



menta
HEART™

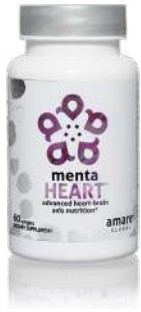
**Advanced Heart-Brain Axis
Nutrition***



amare®
GLOBAL

THE MENTAL WELLNESS COMPANY

TECHNICAL DATA



menta HEART™

The first product of its kind to support mental wellness through the heart-brain axis, MentaHeart features key ingredients backed by multiple clinical studies shown to help optimize the heart, the body's third brain.*

Studies have now shown that the heart is the body's third brain, containing approximately 40,000 neurons that can sense, feel, learn, and remember. Similar to the gut-brain axis, the heart and brain are also closely connected via the heart-brain axis. The heart-brain axis refers to the close intuitive connection between what we feel (heart/emotions) and what we know (brain/intelligence). Signals across the heart-brain axis underlie cellular coherence — the concept that optimal function in one tissue (heart) can optimize function in another tissue (brain) — via electrical, hormonal and other signals transmitted between tissues.

The heart contains a complex and intrinsic nervous system similar to our brain and sends emotional and intuitive signals to the brain on a continuous millisecond by millisecond basis. Like the gut (with its enteric nervous system), the heart has its own independent complex nervous system that permits it to function without direct input from the brain. MentaHeart is the first product of its kind to support mental wellness through the heart-brain axis.

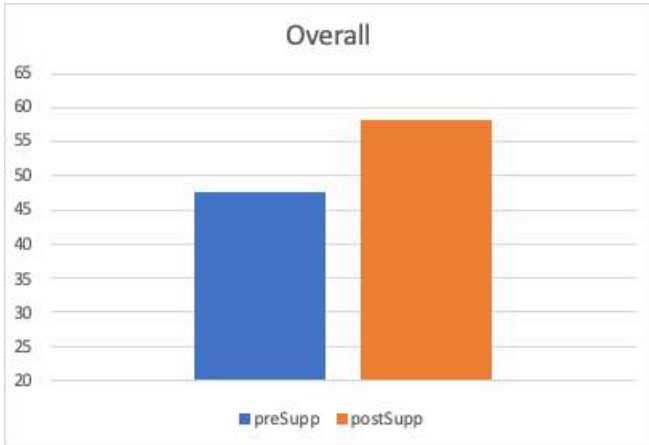
MentaHeart helps people infuse emotions with intelligence — helping us effectively manage our emotions in the midst of life's challenges and the 21st century stress epidemic. Negative emotions disrupt nervous system balance and interfere with normal heart rhythms, whereas positive emotions improve nervous system balance and enhance heart signaling to the brain.

A recent pilot clinical trial on MentaHeart showed dramatic differences in "physical health" benefits such as cardiac efficiency, heart rate variability, and parasympathetic nervous system tone; as well as improvements in "mental fitness" parameters such as stress, focus, and motivation (see graphs below). This data will be presented at the upcoming International Society for Nutritional Psychiatry Research Conference in London.

"Physical" heart benefits and "mental" brain benefits are related via the psychophysiological "heart-brain-axis" with simultaneous improvements in both physical and mental wellness. Our studies have shown targeted supplementation to improve parameters associated with heart health (antioxidant, fat oxidation, endurance) and brain health (neuro-inflammation, cognition, antidepressant/anxiolytic) — with further previously-undescribed benefits for psychological mood state (depression, fatigue, vigor).

