



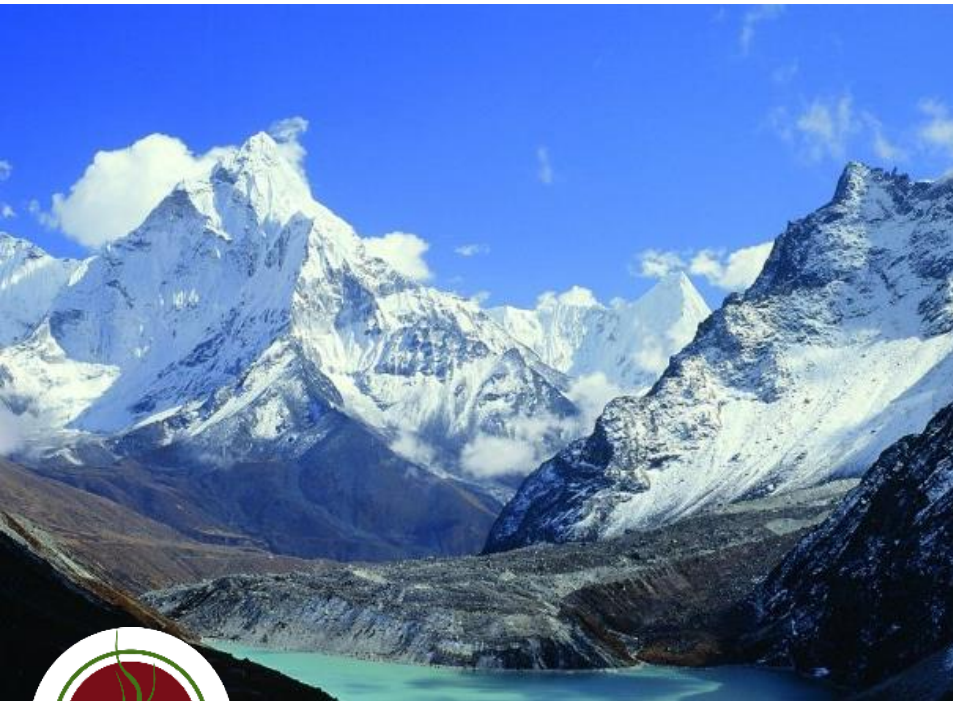
**algaehealth**  
IMPROVING HEALTH WITH ALGAE

**AstaZine®**  
THE WORLD'S PUREST  
Natural Astaxanthin

# AstaZine®

THE WORLD'S PUREST  
Natural Astaxanthin

From the Pure Waters of  
the Himalayan Mountains...



# AstaZine®

THE WORLD'S PUREST  
Natural Astaxanthin



...to the World's Second  
Largest Astaxanthin Farm

# Introducing: AstaZine®

THE WORLD'S PUREST  
Natural Astaxanthin



The supplement  
**YOU CAN FEEL**





## OUR COMPANY

Focus is on  
unsurpassed quality  
at reasonable pricing

Biggest market is  
Japan (with the  
world's toughest  
quality standards)

Supplying most of  
the world's largest  
supplement  
companies

Algae Health Sciences  
(AlgaeHealth) is a  
subsidiary of BGG  
dedicated to the  
research, development  
and marketing of  
products from algae







# OUR COMPANY

Founded in 1995

450 employees and  
6 production sites

32 patents and  
5% of revenue  
invested in R&D

Facilities in USA,  
Japan, Europe  
and China



# OUR FARM

## LEADING *HAEMATOCOCCUS* FARM

World's second largest  
Natural Astaxanthin  
producer

All glass tubing  
to protect from  
contamination

Natural process using  
the sun's energy

Pristine growing  
region, clean air  
& water



# OUR FARM

## WORLD CLASS LABORATORIES

State-of-the-art

Ultra-hygienic

“Most impressive labs  
on the algae scene”





# OUR FARM

## CAPACITY EXPANSION

Nearby land earmarked  
for expansion

Doubling size of farm to  
160 acres (64 hectares)

World's largest  
producer by 2021

# The Future and beyond

640,000 square meter  
Astaxanthin farm



## OUR FARM EXPANSION CAPABILITY

Worldwide Astaxanthin  
demand exceeded  
supply from 2011 – 2014

Every supplier was  
out-of-stock with  
horrible lead times

This will never happen  
again due to AlgaeHealth's:

- Ability to expand capacity quickly and efficiently
- (Went from small producer to world's second largest in only 6 months)





# OUR FARM

## WATER SOURCE

From the Tibetan  
Plateau in the  
Himalayan Mountains

Run through  
reverse osmosis  
for additional safety





*Located next to the  
Pristine Stone Forest*

# OUR FARM

## ENVIRONMENTAL RESPONSIBILITY

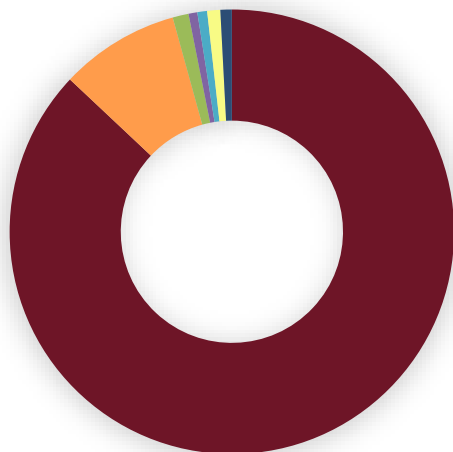
One of our most  
important guiding  
principles

Using the sun's energy

Minimal water  
use and water  
recycling

Closed system  
with no runoff into  
the environment





### Typical Composition

- Mono-Esterified Astaxanthin 87.01%
- Di-Esterified Astaxanthin 8.7%
- Free Astaxanthin 1.16%
- Lutein 0.64%
- Zeaxanthin 0.71%
- Canthaxanthin 0.95%
- Beta-carotene 0.83%

***Purest and most  
concentrated Astaxanthin  
in the world***

## OUR PRODUCT

### PUREST AND MOST CONCENTRATED ASTAXANTHIN IN THE WORLD

#### Purest Natural Astaxanthin in the world

- Carotenoid fraction is 97% Pure Astaxanthin
- Other producers generally range from 85% to 95% Pure

#### Most concentrated Natural Astaxanthin in the world

- 6.0% to over 8.0% concentration in the algae biomass
- Other producers generally range from 2.0% to 5.0%



# OUR PRODUCT

## CONTAMINANTS FOUND IN OTHER ASTAXANTHIN PRODUCTS

Frequent testing of heavy metals without detectable levels

Pesticide and herbicide screens consistently show no detectable levels

Screen of benzopyrene, PAHs, PCBs and aflatoxins without detectable levels

Solvent-free supercritical CO2 oleoresins



# OUR PRODUCT

## VITAL CONTAMINANT CONCERN

Glyphosate (RoundUp®) is becoming ubiquitous in many countries in the food chain and in many supplements

Peer-reviewed study: Levels as low as 50 parts per trillion resulted in liver and kidney damage in rodents

AstaZine® was found free of Glyphosate to detection limits of less than 26 parts per trillion







