

AstaReal® Natural Astaxanthin

Astaxanthin - One of Nature's Most Powerful Antioxidants

Brain & Cognitive Health





Cognitive Health and Fatigue-Resistance
with AstaReal® Natural Astaxanthin

Benefits of natural astaxanthin for cognitive function and fatigue-resistance:

- Improves age-related forgetfulness, multi-tasking and alertness
- Decreases oxidation of red-blood cells (linked to prevention of vascular dementia)
- Enhances capillary blood flow in the brain while modulating blood pressure (may reduce risk of stroke and dementia)
- Increases physical and cognitive endurance and reduces fatigue

Cognitive Ageing

As we age, the brain undergoes gradual changes that can affect memory, attention, and other cognitive functions—a process known as cognitive ageing. While some decline is a natural part of ageing, growing evidence suggests that certain modifiable risk factors, such as poor diet, sedentary lifestyle, and

chronic stress, can accelerate this process. Therefore, demand for supplementary dietary solutions that help slow down the cognitive ageing and counteract the effects of poor lifestyle choices on brain health is steadily increasing.

Oxidative Stress & Chronic Inflammation

The human brain is particularly vulnerable to oxidative stress and inflammation due to its fat composition and high metabolic demands. Approximately 12–14% of the brain's fatty acids are polyunsaturated fatty acids (PUFAs), such as docosahexaenoic acid (DHA), which



are essential for neuronal function but susceptible to peroxidation. While the brain possesses endogenous antioxidant enzymes to combat oxidative stress, studies indicate that the activity of these enzymes may decline with age, potentially compromising the brain's defence mechanisms.

Energy metabolism is another critical factor affecting the brain health. Despite constituting only about 2% of body weight, the brain consumes approximately 20% of the body's energy. Neurons, in particular, have high energy requirements; for instance, a single neuron can utilize around 4.7 billion ATP molecules (cellular energy produced by mitochondria) per second under resting conditions. Mitochondria play a pivotal role in meeting these energy demands. However, during energy production, also large amounts of free radicals are produced which can contribute to oxidative stress. In addition, mitochondria dysfunction that may occur by ageing can impair cognitive processes, including memory formation, which is notably energy-intensive. Considering all of the above,



early dietary interventions aiming at bolstering antioxidant defences, improving blood flow, and supporting mitochondrial function may be beneficial for extending the healthy brain and cognitive ageing.

What is Natural Astaxanthin?

Natural astaxanthin is a carotenoid with a distinctive red colour. The primary and most abundant source for astaxanthin in nature is the freshwater microalgae *Haematococcus pluvialis*. Natural astaxanthin is one of the most powerful antioxidants known to science and it exerts anti-inflammatory properties as well. Due to its unique molecular structure, natural astaxanthin is able to span the entire

lipid bilayer of the biological membranes, offering exceptional protection to cells and mitochondria against free radical damage.

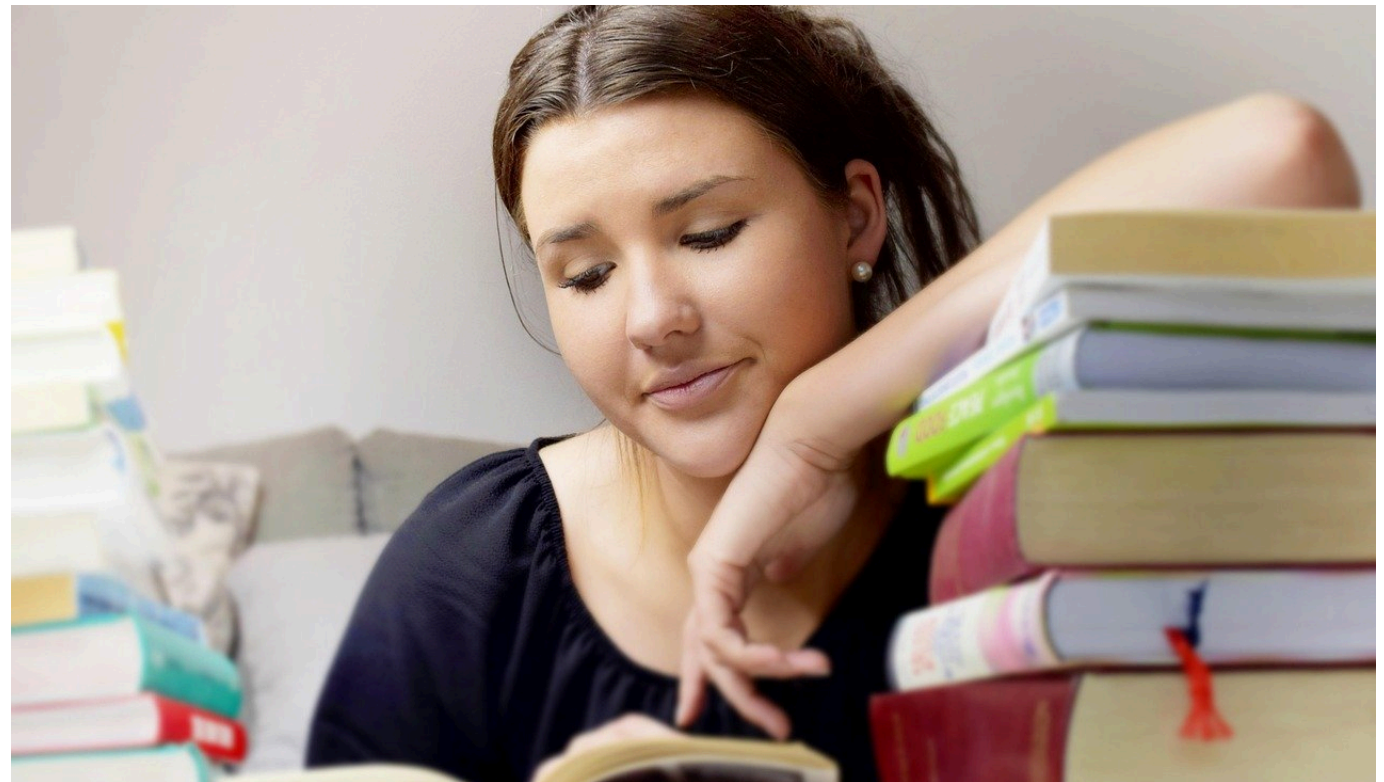
Enhancing Cognitive Function & Endurance