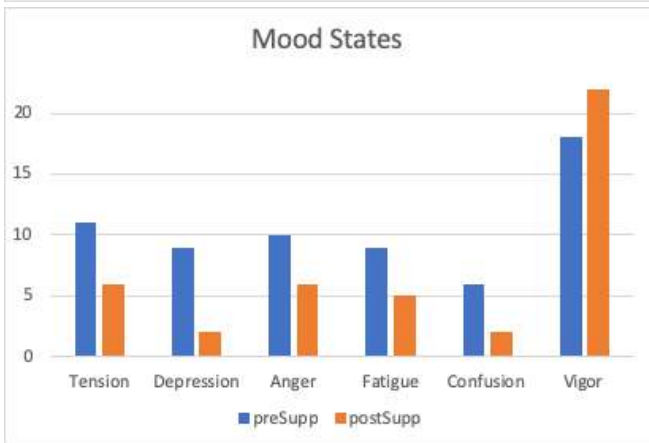
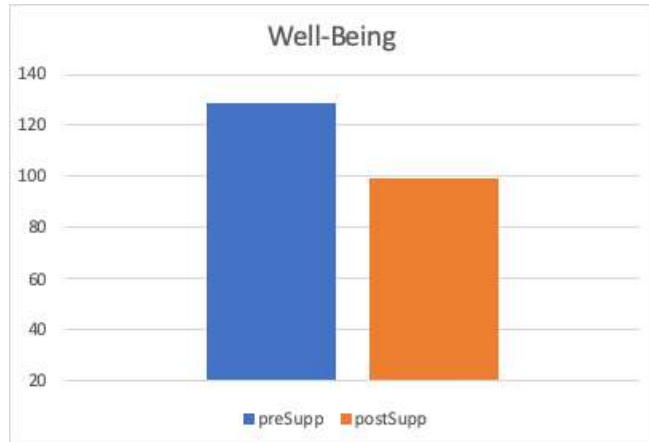
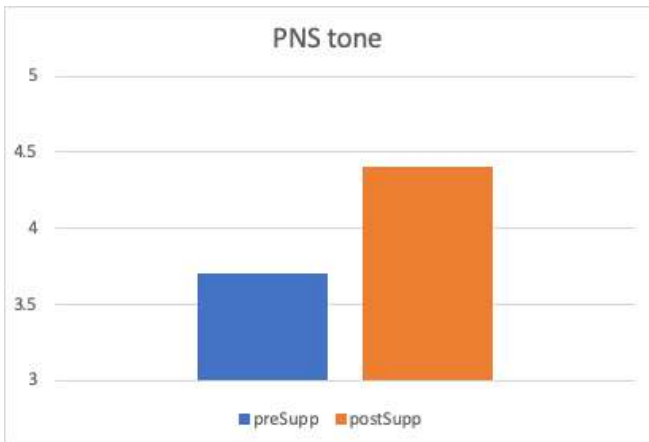
HRV / SDNN (msec)

SDNN = standard deviation of N-N intervals



HRV / RMSSD

RMSSD – root mean square of successive differences



KEY INGREDIENTS

PFBc™ Palm Fruit Bioactives Complex — Is a 100% natural, non-GMO and water-soluble complex isolated from the fruit of the oil palm tree that supports optimal total cardiac output, a decreased workload or pressure on the heart, and a reduction of oxidative stress to help preserve mental wellness.*

Bergavit® 40 — Is a bergamot fruit extract that supports cardiovascular health, promotes wellness for metabolic processes, supports cholesterol levels already in the normal range, and helps provide antioxidant protection.*

Astazine® Astaxanthin — Promotes brain health, provides cardiovascular support, decreases some oxidative stress markers, and improves cognitive function. High-Astaxanthin Algae extract (Astazine 10% oleoresin) is an antioxidant, astaxanthin that is said to have many health benefits. It's been linked to healthier skin, endurance, heart health, joint pain, and may even have a future in cancer treatment.*

CoQ10 (Aquacelle) — Improves the absorption of nutrients and It helps provide energy to cells. Coenzyme Q10 also seems to have antioxidant activity. People with certain diseases, such as heart failure, high blood pressure, gum disease, Parkinson's disease, blood infections, certain diseases of the muscles, and HIV infection, might have lower levels of coenzyme Q10.*

ThymoQuin™ Black Cumin Seed Oil — Helps support already normal blood sugar and cholesterol levels, and enhances memory and cognitive health. In addition, it favorably affects several parameters related to heart disease risk including lowering total and LDL cholesterol, reducing inflammation, lowering blood pressure, reducing plaque formation. It also reduces blood glucose, as well as diabetic-associated complications such as neuropathy.*

CLINICAL STUDIES

Effect of Astaxanthin Supplementation on Psychophysiological Heart-Brain Axis Dynamics in Healthy Subjects.

Functional Foods in Health & Disease. FFHD: Online ISSN: 2160-3855 Vol 9, No 8 (2019).

Abstract

Objective: Marine microalgae is the predominant source of natural astaxanthin (NAX), a red-orange carotenoid with powerful antioxidant and anti-inflammatory properties. Previous studies suggest that NAX supplementation improves antioxidant capacity and reduces oxidative stress, while also enhancing fat utilization, exercise endurance, cardiovascular function, and neurological parameters. The purpose of this study was to assess the effects of NAX on the psychophysiological “heart-brain-axis” while nutrition (astaxanthin) may impact physiology (cardiovascular function) and psychology (mood state) in a coordinated manner.

Methods:

Using a double-blind parallel design, 28 healthy subjects (male=14, female=14, age=42) were supplemented for 8 weeks with NAX (12mg/day Haematococcus pluvialis algal extract) or a matching placebo. Before and after supplementation, subjects performed a cardiovascular stress test (VO₂max) and completed a validated Profile of Mood States (POMS) survey to assess global mood state (GM) and related subscales: Vigor (V), Tension (T), Depression (D), Anger (A), Fatigue (F), and Confusion (C).