# OUR PRODUCT

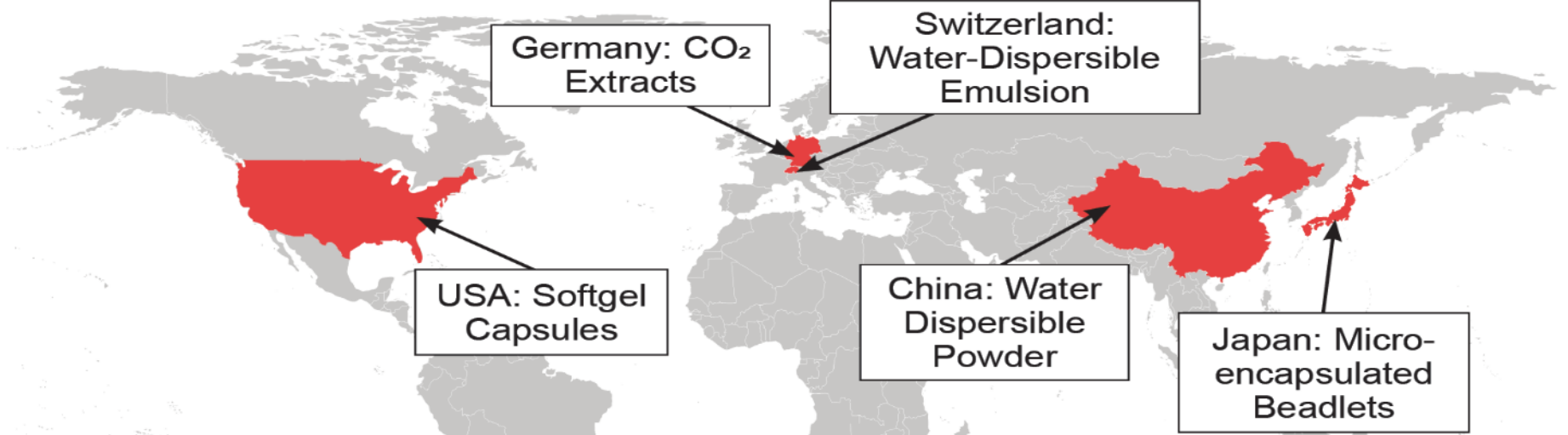
## LEADING ASTAXANTHIN PRODUCER

- Clinically-validated product: Only three Astaxanthin producers have sponsored clinical research on their product
- Seven years perfecting production techniques and isolating a superior strain of algae before full-scale production
- Best growing system: Closed tube system to prevent contamination
- Cutting-edge technology: Purest; most concentrated; world's first organic Astaxanthin product
- Accurate analytical method and stable raw materials



**algaehealth**  
IMPROVING HEALTH WITH ALGAE





# OUR PRODUCT

**GLOBAL SUPPLY CHAIN: SOURCING FROM THE BEST-OF-THE-BEST**

Beadlets:  
Made in Japan

Water-Dispersible  
Emulsion: Made in  
Switzerland

Supercritical CO<sub>2</sub>  
solvent-free oleoresins:  
Made in Germany

Softgels:  
Made in USA

Water-Dispersible  
Powder: Made in China



# OUR PRODUCT

## WATER DISPERSIBLE ASTAXANTHIN VERSUS LEADING COMPETITOR

AstaZine® water dispersible powder is on the right in each photo

Quick dispersion without stirring

Competitive product doesn't disperse properly even after stirring

Member of  
**NAXA**



# OUR PRODUCT

QUALITY: PRODUCED UNDER CGMP ACCORDING TO 21 CFR 111

Member of NAXA

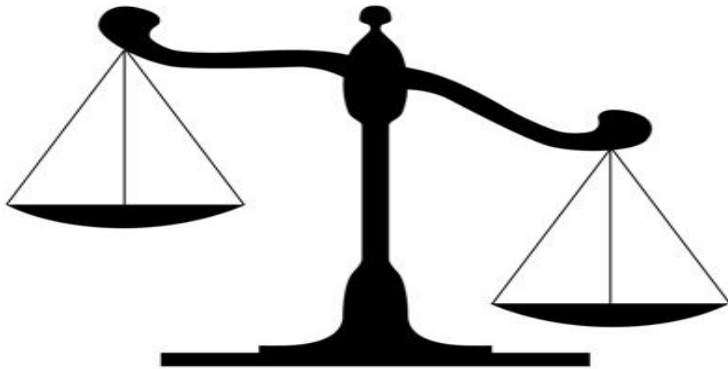
ISO 9001-2008  
ISO 22000-2005

HACCP

All Natural Process

- Certified Organic Farm
- Vegan
- Allergen and Solvent Free
- Non-Irradiated
- Kosher & Halal
- Non-GMO Project Verified





# PRODUCTS FROM NON-NAXA SUPPLIERS

Member of NAXA

Some consumer products  
labeled “Natural” are  
actually Synthetic  
Astaxanthin

15 commercial products  
tested

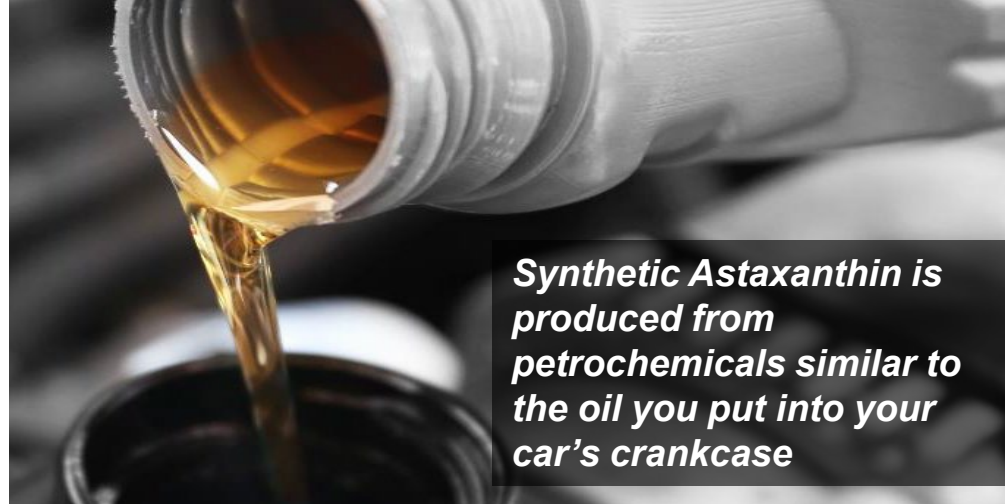
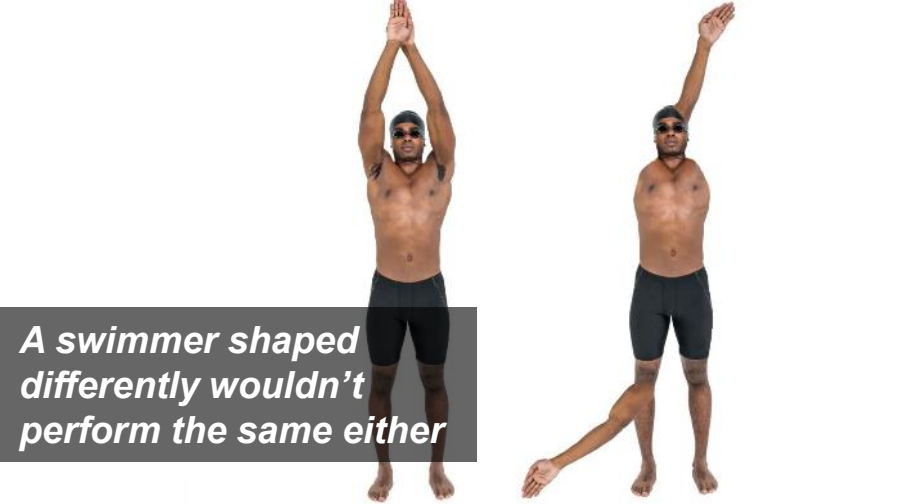
- Only 3 had the stated level of Astaxanthin present
- 80% were cheating the consumer
- 1/3 of the products tested had less than half of label claim





