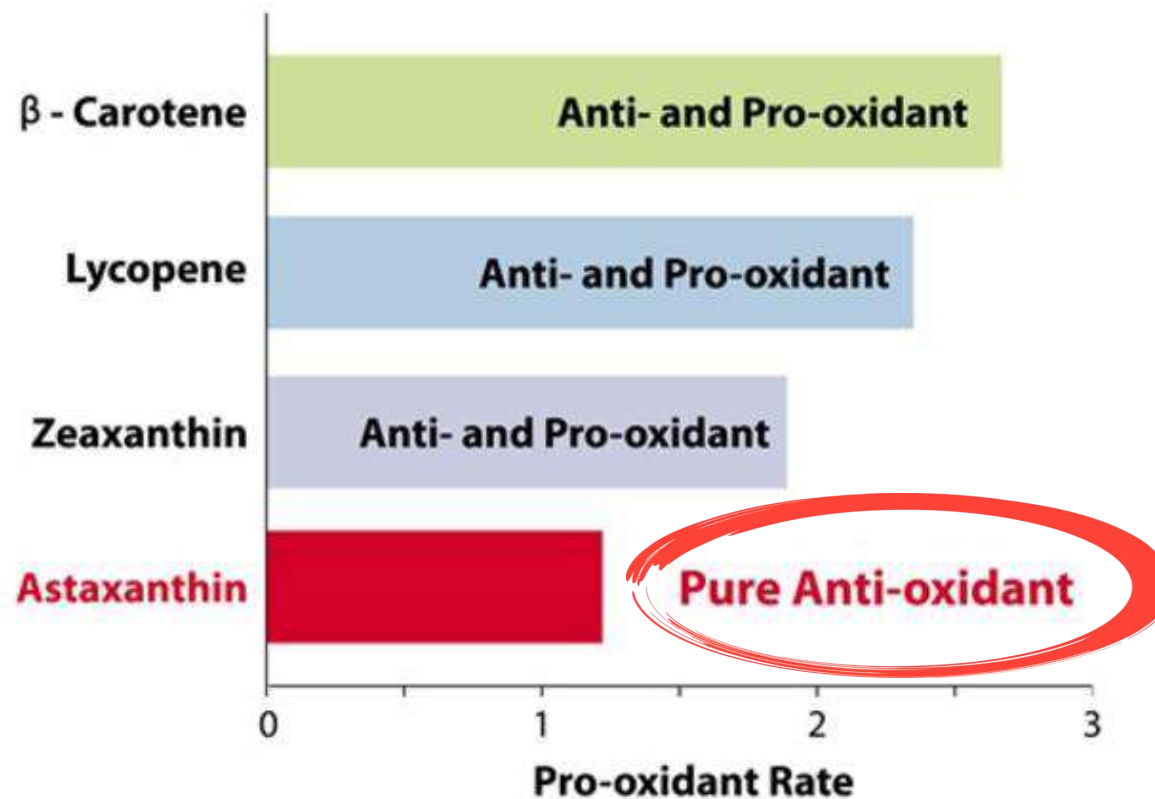


Astaxanthin facilitates utilization of body fat as energy source instead of glucose. It helps reduction of lactic acid accumulation in your muscle. Meanwhile, astaxanthin fights against ROS and improves efficiency of mitochondrial function that leads to more energy production.