Results:

Subjects in the NAX group showed a significant ~10% lower average heart rate at submaximal exercise intensities compared to those in the placebo group (aerobic threshold, AeT; NAX 130+17 v. PL 145+14; and anaerobic threshold, AT; NAX 139+20 v. PL 154+11, p<0.05). Significant improvements were found in the NAX group for both positive mood state parameters: GM (+11%, p<0.05) & V (+5%, NS); and negative mood state parameters: T (-20%, NS), D (-57%, p<0.05), A (-12%, NS), F (-36%, p<0.05), and C (-28%, NS).

Conclusions:

NAX supplementation lowered average heart rate at submaximal endurance intensities (suggesting a “physical” heart benefit) and improved mood state parameters (suggesting a “mental” brain benefit). While previous studies have shown NAX supplementation to improve parameters associated with heart health (antioxidant, fat oxidation, endurance) and brain health (neuro-inflammation, cognition, antidepressant/anxiolytic), these results suggest that natural astaxanthin supplementation supports the psychophysiological “heart-brain-axis” with simultaneous improvements in both physical and mental wellness.

Keywords: Antioxidant; Carotenoid; Cardiovascular; Mood State; Mental Wellness

Astaxanthin Supplementation Reduces Depression and Fatigue in Healthy Subjects.

EC Nutrition 14.3 (2019): 239-246. Talbott, Hantla, Capelli, Ding, Li, and Artaria.

Abstract

Objective:

Natural Astaxanthin from *Haematococcus pluvialis* microalgae (NAX) has been researched in hundreds of clinical trials, pre-clinical animal studies and in-vitro surveys for various bioactive properties that indicate potential preventive and therapeutic health benefits. Among the most widely-researched properties of astaxanthin in the literature are broad-spectrum anti-inflammatory activity and powerful antioxidant capacity. In addition, both human and animal research have revealed a wide range of potential benefits for neurological and eye health, cardiovascular function, exercise endurance, enhancement of the immune response and skin health. This study's goal was to explore the effects of a daily dose of 12 mg per day of NAX on psychological mood state in healthy subjects.

Methods:

This study employed placebo control and parallel design under double blind conditions. A total of 28 healthy subjects, half male and half female, with a median age of 42, supplemented with 12 mg per day of NAX or placebo. Before Day 0 and again at the end of the 8-week supplementation period, subjects completed a validated Profile of Mood States (POMS) survey to assess global mood state (GM) and related subscales: Vigor (V), Tension (T), Depression (D), Anger (A), Fatigue (F) and Confusion (C).

Results:

Significant improvements were found in the NAX treatment group for positive mood state parameters: GM (+11%, $p < 0.05$) and V (+5%, NS); and negative mood state parameters: D (-57%, $p < 0.05$), F (-36%, $p < 0.05$), T (-20%, NS), A (-12%, NS), and C (-28%, NS).

Conclusions:

While previous studies have shown NAX supplementation to improve parameters associated with brain health (neuro-inflammation and cognition), these data are the first to suggest that natural astaxanthin supplementation reduces negative mood state parameters (depression and fatigue) and improves global mood state and thus supports mental wellness.

Effect of Astaxanthin Supplementation on Cardiorespiratory Function in Runners. EC Nutrition 11.6 (2016): 253-259. Talbott, Hantla, Capelli, Ding, Li, and Artaria.

Abstract

Purpose:

Marine microalgae is the predominant source of natural astaxanthin (NAX), a red-orange carotenoid with powerful antioxidant and anti-inflammatory properties. Studies in both rodents and humans suggest that NAX supplementation improves antioxidant capacity and reduces oxidative stress, while also improving fat utilization and exercise endurance. The purpose of this study was to assess the effects of a moderate dose of NAX supplementation (12mg/day for 8 weeks) on cardiorespiratory function during both higher and lower intensity exercise in recreational runners.

Patients and Methods: Using a double-blind parallel design, 28 recreational runners (male = 14, female = 14, age = 42) were supplemented with NAX (Haematococcus pluvialis algal extract) or a placebo. Before and after the supplementation period, subjects performed a maximal running test (VO₂max on treadmill) and a maximal cycling test (watts on cycle ergometer).