## MAJOR DIFFERENCES FROM SYNTHETIC ASTAXANTHIN

- **Source:** Natural is extracted from algae while Synthetic is synthesized from petrochemicals
- **Strength:** Natural is 20 – 90 times stronger as an antioxidant
- **Animal Trials Prove Superiority:** Six different animal trials prove Natural has superior health benefits
- **Safety:** Natural has an extensive portfolio of human safety studies and over 20 years of commercial use; Synthetic has never been tested for safety in humans
- **Efficacy:** Natural has been clinically validated to have many diverse health benefits in over 100 human clinical trials; Synthetic has never been shown to have any health benefits



## SHAPE MATTERS

- Natural and Synthetic Astaxanthin molecules are shaped differently
- Natural is esterified with a fatty acid molecule attached to the end of the molecule while Synthetic is non-esterified
- Natural comes complexed with a small amount of naturally occurring carotenoids while Synthetic does not
- End result: Natural performs far better than Synthetic
- Regulatory Status: Natural is approved by regulators in all major markets and most smaller markets. Synthetic is not approved in many markets (including EU & Japan)



# ALGAEHEALTH FIRSTS

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- First Organically Certified Astaxanthin Product
- Only Astaxanthin producer with two Novel Foods approvals in Europe for different Astaxanthin extraction methods
- By far the most Structure Function Claims submitted to US FDA without objection (239)
- Two Astaxanthin use patents pending
- Only US FDA NDI over 12 mg per day dosage
  - 24 mg per day: Recommended for initial 30 days as a “loading phase” and for the 30 days immediately preceding a “big event” for athletes

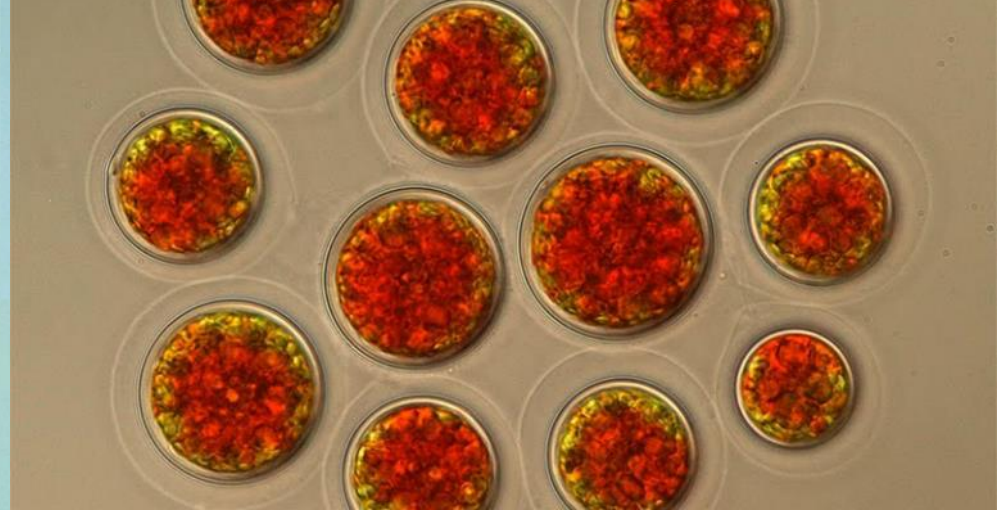
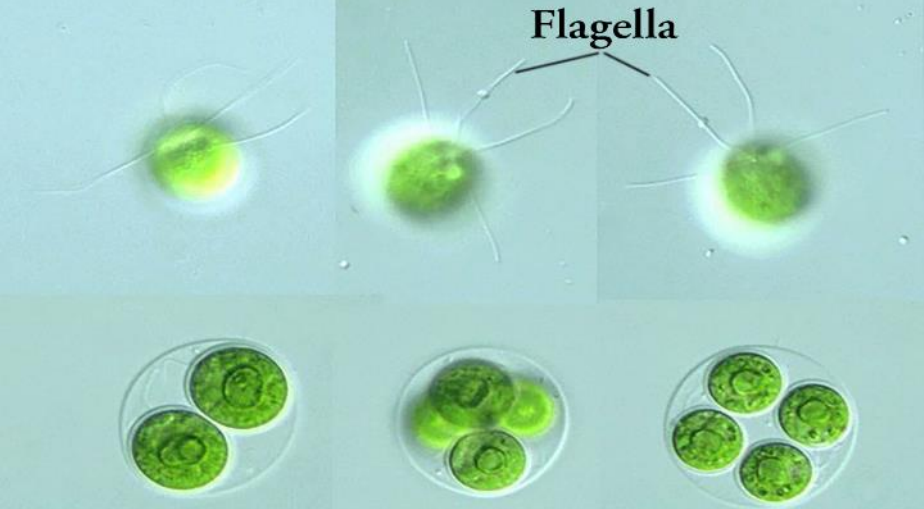


# ALGAEHEALTH DOES NOT COMPETE WITH OUR CUSTOMERS

**ASTAXANTHIN PRODUCERS WITH THEIR OWN BRANDS ARE BECOMING PREVALENT**

- Out of the top five Astaxanthin producers, four producers own their own consumer brand of Astaxanthin
- They are competing in the retail market with their own customers
- They will always give preference to their own brand over their customers' brands
- AlgaeHealth is the ONLY one of the top five Astaxanthin producers that does not own their own consumer brand

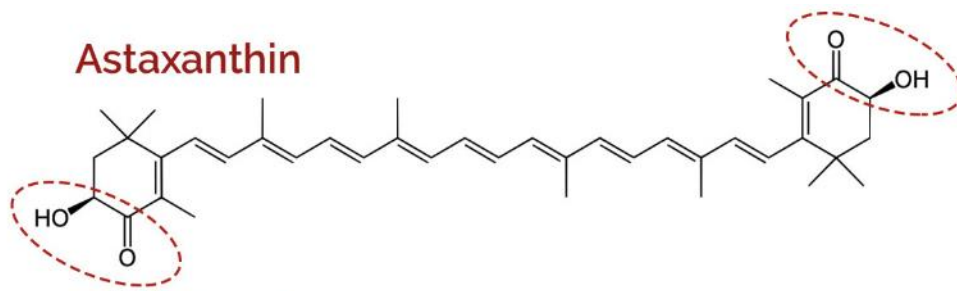




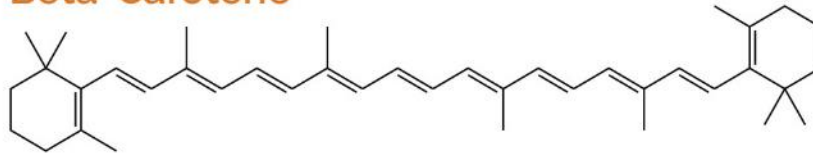
# WHAT IS ASTAXANTHIN?