3 Reasons Why Astaxanthin is Antioxidant of Choice

3. Astaxanthin is pure-antioxidant

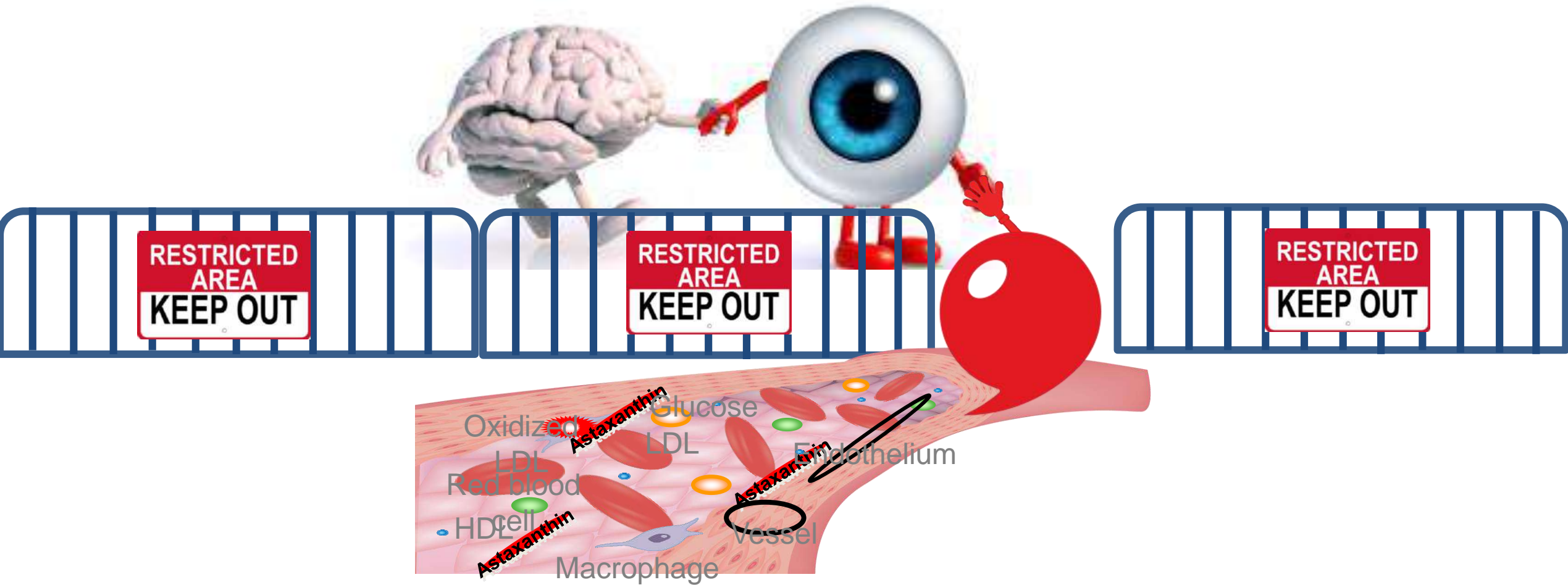
All antioxidants are GOOD for you, right?



Martin H.D. et al. 1999

Some antioxidants become pro-oxidant and harmful. Unlike other antioxidant in carotenoid family, astaxanthin does not become pro-oxidant!

Astaxanthin Crosses Blood Barriers to reach eyes and brain



Your eyes and brain are protected by Blood Brain Barrier and Blood Retinal Barrier to shutout foreign substances that can be harmful. Astaxanthin crosses those barriers to reach cells in brain and eyes!

Why You Should Take AstaReal Astaxanthin

AstaReal is the most studied brand of Natural Astaxanthin. With its state of art indoor closed bioreactors, AstaReal protects the microalgae from environmental contaminants and allows AstaReal to create the purest and most potent natural astaxanthin in the world.



Not All Astaxanthin is Created Equal



AstaReal cultivates microalgae, *Haematococcus pluvialis*, using indoor closed bioreactors in Moses Lake, Washington, USA. The indoor cultivation method protects the microalgae from environmental contaminants and allows AstaReal to create the purest and most potent natural astaxanthin in the world.

AstaReal = Free of Contamination

PAH

REPORT OF ANALYSIS

Sample Code 468-2018-0615B115



AR-18-QA-041261-01

Sample Description ASTAXANTHIN 10% OIL (L10)
 Client Sample Code LOT #T1805058
 Sample Reference 10 GRAMS

Reception Date 08/15/2018
 Reception Temperature 25 (Celsius)
 Sample Condition Acceptable
 Purchase Order

Test Results

QA22D - Polynuclear Aromatic Hydrocarbons (GC-MSMS)
 Completion Date: 06/20/2018 Method: Internal method
 Benz(a)anthracene
 Chrysene
 Benzo(b)fluoranthene
 Benzo(a)pyrene
 Sum of all positive identified PAH

Result

<0.50 µg/kg
 <0.50 µg/kg
 <0.50 µg/kg
 <0.50 µg/kg
 <2.0 µg/kg

Pesticides

REPORT OF ANALYSIS

Sample Code 468-2015-0422B148



AR-15-QA-018918-01

Sample Description ASTAREAL L10 OIL
 Client Sample Code LOT #T1412008
 Sample Reference 80 GRAMS

Reception Date 04/22/2015
 Reception Temperature 25 (Celsius)
 Sample Condition Acceptable
 Purchase Order