Astaxanthin is one of the few antioxidants that is able to cross the blood-brain barrier and help safeguard neurons— the fundamental units of the brain and nervous system. Furthermore, it improves the antioxidant status of red blood cells, which can contribute to overall brain health and may help prevent neurodegenerative diseases, like dementia.⁽¹⁾ Several studies have suggested that astaxanthin has various biological effects on the brain and cognitive function. For instance, in a study involving a group of men complaining of age-related forgetfulness (age range 50-69 years), supplementation with 12 mg AstaReal® Astaxanthin for three months significantly improved the mean response time to several CogHealth tasks, including simple reaction, choice reaction, working memory, delayed recall and divided attention.⁽²⁾

There was also a significant improvement in the mean accuracy of working memory at the end of the study. Additional evaluation of cognitive function using an event-related potential, the P300, indicated that astaxanthin could increase information processing capacity and selective attention.

AstaReal® Astaxanthin offers cognitive and performance benefits that extend beyond older adults, making it also valuable for younger individuals—who aim to optimize focus and productivity in work, academics, or sports. In a randomised, double-blind, placebo-controlled clinical trial, healthy and active participants aged 20 to 64 (mean age 48) who supplemented with 12 mg of AstaReal® Astaxanthin daily for eight weeks demonstrated greater resistance to mental fatigue and improved accuracy in sustained mental tasks, such as continuous calculations, compared to a placebo group.⁽³⁾

These findings suggest that natural astaxanthin may support mental clarity and endurance, particularly relevant for, for



instance, athletes striving to break through psychological limits and reduce the risk of injury through improved concentration.

In addition, the expanding clinical evidence for efficacy of astaxanthin in supporting eye, brain, and muscle function suggest an

emerging health-promoting role for astaxanthin in E-sports where an intense mental focus and visual precision are required.

References & Selected Publications

(1) Nakagawa K, Kiko T, Miyazawa T, Carpennero Burdeos G, Kimura F, Satoh A, et al. Antioxidant effect of astaxanthin on phospholipid peroxidation in human erythrocytes. *Br J Nutr.* 2011 Jun;105(11):1563–71.

(2) Satoh A, Tsuji S, Okada Y, Murakami N, Urami M, Nakagawa K, et al. Preliminary Clinical Evaluation of Toxicity and Efficacy of A New Astaxanthin-rich *Haematococcus pluvialis* Extract. *J Clin Biochem Nutr.* 2009 May;44(3):280–4.

(3) Hongo N, Fujishita M, Takihashi J, Tominaga K. Randomized controlled trial of the anti-fatigue effects of astaxanthin on mental and physical loads simulatin daily life. *J Clin Therap Medicine.* 2016;32(7):577–91.





Innovative Formulations



#1: Dosage Forms

From capsules to liquid shots, to sachets, to gummies, the possibilities for developing astaxanthin products for brain, cognitive or mental health are almost unlimited. AstaReal's bulk product range includes different astaxanthin concentrations in the form of algal biomass, oil, microencapsulated and water-dispersible powder, thus allowing the development of innovative dosage forms.

