



AstaPure[®] Arava

Whole algae complex delivers natural
astaxanthin along with essential nutrients





DEFINING A GLOBAL TREND

As consumers around the world seek to improve their overall health, the trend of obtaining valuable nutrients from whole foods continues to grow.

Whole foods are minimally processed products that contain diverse micronutrient varieties. These micronutrients offer a wide range of vitamins, minerals, co-factors and enzymes that are essential to the health of the human body. Many whole foods are also good sources of antioxidants, which are known to support all stages of a healthy cell-life cycle.

1 Consumers recognize the impact that cognitive health and mental wellbeing have on the immune system.*

2 Consumers want products and ingredients that they associate with maximum efficacy.*

3 Natural formulation is a high priority for consumers and is associated with a variety of benefits.*

4 Consumers want maximum transparency over the ingredients that are in the food and drink that they purchase.*

*FMCG Gurus, Top Ten Trends for 2021 Presentation (December 2020)

MICROALGAE: A SUSTAINABLE SOURCE FOR HIGH-QUALITY NUTRIENTS

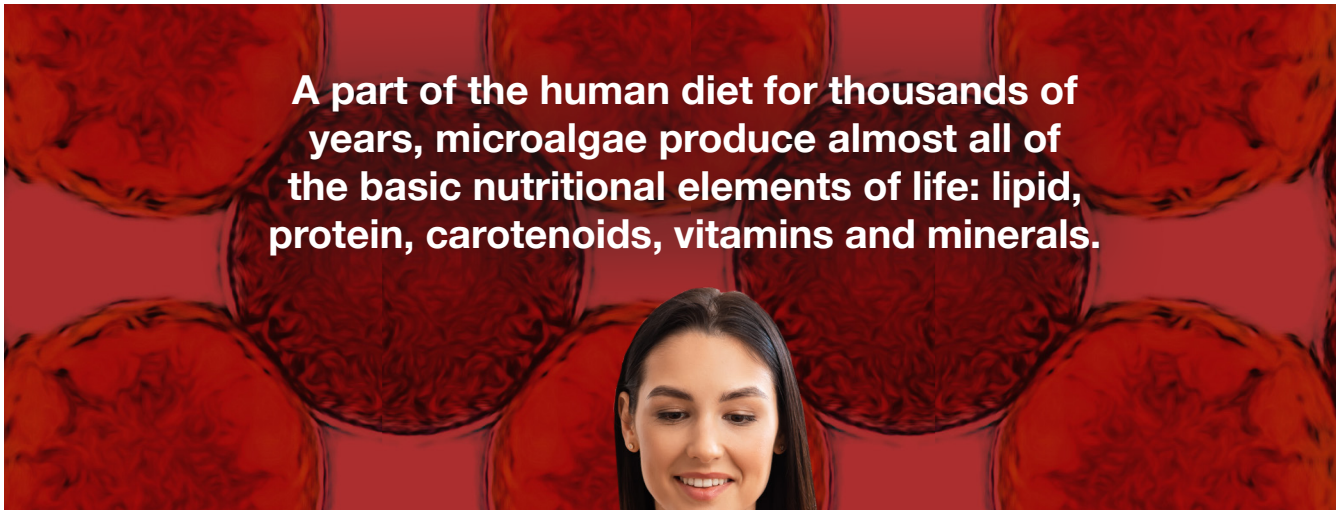
Microalgae is where life as we know it begins. Billions of years ago, microalgae made life on earth possible by performing photosynthesis and producing roughly half of the atmosphere's oxygen.

As an ancient organism at the bottom of the food chain, microalgae contain nutrients that are essential for our health, nourishment and continued survival – and hold the keys to the longevity and survival of life on our planet.

Microalgae cultivation does not compete with resources required for traditional crops. Microalgae feed on industrial byproducts and create oxygen as waste.