Test Results

SP411 - Organonitrogen Pesticides (MS1+MS2)
 Completion Date: 04/29/2015 Method: ASU L00.00-34
 Screened pesticides

Not Detected

SP421 - Organochlorine Pesticides, Pyrethroides
 Completion Date: 04/29/2015 Method: ASU L00.00-34
 Screened pesticides

Not Detected

SP424 - Organophosphorus Pesticides
 Completion Date: 04/29/2015 Method: ASU L00.00-34
 Screened pesticides

Not Detected

Benzoic Acid

Brand: AstaReal Container Size:
 Sampled by: Anna Birge Date Sampled: 4/11/2018
 Sampling Procedure: Single sample representative of production lot and randomly selected for analysis.
 Received by: Bdinntorn B. Nuanual Date Received: 4/12/2018 Time Received : 10:45

ANALYTICAL REPORT

Sample Number	Laboratory Number	Product Description	Method Reference	Analytical Results	Analysts
	18-C72	Astaxanthin Esters Production Code: L10 Lot Number: T1801054			
823	Benzoic Acid	AOAC 983.16		Not Detected MRL=5.0 ppm	SRT

Certificate of Analysis

AstaReal® L10			
Description	Natural Astaxanthin Complex	Date of Manufacture	02 May 2018
Lot Number	T1805058	Expiration Date	01 May 2021

Analyte	Specification	Result
Appearance	Dark Red Oil	Dark red oil
Astaxanthin Content* (HPLC method)	81.1 ± 0.5% (As Astaxanthin free form)	10.9%
Moisture*	Less than 5.0%	0.08%
Standard Plate Count*	Less than 1000 cfu/g	< 10cfu/g
Total Yeast*	Less than 100 cfu/g	< 10cfu/g
Total Mold*	Less than 100 cfu/g	< 10cfu/g
Total Coliforms*	Negative/g	Negative
Staphylococcus*	Negative/g	Negative
Salmonella*	Negative/g	Negative
E. coli*	Negative/g	Negative
Arsenic*	Less than 1 ppm	< 0.50ppm
Cadmium*	Less than 1 ppm	< 0.25ppm
Lead*	Less than 0.5 ppm	< 0.050ppm
Mercury*	Less than 1 ppm	< 0.30ppm
Total Heavy Metals**	Less than 10 ppm	< 1.0ppm

Why AstaReal®

- ✓ Studied by over 150 publications including 60 clinical trials on AstaReal
- ✓ Pioneer of Natural Astaxanthin research and innovation since 1988
- ✓ Fully Controlled Closed Indoor Cultivation / Solvent Free sCO₂ Extraction
- ✓ Cultivated in the USA in a NSF cGMP Registered Cultivation Facility
- ✓ AstaReal® Astaxanthin Oleoresin has been verified for human consumption by
 - ✓ USP Dietary Supplement Verification Program
 - ✓ Project Non-GMO Verified by NSF

AstaReal® Astaxanthin

Clinically Tested Antioxidant in Nature

Health Benefits

Demonstrated by AstaReal®

Muscle Health Benefits of Natural Astaxanthin

- Reduces buildup of lactic acid ^{1, 11}
- Supports endurance and muscle performance ^{2,3}
- Promotes good circulation; nutrition & oxygenation of muscles ^{7, 8, 9}
- Supports sustained energy and athletic performance ^{2, 3}
- Helps improve power output ³
- Supports muscle recovery ^{4, 5, 6}
- Protects against exercise-induced muscle damage ^{4, 5, 6}
- Promotes mental clarity and focus ¹⁰

Studies with **ASTAREAL**® Astaxanthin

1. Sawaki *et al.* Journal of Clinical Therapeutics & Medicines. 2002;18(9):1085-100.
2. Malmsten *et al.* Carotenoid Science. 2008; 13:20-2.
3. Earnest *et al.* International journal of sports medicine. 2011 Nov;32(11):882-8.
4. Djordjevic *et al.* The Journal of sports medicine and physical fitness. 2012 Aug;52(4):382-92.
5. Baralic *et al.* Phytotherapy research: PTR. 2013;27(10):1536-42.
6. Baralic *et al.* Evidence-Based Complementary and Alternative Medicine. 2015
7. Miyawaki *et al.* Journal of clinical biochemistry and nutrition. 2008 Sep;43(2):69-74.
8. Saito *et al.* Albrecht von Graefes Archiv für klinische und experimentelle Ophthalmologie. 2012 Feb;250(2):239-45.
9. Iwabayashi *et al.* Anti-aging medicine. 2009 6(4):15-21.
10. Hongo *et al.* Japanese Pharmacology & Therapeutics. 2017 Jan; 45:61-72.
11. Fukamauchi M. *et al.* FOOD STYLE 21. 2007;11(10).