Results: There was no improvement in maximal oxygen uptake (running VO₂max) or maximal power output (cycling watts) with NAX supplementation. However, subjects in the NAX group showed a significant ~10% lower average heart rate at submaximal running intensities compared to placebo (aerobic threshold, AeT; NAX 130+17 v. PL 145+14; and anaerobic threshold, AT; NAX 139+20 v. PL 154+11, p < 0.05).

Conclusion:

Supplementation with 12 mg/day of NAX for 8 weeks reduced average heart rate at submaximal endurance intensities (AeT and AT), but not at higher “peak” intensities. These results suggest that NAX may be a beneficial ergogenic aid for long/ultra-distance endurance athletes, but not necessarily for athletes competing in shorter higher intensity efforts. In addition, these data are also suggestive of a general “cardiotonic” effect of NAX, that should be investigated in non-athletic populations including elderly subjects and those with cardiac complications including post-myocardial infarction, heart failure, statin usage, mitochondrial dysfunction, chronic fatigue, and related conditions.

Keywords: Antioxidant; Cardiovascular; Carotenoid; Athlete; Endurance Introduction

Astaxanthin sources: Suitability for human health and nutrition.

Capelli, Talbott, Ding. *Functional Foods in Health & Disease*; FFHD: Online ISSN: 2160-3855 Vol 9, No 6 (2019)

Abstract

Background:

Astaxanthin (AX) has been consumed as a nutritional supplement for approximately twenty years. The primary source has been a natural plant-based supplement from the single-cell alga *Haematococcus pluvialis* (NAT-AX). Recently, Astaxanthin from other sources has entered the marketplace. The primary alternative source in the human nutritional supplement market has been a synthetic form of Astaxanthin produced from petrochemicals (SYN-AX). Additionally, a very small amount of Astaxanthin from a genetically-manipulated yeast *Xanthophyllomyces dendrorhous* (former nomenclature *Phaffia rhodozyma*, still commonly referred to as “Phaffia”) (PH-AX) is also available in some supplement products. The three forms have substantial chemical differences. In addition to the chemical differences between sources of AX, in-vitro research has demonstrated profound differences in antioxidant strength and animal research has revealed fundamental differences in health benefits. In all cases, NAT-AX has proven more biologically active than the other sources. This review is designed to assist readers in understanding which form(s) of AX are suitable for consumers desiring preventive or therapeutic health benefits.

Results:

In head-to-head antioxidant experiments, NAT-AX demonstrated 14X to 90X greater antioxidant activity than SYN-AX. In numerous animal trials in diverse species, NAT-AX in esterified form has demonstrated superior efficacy in increasing lifespan; treating skin cancer; preventing the formation of gastric ulcers; improving resistance to stress; decreasing reactive oxygen species (ROS); increasing retinol conversion in the liver; augmenting enzyme levels; increasing growth rates; and improving exercise endurance.

From a safety perspective, NAT-AX has been the subject of human clinical trials demonstrating safety and a wide variety of health benefits. In addition, no documented adverse events have surfaced during its twenty years of distribution as a food supplement for humans. SYN-AX and PH-AX have not been proven safe for direct human consumption and have not demonstrated any health benefits in clinical trials. Due to these facts, SYN-AX and PH-AX have not been allowed for human consumption by government regulators in many countries while NAT-AX is widely accepted in most countries around the world.

Conclusion:

Based on our review of the literature below, we recommend NAT-AX as the sole form of AX for human consumption until SYN-AX and PH-AX have been proven safe and efficacious through human clinical research.

Astaxanthin, oxidative stress, inflammation and cardiovascular disease.

Future Cardiol. 2009 Jul;5(4):333-42. Fassett RG1, Coombes JS.

Abstract

It is accepted that oxidative stress and inflammation play an integral role in the pathophysiology of many chronic diseases including atherosclerotic cardiovascular disease. The xanthophyll carotenoid dietary supplement astaxanthin has demonstrated potential as an antioxidant and anti-inflammatory therapeutic agent in models of cardiovascular disease. There have been at least eight clinical studies conducted in over 180 humans using astaxanthin to assess its safety, bioavailability and clinical aspects relevant to oxidative stress, inflammation or the cardiovascular system. There have been no adverse outcomes reported. Studies have demonstrated reduced markers of oxidative stress and inflammation and improved blood rheology. A larger number of experimental studies have been performed using astaxanthin. In particular, studies in a variety of animals using a model of myocardial ischemia and reperfusion have demonstrated protective effects from prior administration of astaxanthin both intravenously and orally. Future clinical studies and trials will help determine the efficacy of antioxidants such as astaxanthin on vascular structure, function, oxidative stress and inflammation in a variety of patients at risk of, or with, established cardiovascular disease. These may lead to large intervention trials assessing cardiovascular morbidity and mortality.

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