Microalgae have the ability to grow rapidly, efficiently use light energy, fix atmospheric CO₂, and produce more food per hectare than traditional crops.

A part of the human diet for thousands of years, microalgae produce almost all of the basic nutritional elements of life: lipid, protein, carotenoids, vitamins and minerals.



A CLOSER LOOK AT *HAEMATOCOCCUS PLUVIALIS*

Having survived for billions of years, *Haematococcus pluvialis* is arguably one of the most resilient organisms in nature and the best source of astaxanthin.

Haematococcus pluvialis is a microalgae that produces astaxanthin to protect itself from stressful environmental conditions, which allows it to preserve its DNA. Even if it takes dozens of years, the microalgae are always ready and able to grow again, patiently waiting for the next rain to fall.

Natural Astaxanthin's Major Source

Haematococcus pluvialis algae is the most concentrated natural form of astaxanthin. While it is possible to produce astaxanthin from several natural sources, Solabia- Algatech Nutrition produces astaxanthin strictly from *Haematococcus pluvialis* – thus ensuring a highly concentrated, extremely healthy keto-carotenoid.

ALGAE IN SPACE

One of the algae examined by NASA for use in space is the microalgae *Haematococcus pluvialis*.

Researchers believe that growing and consuming this powerful microalga (& antioxidant) would help keep astronauts' bodies healthy for long-duration space missions.

According to the NASA website: "A fresh supply of astaxanthin on board could potentially be a preventative measure against, radiation exposure, eye damage caused by bodily fluid pressure changes, cardiovascular system damage, and bone loss on long space exploration missions."



ASTAPURE® ARAVA – BEYOND ASTAXANTHIN

AstaPure® Arava whole algae *Haematococcus pluvialis* is a unique source of minimally processed and unrefined natural astaxanthin that contains the vital nutrients naturally found in microalgae.

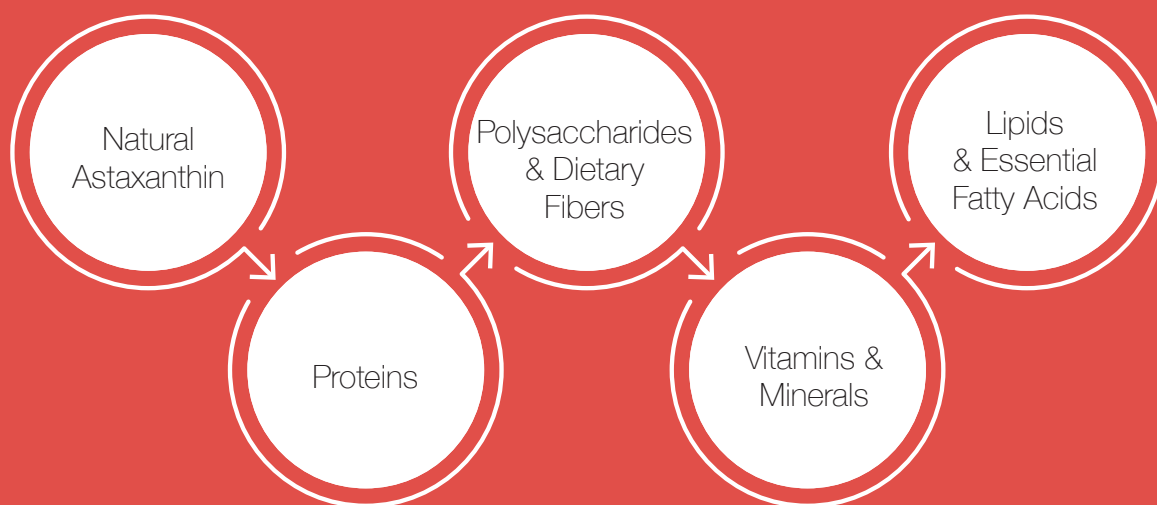
AstaPure® Arava is produced using Solabia-Algatech's Nutrition's ESL proprietary technology, which gently preserves all-natural microalgae components.