AstaReal® Astaxanthin Boosts Endurance

14 competitive cyclists (ages 18-39) had their performance tested in a 20km timed trial

7 cyclists treated with placebo

7 cyclists treated with 4mg/day **AstaReal® Astaxanthin** for 4 weeks

AstaReal® Astaxanthin group:

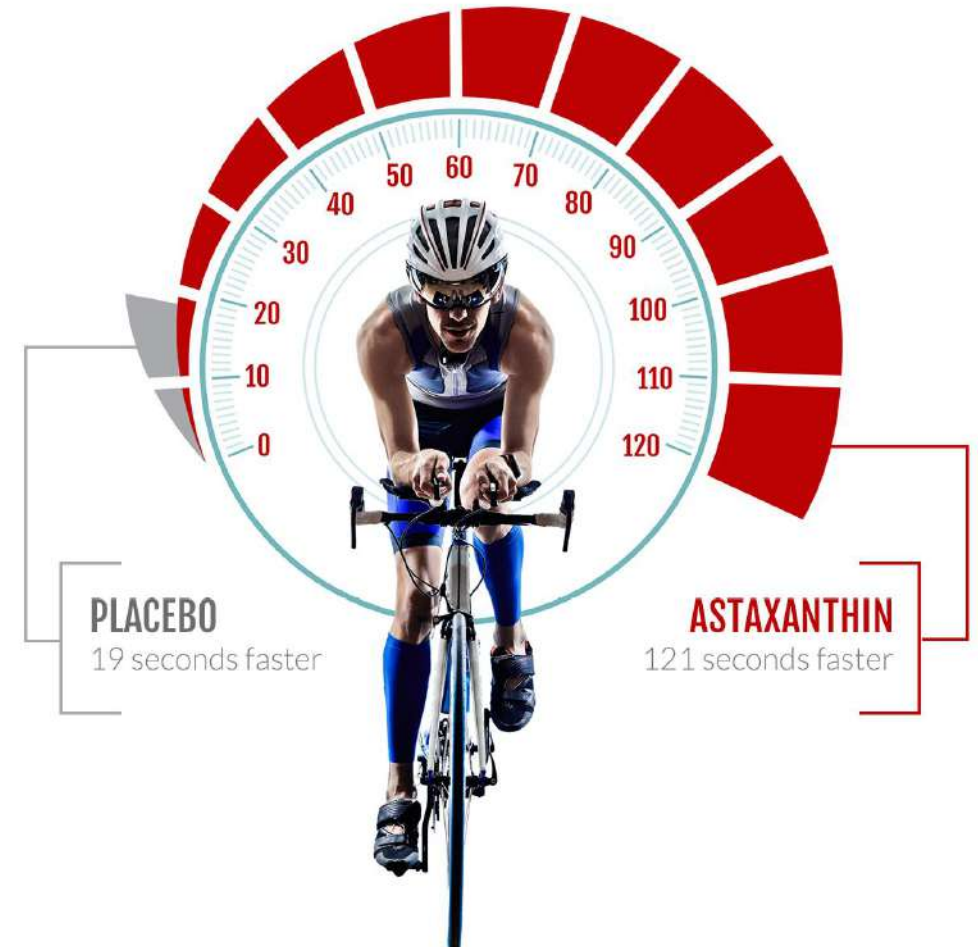
- 121 sec improvement (5%) in average time.
- 20W increase (15%) in average power output.

Placebo group:

- 19 sec improvement (0.8%) in average time.
- 1.6W increase (0.5%) in average power output.