- *Haematococcus pluvialis* algae cells turn from green to red as they accumulate the carotenoid Astaxanthin when subjected to environmental stress
- Astaxanthin serves as a “force field” to protect the algae cells
- Astaxanthin is so protective the cells can live for over 40 years without food or water and in extreme climatic conditions
- When ingested by humans or animals, Astaxanthin gets throughout the entire body and protects our cells just like it protects the algae cells

Astaxanthin



Beta-Carotene



## CHEMICAL STRUCTURE

Astaxanthin molecule is different from other carotenoids

Hydroxyl groups on the end of the molecule provide unique benefits



## ORIGINALLY USED FOR ANIMAL FEEDS

Cures a life-threatening muscle disease in horses

Increases salmon fry survival rates from 17% to 87% when only 1 ppm is added to salmon feed

83% of shrimp larvae fed Natural Astaxanthin lived to maturity while only 28% fed Synthetic Astaxanthin did

Used for strength and health in sled dogs

- Nestle Purina's top researcher says Astaxanthin caused the most noticeable change he ever saw in over 20 years of testing nutrients in sled dogs





# SAFETY OF NATURAL ASTAXANTHIN

In the food chain in salmon, lobster, shrimp, crab and trout plus over 20 years as a dietary supplement

Multiple small mammal studies up to 12,000 to 17,000 mg/kg per day showed no signs of toxicity, cancer formation or birth defects

Chronic and acute safety studies in humans

# “THE HEALTHY TEN”

## TEN CLINICALLY-VALIDATED BENEFITS OF NATURAL ASTAXANTHIN



*Approximately 100 new studies each year over the last three years*



### Brain Health

- 9 Human Clinical Studies
- 83 Supporting Pre-Clinical Trials



### Skin Health & UV Protection

- 12 Human Clinical Studies
- 38 Supporting Pre-Clinical Trials



### Immune System Modulation

- 5 Human Clinical Studies
- 28 Supporting Pre-Clinical Trials



### Reproductive and Hormonal Health

- 5 Human Clinical Studies
- 23 Supporting Pre-Clinical Trials

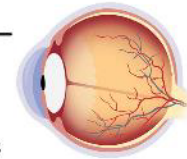


### Joint, Tendon and Muscle Support

- 10 Human Clinical Studies
- 78 Supporting Pre-Clinical Trials

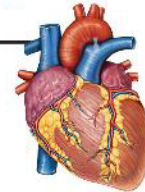
### Eye Health

- 15 Human Clinical Studies
- 29 Supporting Pre-Clinical Trials



### Cardiovascular Support

- 11 Human Clinical Studies
- 56 Supporting Pre-Clinical Trials



### Anti-Aging & Cellular Health

- 62 Human Clinical Studies
- 334 Supporting Pre-Clinical Trials



### Athletic Performance & Energy Levels

- 18 Human Clinical Studies
- 35 Supporting Pre-Clinical Trials



### World's Strongest & Highest Quality Natural Antioxidant

- 13 Human Clinical Studies
- 114 Supporting Pre-Clinical Trials







# ASTAZINE® PROPRIETARY RESEARCH

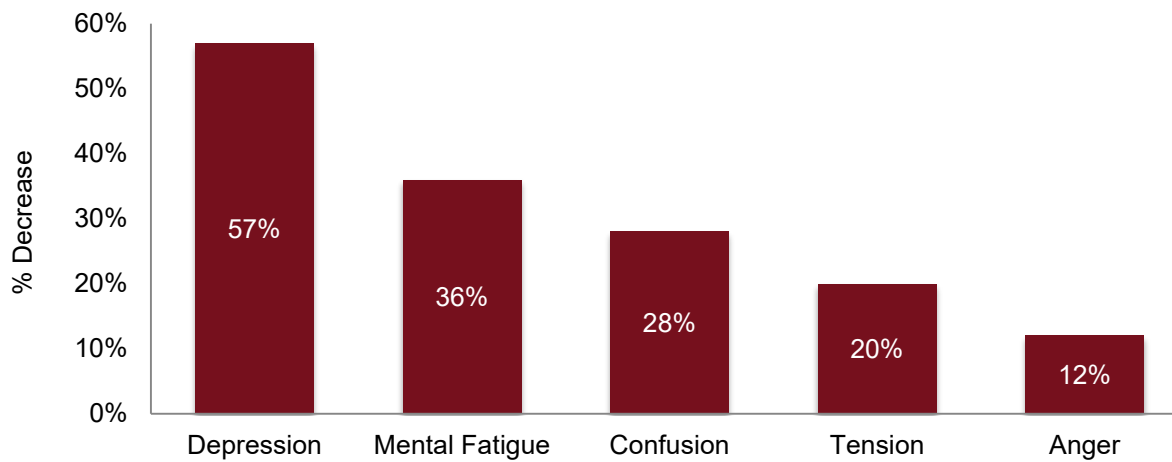
PEER-REVIEWED PUBLICATION, TALBOTT ET AL., 2017

12mg per day  
over 60 days

10% decrease in heart rate at  
submaximal endurance intensities

- In long distance running (not sprinting), AstaZine® enabled the heart to function well at 10% slower heart beat
- “Cardiotonic Effect”

Patent pending

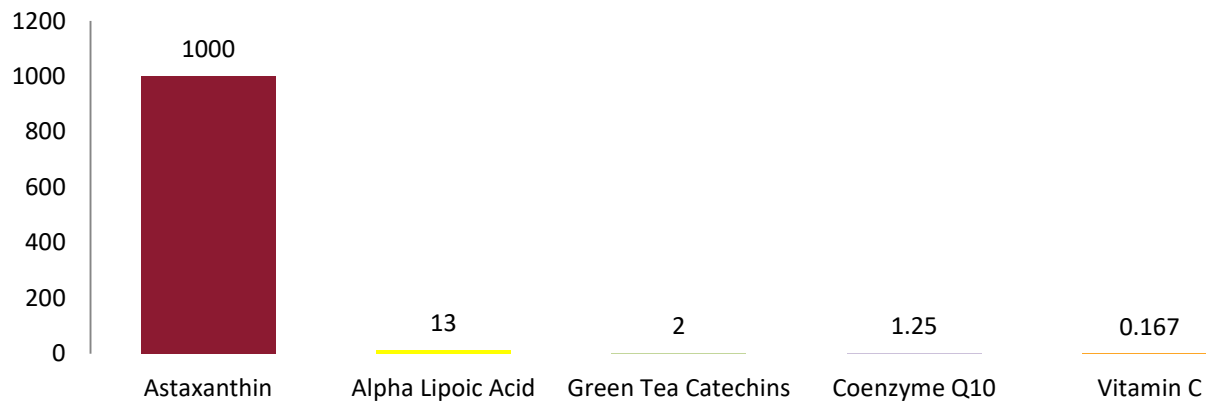


*Negative Mood State  
Parameters all Decreased*

# ASTAZINE® PROPRIETARY RESEARCH

PEER-REVIEWED PUBLICATION, TALBOTT ET AL., 2019

- Looking at benefits for athletes from a different angle: Mood state
- Athletes supplementing with AstaZine® experienced:
  - 11% better overall mood state
  - 36% less mental fatigue
  - 57% less feelings of depression
  - Statistically significant at  $p < 0.05$
- Patent pending

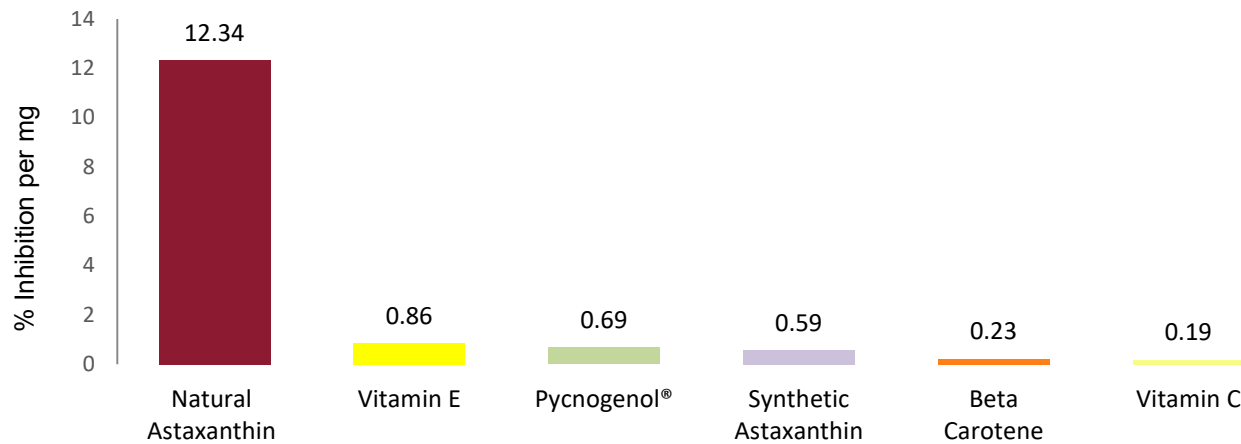


*Relative Singlet Oxygen  
Quenching Activity*

# WORLD'S STRONGEST NATURAL ANTIOXIDANT

## Singlet Oxygen Quenching

- 6000 times stronger than Vitamin C
- 800 times stronger than CoQ10
- 550 times stronger than Green Tea Catechins
- 75 times stronger than Alpha Lipoic Acid