AstaPure® Arava is manufactured via eco-friendly, closed-system cultivation technology, which is completely exposed to the natural sunlight of the Arava desert, and mimics the natural habitat and biological processes of microalgae.

The whole algae comprises a unique composition that demonstrates support for the organism's resilience: antioxidants, polysaccharides & dietary fibers, essential fatty acids and vitamins & minerals.

According to in-vitro cell studies, the whole algae complex complex displayed significant results affecting immune system activity.

ENJOY THE NUTRITIONAL GOODNESS OF ASTAPURE® ARAVA



3% NATURAL ASTAXANTHIN

Astaxanthin is known as "The king of carotenoids", a natural wonder and one of nature's most potent antioxidants, which provides a wide variety of health benefits.

The potential beneficial health effects of astaxanthin have been widely studied in more than 500 clinical and pre-clinical studies worldwide.

Studies have shown that natural astaxanthin derived from microalgae is over 500 times stronger than vitamin E and is a much more powerful antioxidant than all other carotenoids.

Astaxanthin not only provides shrimp, krill and salmon with their distinctive colors; it also gives salmon the endurance they need to swim upstream for up to 2,000 miles.

Astaxanthin's positive characteristics have been linked to anti-inflammatory properties and strong antioxidant effects that allow it to neutralize free-radicals, prevent DNA damage and support cell mitochondria.

Due to its unique structure situated through the cell membrane, astaxanthin can help protect cells from both internal and external oxidative stressors.

Astaxanthin is bioavailable in many organs and can cross the blood-brain barrier and blood-retinal barriers, bonds with muscle cells and enters skin cells – thus achieving a multitude of health-related benefits.



NATURAL ASTAXANTHIN HEALTH BENEFITS



Improves endurance & exercise performance



Supports cardiovascular health



Supports immune system



Supports male fertility



Supports eye health



Supports skin health



Supports brain health & function



Supports joint health



CARBOHYDRATES POLYSACCHARIDES & DIETARY FIBERS

Over half of *Haematococcus pluvialis* cells are comprised of carbohydrates, including polysaccharides and dietary fibers. Polysaccharides function as energy storage units and structural elements, and have a beneficial effect on the immune system.

Dietary fibers are recommended for promoting health as they have repeatedly exhibited the **following health benefits:**

- Plays an important role in the normal function of the the digestion process
- Lower cholesterol levels
- Support blood sugar levels
- Support healthy weight
- Reduce incidence of respiratory illnesses

LIPIDS & ESSENTIAL FATTY ACIDS [EFA]

Haematococcus pluvialis yields contain approximately 35% lipids, including: Omega-3, 6, 7 and 9 fatty acids. EFA are essential components of membranes, used as energy storage compounds and cell signaling molecules. The body utilizes EFAs throughout all areas including; heart, lung, skin, eye and nerve cells.

VITAMINS & MINERALS

Haematococcus pluvialis whole algae contains a range of healthy constituents, including six essential vitamins (B2, B5, B6, B8, B12 and D3) and four minerals that support the physiological function of enzymes, cellular processes and cellular communication, or act as precursors for functional molecules.

ASTAPURE® ARAVA WHOLE ALGAE AND OXIDATIVE BALANCE

A study with AstaPure® Arava whole algae aqueous extract significantly reduced oxidative stress in human white blood cells.

Reactive Oxygen Species (ROS) are naturally generated in human cells as part of oxygen metabolism. Excessive ROS accumulation, known as oxidative stress, is harmful to proteins, lipids & DNA.

It is vital to maintain antioxidant/pro-oxidant balance and an equilibrium between ROS and antioxidant defenses. Immune cells produce ROS as part of the anti-pathogen response and thus are particularly in danger of oxidative stress damage.