#2: Effective Dose

Relatively low doses of astaxanthin are effective without affecting quality or efficacy. Studies have shown significant results after short-term supplementation, ensuring your customers will feel the benefits of astaxanthin working in your formula. Dosages in clinical research range from 4 to 16 mg astaxanthin with majority based on a dose of 6-12 mg astaxanthin per day for brain and cognitive health. Depending on where your products

are sold, dosage recommendations and regulations may vary. To help determine which dose is right for your product and market, please contact us and we will be happy to offer advice.

#3: Synergistic Combinations

AstaReal® Astaxanthin can be easily combined with a range of other high-quality ingredients, especially those with authorised health claims for brain, cognitive, or mental health. This

potent natural antioxidant (preferably in encapsulated form) in combination with zinc may better contribute to normal cognitive function. Astaxanthin, in combination with other antioxidants such as vitamins C and E, can synergistically strengthen the defence against oxidative stress. Moreover, emerging scientific evidence suggest that astaxanthin and DHA (docosahexaenoic acid) together may better enhance cognitive performance. To further increase resistance to mental and physical fatigue, astaxanthin can be combined with B vitamins (particularly B1, B2, B6, B12, and folate).

#4: Sustainability & Traceability

Consumers are increasingly paying attention to the origin of the products they buy. Thus, demand for more naturally and sustainably sourced products will continue to rise. Consequently, the industry is looking for plant-based sources of traditional ingredients, such as antioxidants, and has already begun to focus on algae. Microalgae are nature's original producers, forming the base of most aquatic food chains. The freshwater



microalgae *Haematococcus pluvialis* is considered as a highly sustainable, plant-based source of astaxanthin, compared to the synthetic version and astaxanthin from marine animals (e.g., krill, salmon). Synthetic astaxanthin or astaxanthin derived from other microorganisms are not approved for human use in many countries.

The exceptional profile of AstaReal® Astaxanthin (regarding traceability, quality, safety, efficacy, and scientific backing) make it an ideal fit for next-generation nutraceuticals.

#5: Quality & Origin

Astaxanthin's quality is affected by the

environment in which the microalgae are cultivated. The indoor cultivation systems (photobioreactors) are best suited for producing high-value compounds, like astaxanthin. Overall, indoor, controlled cultivation systems, like the one AstaReal employs, allow for better control of factors affecting the final product's quality and stability, including light control, temperature regulation, contamination risk, nutrient control, water quality, etc. This results in a safe product with high astaxanthin content in the biomass and without any environmental impurities.



Why AstaReal?



Trusted Science

In nutraceuticals and natural ingredients market, AstaReal is an authority in human clinical studies and is the only brand of natural astaxanthin backed by over 75 clinical studies. With clinical studies across indications such as skin health (beauty from within and out), muscle performance, vision & eye health, cognitive function, cardiovascular and metabolic health, gastrointestinal health, immune function, reproductive health, and even animal nutrition you can be assured that AstaReal® is supported by solid clinical evidence. Our global team of experts can also guide you on how to properly leverage our clinical findings, tailored to the regulatory framework of your target market.



Unrivalled Quality

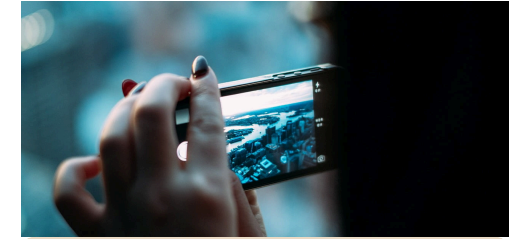
Stability and purity of natural astaxanthin matters as poor quality can have a negative impact on your final formulation and efficacy of your product. Our indoor, controlled cultivation process allows for optimal maturation of the algae cells, resulting in a superior astaxanthin product with the highest quality, stability, and concentration available on the market.

AstaReal is ISO 9001 and FSSC 22000 (incl. HACCP) certified. AstaReal® bulk products (human grade) have Halal, Kosher, Informed Ingredient and Vegan Society certifications.



Worldwide Expertise

Our business partners benefit from access to talented, high performance local teams of technical, marketing, and regulatory experts with in-depth knowledge of the target regions.



Innovation Partnership

We are stronger together and can stand out through strategic long-lasting business collaborations. AstaReal® product range allows the development of innovative dosage forms, from traditional to on trend. By providing you with the latest market insights and technical advancements, the AstaReal expert team supports you in choosing the best possible delivery formats and combinations for your target market.

[Read more here](http://www.astareal.se)
www.astareal.se

Thank you for reading!

Put our astaxanthin expertise to work for you
and get in touch with us.

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