*Oxygen Free Radical Scavenging*

## WORLD'S STRONGEST NATURAL ANTIOXIDANT

14X – 60X stronger than  
other antioxidants in free  
radical scavenging

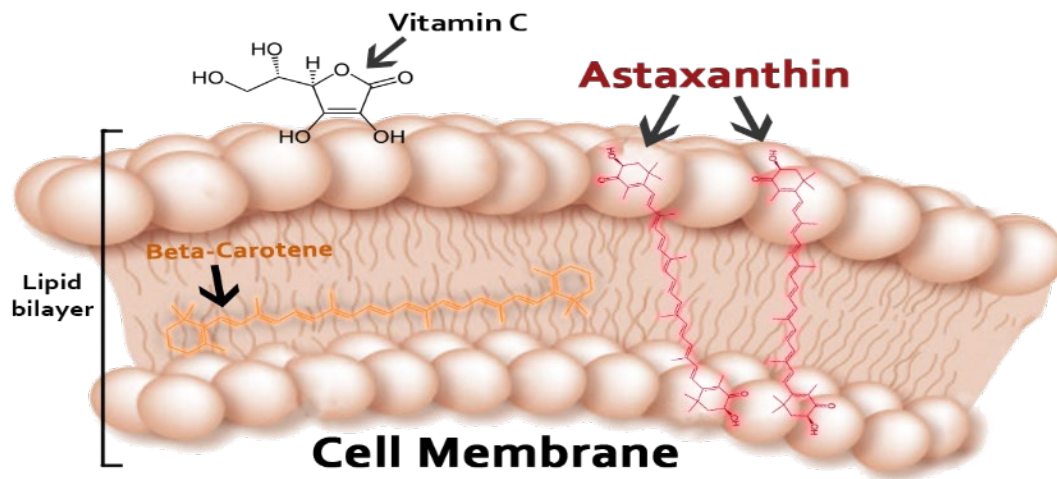
20X stronger than  
Synthetic Astaxanthin in  
free radical scavenging





# WORLD'S HIGHEST QUALITY ANTIOXIDANT

- Oxidation in our bodies is like a car rusting
- We need a high quality antioxidant to prevent our bodies from rusting
- Astaxanthin has six distinct properties that other antioxidants do not possess
  - Some antioxidants may share a few, but no other antioxidant has all six
- Astaxanthin provides a “fresh coat of paint” to protect our bodies



# 1. WORLD'S HIGHEST QUALITY ANTIOXIDANT SPANS THE CELL MEMBRANE

The Astaxanthin molecule is exceptionally long

It spans the cell membrane to protect the entire cell

Protects both the fat-soluble and water-soluble parts of cells



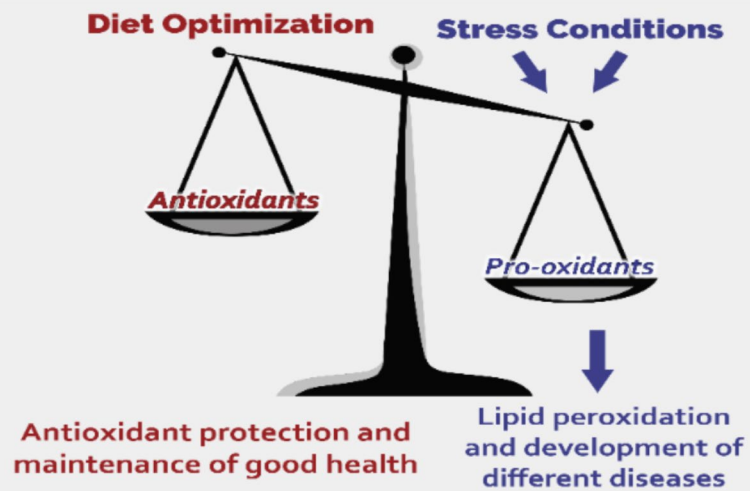
## 2. WORLD'S HIGHEST QUALITY ANTIOXIDANT

HANDLES MANY FREE RADICALS SIMULTANEOUSLY

Remains active as an antioxidant longer and can handle many free radicals at the same time

Astaxanthin is believed to be able to handle between 13 and 19 free radicals simultaneously

Neutralizes various types of free radicals



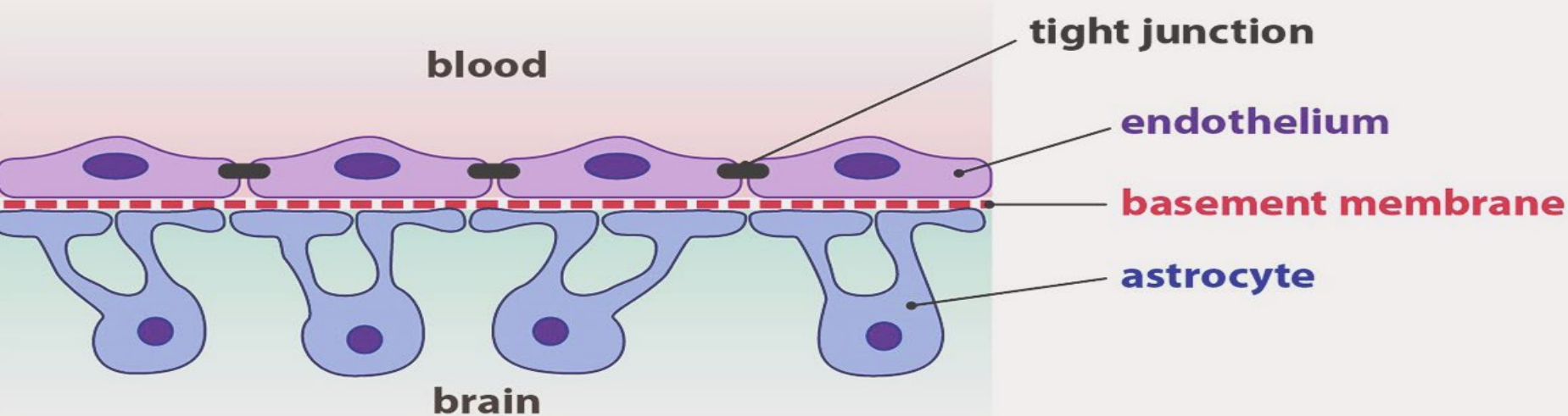
*Antioxidant/Pro-Oxidant  
Balance in the Cell*

### 3. WORLD'S HIGHEST QUALITY ANTIOXIDANT NEVER BECOMES A PRO-OXIDANT

Many good antioxidants  
can become Pro-Oxidants  
under certain condition  
and cause damage to cells

Astaxanthin can  
never become a  
Pro-Oxidant





## 4. WORLD'S HIGHEST QUALITY ANTIOXIDANT

CROSSES THE BLOOD-BRAIN AND BLOOD-RETINAL BARRIERS

Astaxanthin crosses the *blood-brain barrier* to bring its profound antioxidant activity and broad-spectrum anti-inflammatory properties to help protect the brain