STUDY DESIGN

Incubation of human white blood cells with AstaPure® Arava whole algae aqueous extract

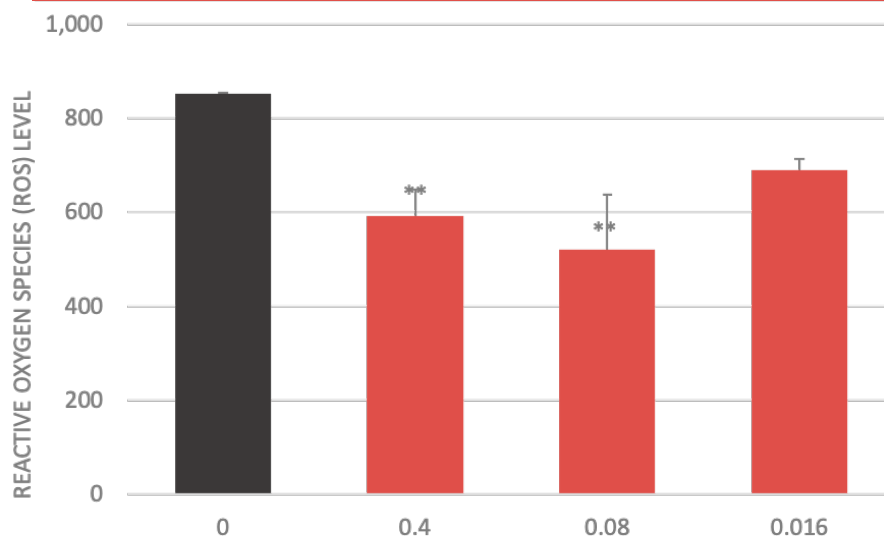


Induction of oxidative stress (exposure to H₂O₂)



Evaluating oxidative stress by measurement of reactive oxygen species (ROS) levels

AstaPure® Arava whole algae aqueous extract reduces ROS formation

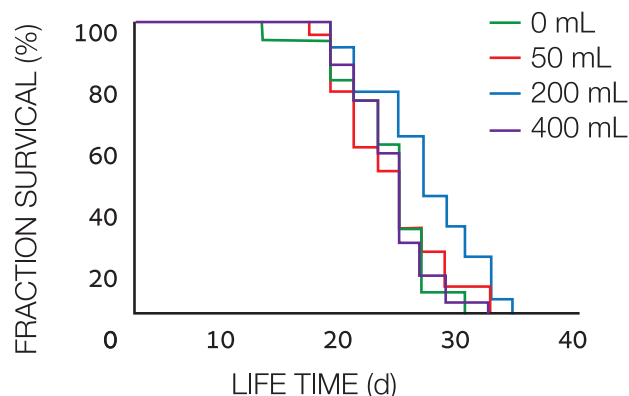


ASTAPURE® ARAVA WHOLE ALGAE AQUEOUS EXTRACT G/L

THE EFFECT OF POLYSACCHARIDE EXTRACTED FROM HAEMATOCOCCUS PLUVIALIS MICROALGAE

The addition of polysaccharide extract to *C. Elegans* worms resulted in a significant increase in the average lifespan by 15% ($p < 0.05$).