ASTAXANTHIN SUPPLEMENTATION

improves performance time of cyclists



AstaReal® Astaxanthin helps Improves Muscle Performance

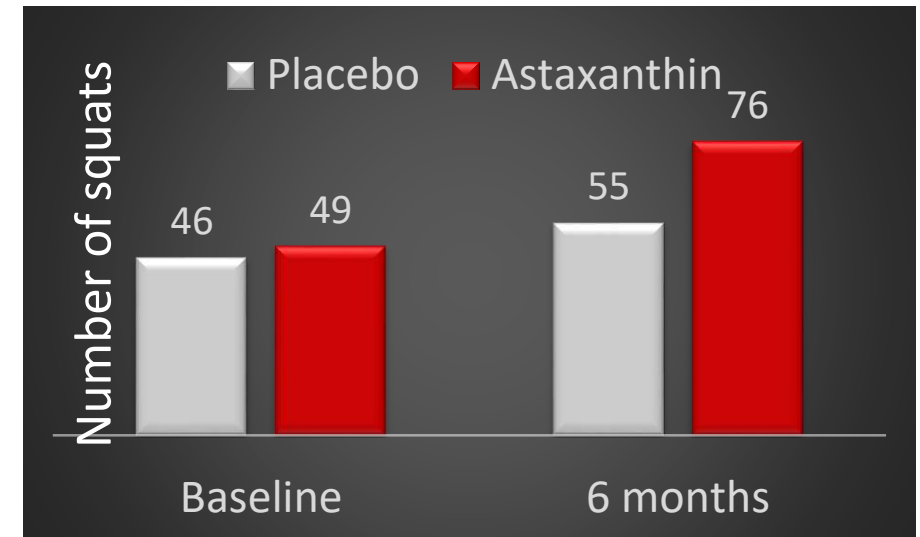
40 healthy paramedic students (ages 17-19) undergoing strength and endurance training

20 treated with placebo

20 treated with 4 mg/day **AstaReal® Astaxanthin**



AstaReal® Astaxanthin Boosts Strength/Endurance Training



Malmsten, et al., *Carotenoid Science*, 13, 20-22 (2008).

AstaReal® Astaxanthin Supports Muscle Recovery

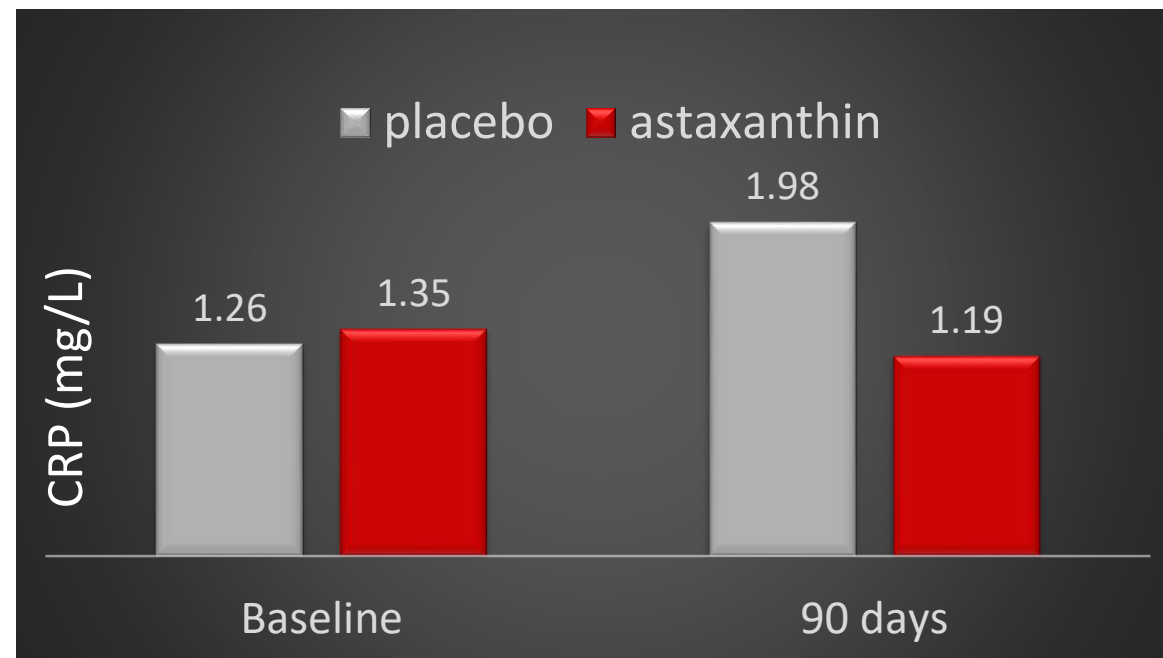
40 trained soccer players (average 18 years old)