Once in the brain, Astaxanthin crosses the *blood-retinal barrier* to help protect the eyes



## 5. WORLD'S HIGHEST QUALITY ANTIOXIDANT

BONDS WITH MUSCLE TISSUE

Astaxanthin can bond  
with muscle tissue to  
control oxidation and  
inflammation

Combats increased  
oxidation in muscle  
tissue caused by  
physical activity



## 6. WORLD'S HIGHEST QUALITY ANTIOXIDANT

ACCUMULATES IN THE SKIN

Astaxanthin  
accumulates  
in the skin

Improves skin health  
and appearance

Prevents UV damage

Tumor  
Necrosis  
Factor-A

Prostaglandin  
E-2

Interleukin  
1-b

Interleukin  
6

Nuclear Factor  
Kappa-B

Nitric Oxide

Cox 1 enzyme

Cox 2 enzyme

## Inflammatory Markers

# SAFE & NATURAL ANTI-INFLAMMATORY

BROAD-SPECTRUM ACTIVITY WITH NO SIDE EFFECTS

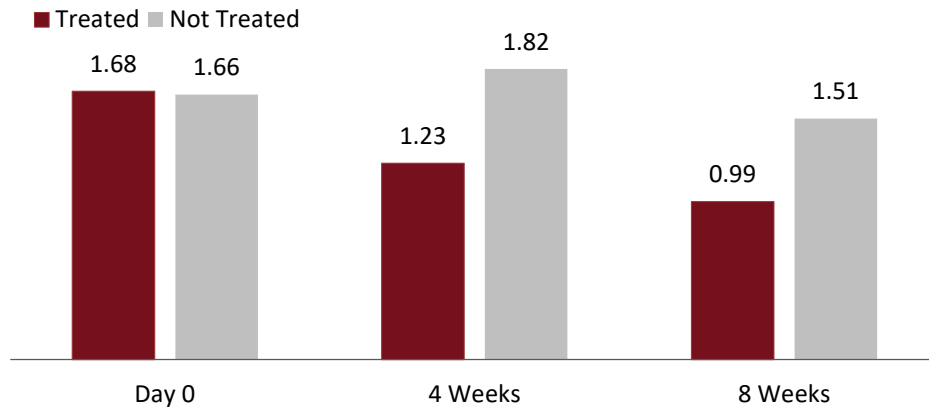
Significantly  
reduces 8  
different  
inflammatory  
markers

No side effects or  
contraindication  
but takes 2 – 6  
weeks to work

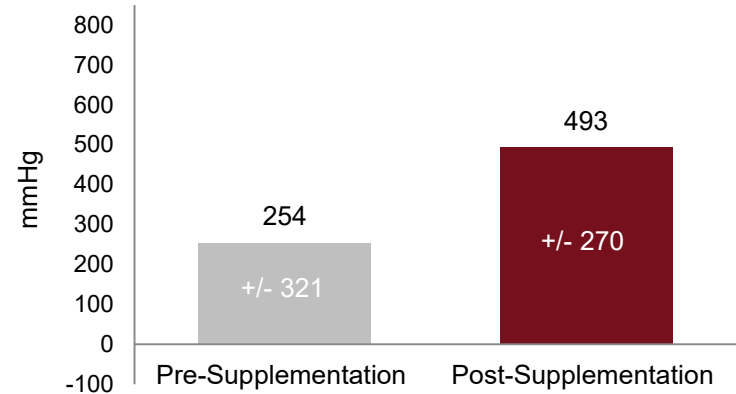
OTC and prescription  
anti-inflammatories all  
have dangerous side  
effects, some that can  
kill you



### PAIN RATE IN RHEUMATOID ARTHRITIS SUFFERERS



### GRIP STRENGTH



## SAFE & NATURAL ANTI-INFLAMMATORY

### PAIN & MOBILITY

- Clinically validated to reduce pain and increase mobility in people suffering from painful conditions such as rheumatoid arthritis and carpal tunnel syndrome
- Increases grip strength by almost double in people suffering from tennis elbow (tendonitis)
- Prevents joint pain after exercise in healthy subjects



# SAFE & NATURAL ANTI-INFLAMMATORY

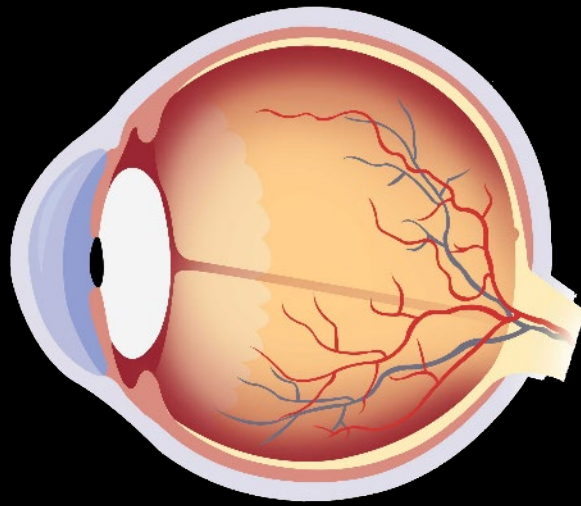
## SILENT INFLAMMATION

Reduces C-reactive protein levels, the key marker for deadly systemic (also known as “silent”) inflammation

- 20% reduction in 8 weeks

Silent inflammation is a leading cause of heart disease, cancer, diabetes, Alzheimer’s, Parkinson’s and many other life-threatening maladies

The American Heart Association believes that C-reactive protein is a better predictor of heart disease than cholesterol levels



# EYE HEALTH

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- Prevents and reduces eye fatigue and eye strain (ten positive human clinical studies)
- Improves visual acuity (the ability to see fine detail)
- Protects the eyes from UV damage
- Improves eye accommodation (depth perception and focus)
- Increases blood flow to the retina
- Age-related macular degeneration (animal studies)



# BRAIN HEALTH

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- Prevention of dementia
- Improvement of age-related decline in cognitive and psychomotor function
- Decrease in age-related forgetfulness
- Improves mood state
- Latest brain health research: Renowned researcher Paula Bickford, PhD has started animal trials which show neurotoxicity benefits in model for Parkinson's



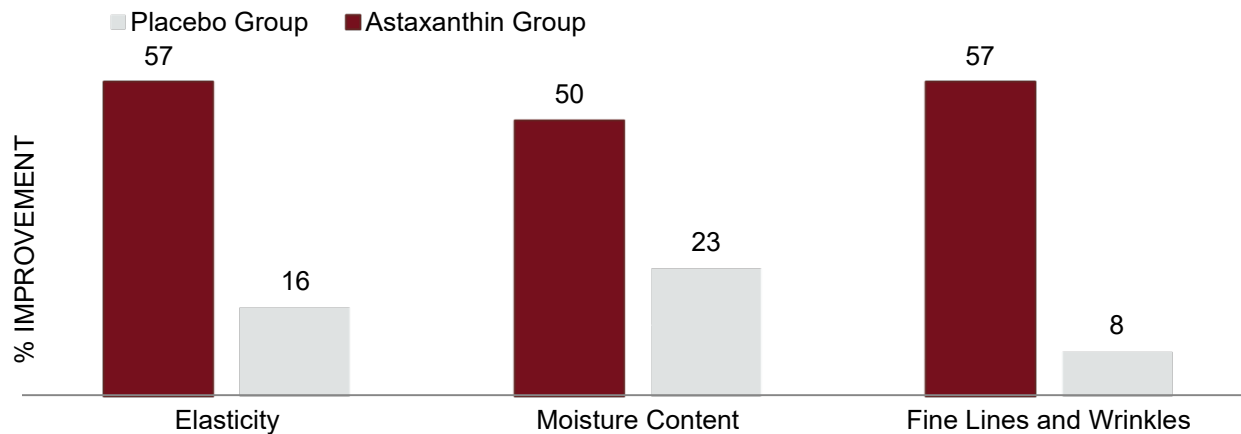


# SKIN HEALTH & UV PROTECTION

Prevention of photo-aging

Prevention of UV damage

Prevention of skin cancer (animal studies)