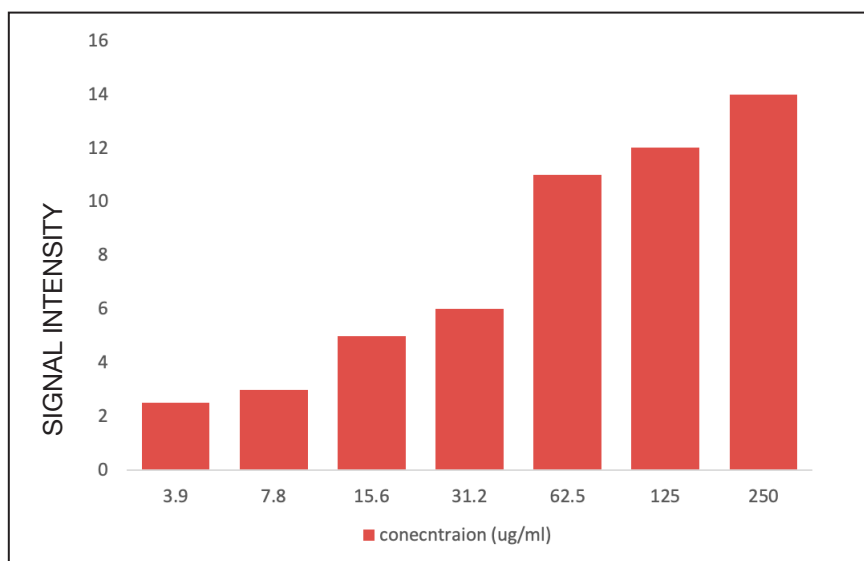
The maximum life duration increased by approx. 3.33 days.



THE EFFECT OF POLYSACCHARIDE EXTRACTED FROM *H. PLUVIALIS* ON IMMUNE CELLS EFFECT

Lymphocytes are white blood cells that play a key role in pathogen specific immunity.

In a pre-clinical study, lymphocyte from mice spleen were incubated for 44 hours in various concentrations of the polysaccharide extract. The extracted polysaccharide exhibited immune stimulatory effects particularly on B lymphocytes.



ASTAXANTHIN ABSORPTION LEVELS

In order to evaluate the bioavailability of the new product AstaPure® Arava, the level of astaxanthin in the plasma of 10 healthy volunteers was measured during a 24-hour follow-up period after the intake of a single dose of AstaPure® Arava tablets.

The results showed that astaxanthin is absorbed from the whole food AstaPure® Arava and is highly bioavailable in levels equivalent to oleoresin.



ASTAPURE® ARAVA: PROMOTING PERSONAL & ENVIRONMENTAL HEALTH

THE OPTIMAL CLEAN LABEL SOLUTION

As consumers demand more unprocessed products with less ingredients, food companies seek to provide a growing variety of clean label, minimally processed, unrefined options.

AstaPure® Arava is an excellent whole food option for health-minded consumers. AstaPure® Arava has no potential residue of harmful solvents or chemicals.

SOLAR-POWERED SUSTAINABILITY

The AstaPure® Arava cultivation process, its location, the use of recycled water and solar energy for all manufacturing activities, use of CO₂ and production of O₂ via photosynthesis in photoreactors contribute not only to the product's sustainability, but also help protect the environment.

ASTAPURE[®] ARAVA FOR TODAY'S WORLD



Delivers the most natural form of astaxanthin, which is packed with an array of nutrients that provide numerous potential health benefits.



Manufactured in an eco-friendly closed system cultivation that is fully controlled and totally exposed to the natural sun light of the Israeli Arava desert.



Whole algae product with strong anti-oxidant activity.



Produced by using Solabia-Algatechs Nutrition's ESL proprietary Gentle Drying Technology that preserves all the natural components of the microalga.



Plant-based, vegan, clean label, organic and non-GMO verified.



REFERENCES:

- [1] Kim J.H., Affan M.A., Jang J., Kang M.H., Ko A.R., Jeon S.M. Morphological, molecular, and biochemical characterization of astaxanthin-producing green microalga *Haematococcus* sp. KORDI03 (*Haematococcaceae*, *Chlorophyta*) isolated from Korea. *J. Microbiol. Biotechnol.* 2015;25:238–246
- [2] Liu, Xiaojuan, Preliminary characterization of the structure and immunostimulatory and anti-aging properties of the polysaccharide fraction of: *Haematococcus pluvialis*. *RSC Advances* 2018 vol 8 9243-9252.



**FOR MORE INFORMATION ON
ASTAPURE® ARAVA PLEASE CONTACT
SOLABIA - ALGATECH NUTRITION**

www.algatech.com | +972-8356425