19 treated with placebo

21 treated with 4mg/day **AstaReal® Astaxanthin**



AstaReal® Astaxanthin Blunts Systemic Inflammation



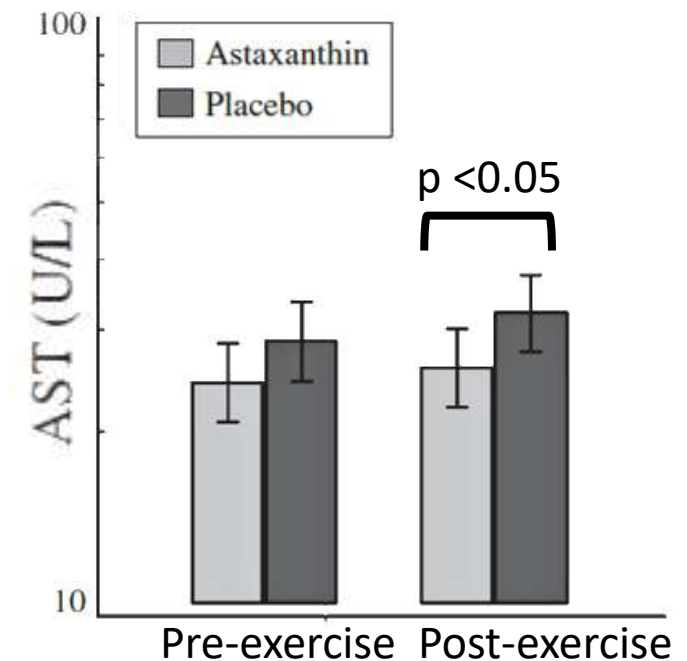
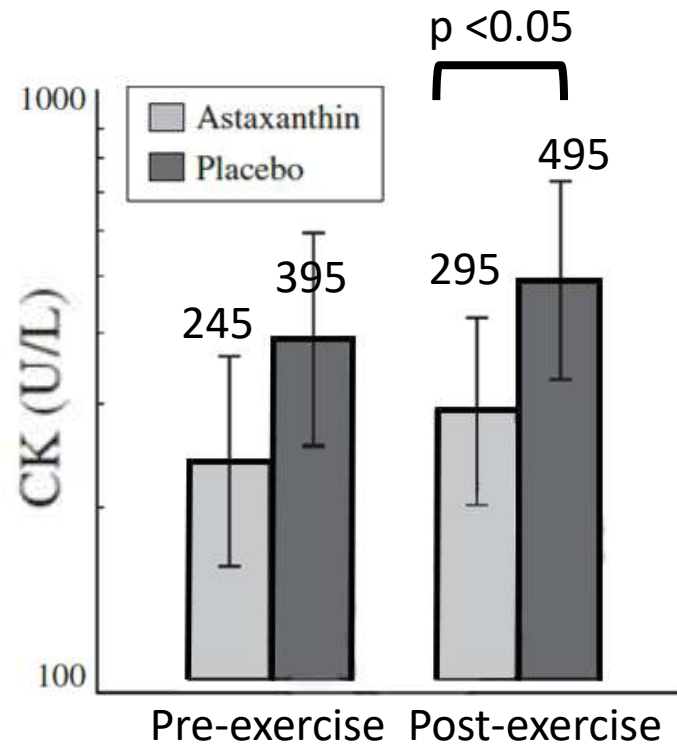
Baralic et al. *Evidence-Based Complementary and Alt. Med.* **2015** (4): 1-9 (2015).

AstaReal® Astaxanthin Protects Muscles from Free Radical Damage

32 elite soccer players (average 18 years old)

14 players were treated with placebo

18 players were treated with 4mg/day **AstaReal® Astaxanthin**



Skin Health Benefits of Natural Astaxanthin

- Reduces the size of wrinkles & improves skin microtexture ^{1, 2, 3, 5}
- Protects the skin's collagen layer ^{1, 2, 3, 4, 5}
- Supports skin hydration ^{1, 2}
- Promotes smooth skin ^{1, 2, 3, 5}
- Enhances skin elasticity ^{1, 2, 3, 4, 5}
- Reduces age spots ^{1, 2}
- Reduces fine lines ^{1, 2, 3, 4, 5}
- Protects skin condition from seasonal stress [low humidity] ⁶