*Assessment of  
Beauty Parameters*

## “BEAUTY FROM WITHIN” LANDMARK CLINICAL TRIAL

- 4 mg per day
- Fights wrinkles
- Increases skin moisture levels
- Improves skin elasticity
- Reduces visible signs of UV-aging within 4-6 weeks of use
- Helps maintain a youthful appearance



# TOPICAL BENEFITS OF ASTAXANTHIN

## HUMAN AND ANIMAL STUDIES

Wrinkle reduction

Protection from  
sun damage

Reduction in premature  
signs of aging

Treatment of  
allergic skin  
conditions



# NATURE'S AQUATIC MARATHON

The highest concentration of Astaxanthin in animals is in salmon where it concentrates in their muscles

Astaxanthin gives salmon the strength and energy to perform nature's greatest endurance feat—swimming up raging rivers for weeks

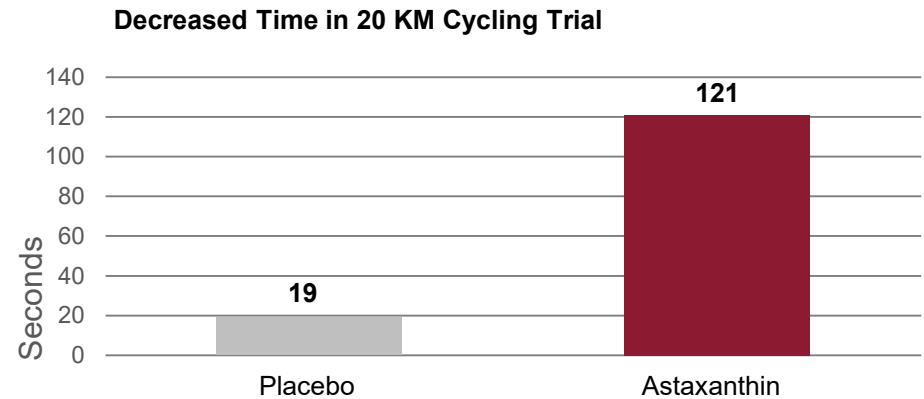
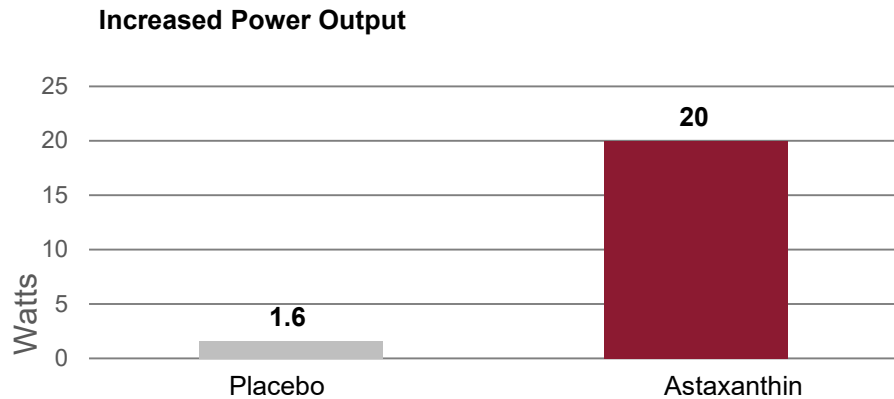




# THE ATHLETE'S DOZEN

## THE 12 CLINICALLY-VALIDATED BENEFITS FOR ATHLETES

- 1) Strength
- 2) Endurance
- 3) Recovery
- 4) Performance
- 5) Muscle Damage
- 6) Heart Rate
- 7) Mental Fatigue
- 8) Physical Fatigue
- 9) Energy Metabolism
- 10) Lactic Acid Levels
- 11) Joint & Muscle Soreness
- 12) Mood State



## STUDY SPONSORED BY GATORADE® IN COMPETITIVE CYCLISTS

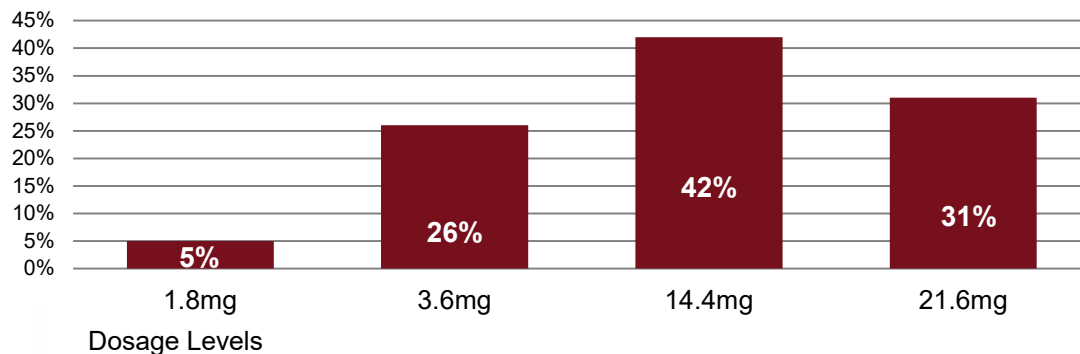
4mg per day over  
four weeks

20 km time trial

Made the cyclists  
5% faster

Increased power  
output by 15%

% Increase in Oxidation Lag Time



*Delay in Oxidation  
of LDL Cholesterol*

## CARDIOVASCULAR HEALTH

Improves blood  
lipid levels

Prevents lipid  
peroxidation

Decreases systolic  
and diastolic blood  
pressure by 5% to 7%

Reduces heart  
rate by 10%  
during exercise

Improves blood flow



# CARDIOVASCULAR HEALTH

Anti-Inflammatory drug Vioxx® was taken off the market after causing many deaths from heart disease

Harvard Medical School study showed that Astaxanthin completely negates the pro-oxidant effects of Vioxx®

If Merck had added a little Astaxanthin to their Vioxx®, they would have saved \$5 billion in lawsuit settlement fees (and more importantly, they would have prevented many deaths)