Studies with **ASTAREAL**® Astaxanthin

1. Yamashita, E. *et al.* Food Style 21. 2002. 6(6):112-17.
2. Tominaga K. *et al.* Food Style 21. 2009;13(10):25-9.
3. Seki T. *et al.* Fragrance Journal. 2001;12:98-103.
4. Tominaga K. *et al.* Acta Biochim Pol. 2012;59(1):43-7.
5. Yamashita E. *et al.* Carotenoid Science. 2006;10:91-5.
6. Tominaga K. *et al.* J. Clin. Biochem. Nutr. 2017. 61(1):33-39.



Eye Health Benefits of Natural Astaxanthin

- Promotes good circulation and nourishment of eyes ⁶
- Alleviates symptoms of Computer Vision Syndrome (CVS) ^{1, 3, 7, 9}
- Helps to focus and re-focus strained eyes ^{1, 2, 3, 4}
- Relieves tired eyes [eye fatigue] ^{5, 6, 7, 8}
- Helps alleviate eye strain ^{1, 3, 8}
- Helps eyes resist and recover from screen time ^{1, 3, 7, 9}
- Alleviates oxidative stress in eyes ^{10, 11, 12, 13}
- Helps promote visual acuity and enhance depth perception ^{14 15}

Helps Studies with **ASTAREAL**® Astaxanthin

1. Nagaki N. et al. 2010. Japanese Review of Clinical Ophthalmology, *Folia Ophthalmologica Japonica*, 3(5): 461-468.
2. Nitta T. et al. 2005. *Journal of Clinical Therapeutics and Medicines*, 21(5): 79-92
3. Nagaki Y. et al. 2002. *Journal of Traditional Medicines*, 19(5): 170-173.
4. Nagaki Y. et al. 2006. *Journal of Clinical Therapeutics and Medicines*, 22(1): 41-54
5. Iwabayashi M. et al. 2009. *Anti-Aging Medicine*, 6(4): 15-21.
6. Nagaki Y. et al. 2005. *Journal of Clinical Therapeutics and Medicines*, 21(5): 73-78.
7. Takahashi N. et al. 2005. *Journal of Clinical Therapeutics and Medicines*, 21(4): 43-48
8. Kajita M. et al. 2009. *Medical Consultation & New Remedies*, 46(3): 325-329.
9. Shiratori K. et al. 2005. *Journal of Clinical Therapeutics and Medicines*, 21(6): 65-78.
10. Hashimoto H. et al. 2009. *Atarashii Ganka (Journal of the Eye)*, 26 (2):229-234.
11. Hashimoto H. et al. 2013. *Journal of Clinical Biochemistry and Nutrition*, 53(1): 1-7.
12. Hashimoto H. et al. 2016. *Journal of Clinical Biochemistry and Nutrition*, 59(1): 10-15.
13. Hashimoto H. et al. 2011. *Rinsho Ganka (Jpn J Clin Ophthalmol)*, 65(4): 465-470.
14. Nakamura A. et al. 2004. *Jpn J Clin Ophthalmol* 58 (6): 1051-1054.
15. Sawaki K. et al.. 2002. *Journal of Clinical Therapeutics and Medicines* 18(9):73-88.



Cardiovascular Health Benefits of Natural

- Supports blood flow ^{1, 2, 3, 4, 5, 6}
- Supports capillary blood flow ³
- Supports blood flow to the eye ^{3, 6}
- Supports healthy blood chemistry/blood lipid profile ⁷

Studies with **ASTAREAL**® Astaxanthin

1. Miyawaki H. et al. Journal of clinical biochemistry and nutrition. 2008 Sep;43(2):69-74.
2. Iwabayashi M., et al. Anti-aging medicine. 2009; 6(4):15-21.
3. Nagaki Y., et al. Journal of Clinical Therapeutics & Medicines. 2005;21(5):537-42.
4. Miyawaki H. et al. Journal of Clinical Therapeutics & Medicines. 2005;21(4): 421-9.
5. Tsukahara H. et al. Medical consultation & new remedies. 2009;46(4);427-32.
6. Saito M. et al. Graefe's archive for clinical and experimental ophthalmology. 2012 Feb;250(2):239-45.
7. Yoshida H. et al. Atherosclerosis. 2010 Apr;209(2):520-3.