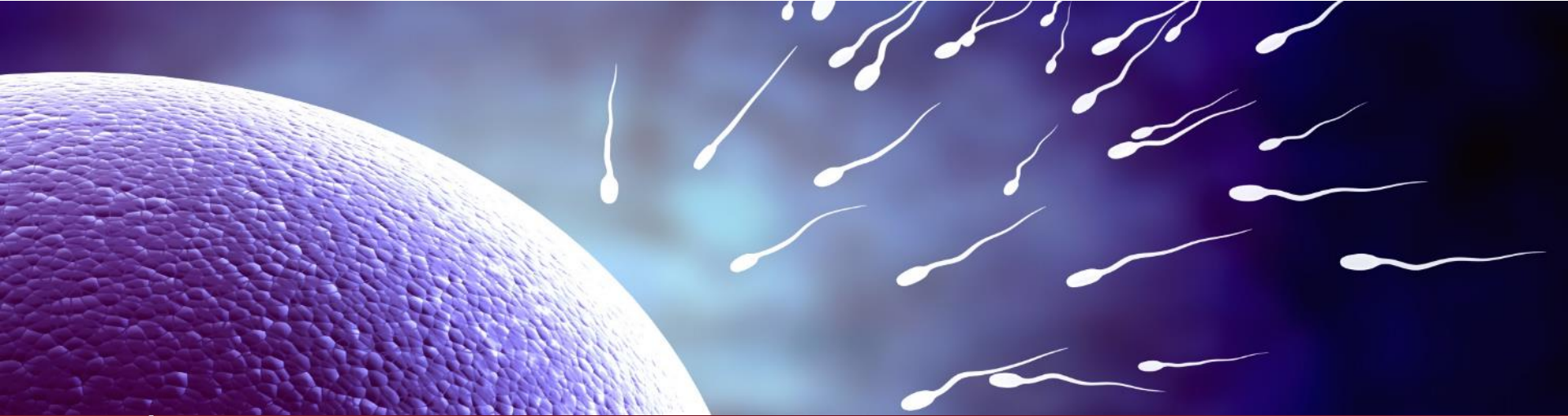




# IMMUNE MODULATION

## LANDMARK WASHINGTON STATE UNIVERSITY SERIES OF STUDIES

- In-vitro, rodent, cat, dog and human clinical studies
- Human study: 0mg, 2mg and 8mg per day over eight weeks
  - Improvement in several immune markers
  - Decrease in DNA damage by 40%
  - Reduction in CRP levels and oxidative stress
  - “Astaxanthin is a strong immune system stimulator”



# MALE FERTILITY

Clinical trial done at  
16mg per day over  
three months

Increased sperm  
velocity and  
reduced reactive  
oxygen species in  
sperm

Over 50% of couples with  
the male diagnosed with  
poor semen quality had a  
baby!



# ANTI-AGING & CELLULAR HEALTH

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- Clinically validated benefits for most of the key concerns with aging
- AstaZine® study in *C. elegans* (a worm that serves as a model organism for longevity testing in mammals) showed AstaZine® group lived 10% longer on average with a 17% maximum increase in survival
- ***The Ultimate Anti-Aging Nutrient***



# EMERGING RESEARCH

## PRE-CLINICAL STUDIES IN ANIMALS AND IN-VITRO

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● Cancer Prevention and Tumor Reduction	63 studies
● Liver & Kidney Health	50 studies
● Support for Diabetes	32 studies
● Gastrointestinal Health	19 studies
● Respiratory Health	7 studies





# ASTAZINE® PRODUCT FORMATS

- Certified Organic 2.5% free-flowing powder, 5% powder and 10% oleoresin
- Supercritical CO2 solvent-free extraction and ethanol extraction
  - 5%, 10% and 20% oleoresin
- 2.0% and 2.5% beadlets
- 2.0% water-dispersible powder and 1.0% water-dispersible emulsion
- 4mg, 6mg, 8mg, 12mg bovine gelcaps and vegetarian gelcaps (available in select markets)
- Private label bottles “Made in USA” (available in select markets)



## & Highest Quality Natural Antioxidant

### Clinical Trial Results

- Reduces various oxidative stress markers
- Prevents oxidative damage
- Prevents peroxidation of blood lipids including LDL cholesterol
- Prevents depletion of non-enzymatic antioxidant defense
- Dosage range 2mg to 4mg per day



### In-Vitro Research Results

- Multiple times stronger than all other antioxidants tested in various head-to-head antioxidant experiments regardless of testing method
- Generally at least 30X stronger than all other carotenoids
- 800X stronger than CoQ10
- 550X stronger than Vitamin E
- 6000X stronger than Vitamin C



## RECOMMENDED DOSAGES

● Antioxidant	2 – 4 mg per day	● Joint, Tendon & Muscle	4 – 12 mg per day
● Immunity	2 – 4 mg per day	● Cardiovascular Health	4 – 18 mg per day
● Skin Health	4 – 6 mg per day	● Brain Health	6 – 12 mg per day
● Eye Health	4 – 8 mg per day	● Male Fertility	16 mg per day
● Athletes & Energy	4 – 12 mg per day	● Topical Applications	20 – 50 ppm
● Anti-Aging	4 – 12 mg per day		



**algaehealth**  
IMPROVING HEALTH WITH ALGAE



# U.S. FOOD & DRUG ADMINISTRATION

## STRUCTURE FUNCTION CLAIMS

- 239 different health claims submitted to US FDA without objection
- By far the most of any Astaxanthin supplier
  - The ultimate nutrient to support the brain and eyes
  - Helps maintain beautiful, younger looking skin
  - Promotes healthy joints, tendons and synovial fluids
  - Helps support cardiovascular function and a healthy circulatory system
  - Promotes improved performance in athletes
  - Nutritional support in the battle against aging



# REPEAT BUSINESS

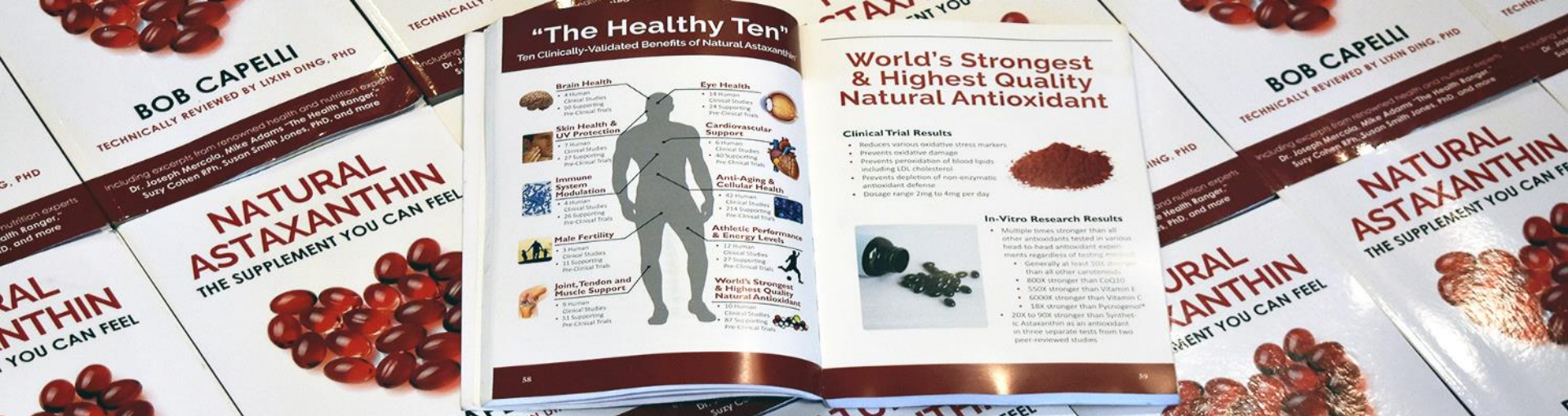
“THE SUPPLEMENT YOU CAN FEEL”

80% of people  
can feel or  
see it working

Great repeat business

Dr. Mercola on the  
Dr. Oz show: “The  
#1 Supplement You  
Should Be Taking”





# MARKETING ASSISTANCE

ALGAEHEALTH PROVIDES UNPARALLELED SUPPORT FOR OUR CUSTOMERS

White Papers

Abstract Lists

Astaxanthin Book

Marketing  
Consultation  
and Guidance





# THANK YOU FOR YOUR ATTENTION

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For questions or more information please contact us at  
[algaehealthsciences.com](http://algaehealthsciences.com) or [bggworld.com](http://bggworld.com)

These statements have not been evaluated by the Food and Drug Administration.

This product is not intended to diagnose, treat, cure, or prevent any disease. Please note that the physiological activity of the ingredient described herein is supported by the referenced clinical trial reports. Marketers of finished products containing the ingredient described herein are responsible for determining whether the claims made for such products are lawful and in compliance with the laws of the country in which they will market the products.