



AstaPure[®] – the sustainable antioxidant

Create dietary supplements that appeal to ethical consumers



Ethical supplements take centre-stage

Sustainability has been a key trend in the food and beverage sector for the past decade, and promises to be a major factor for many years to come. Increasingly the dietary supplements industry is also beginning to address questions of sustainability, with ethical factors now starting to play a much more significant role in the manufacturing, science and marketing of health supplements.

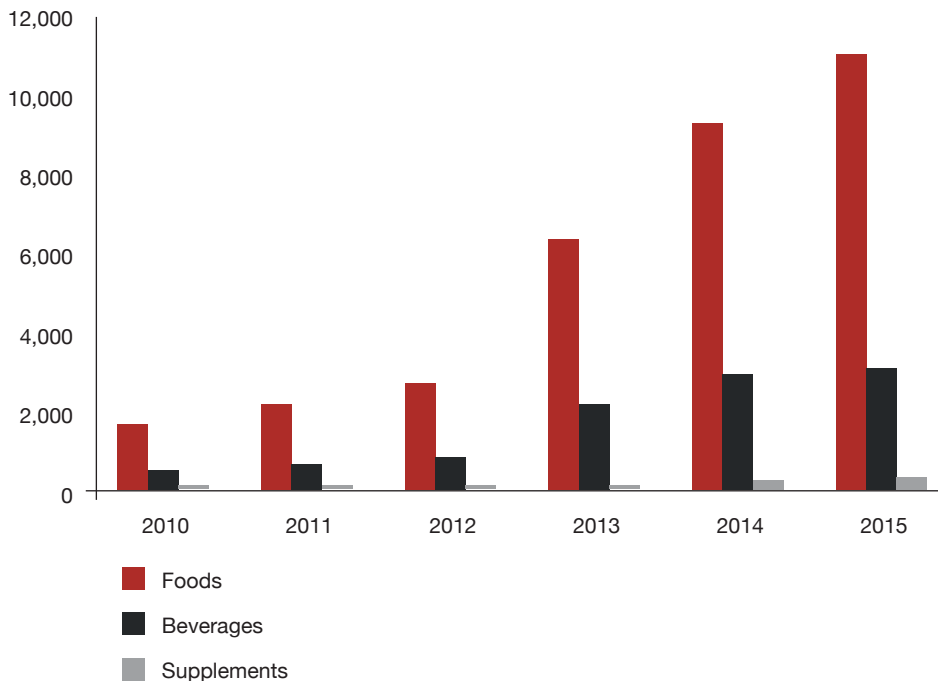
This trend is highlighted by the Mintel Global New Products Database, which tracks new product launches worldwide. A 2015 search identifying products using a claim related to being 'environmentally friendly' delivers the following results:

Foods	11,033	+18% year-on-year
Beverages	3,177	+7% year-on-year
Supplements	370	+37% year-on-year

The number of new supplements marketed in 2015 using a sustainability positioning remained small compared with the food and beverage categories. However, in terms of year-on-year growth, it is clear that 'green' supplements are now outstripping food and beverage products. If this growth curve continues, it will surely only be a matter of time before a majority of supplement companies make the necessary changes to their supply chains so that they, too, can include a sustainability message on their labels.

For dietary supplements companies, there is already a good opportunity to demonstrate a commitment to sustainability by sourcing ethical ingredients. Consumer brands launching eco-friendly products will gain a first-mover advantage over their competitors.

Numbers of new products launched featuring a claim related to 'environmentally friendly'



Source: Mintel GNPD

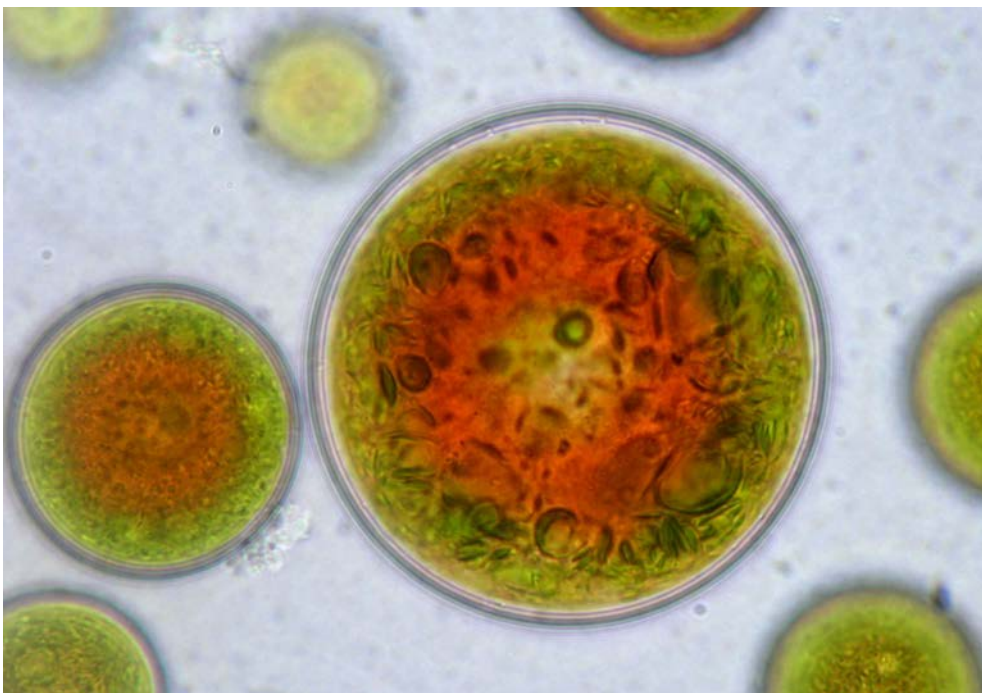
Produced with solar power

In the antioxidant category, there are very few ingredients that are more sustainable than Algatechnologies' AstaPure®, a natural astaxanthin produced from microalgae using solar power. At its facility in Israel's Arava desert, Algatechnologies harnesses sunlight and water to cultivate the *Haematococcus pluvialis* strain of microalgae, creating an antioxidant compound that delivers clinically-proven health benefits in a range of formats suitable for use in dietary supplements, cosmeceuticals and functional beverages. Increasingly, dietary supplement brands are recognizing how Algatechnologies' unique environmentally responsible processes can enable them to capitalize on the growing trend for sustainably produced products.

Haematococcus pl. offers the most concentrated source of natural astaxanthin, greater than salmon and crustaceans, which are part of our everyday food supply. Like all plants, *Haematococcus pl.* grows via photosynthesis. It combines energy from sunlight with carbon dioxide and trace nutrients, converting these into plant material and oxygen. This is the same process that enables microalgae in the oceans to clean up twice as much carbon dioxide and release twice the amount of oxygen into the atmosphere as the rainforests.

The Arava desert enjoys year-round sunshine, providing the *Haematococcus pl.* with ideal growing conditions without the need for artificial light. Algatechnologies uses a closed system of glass tubular photobioreactors to grow the microalgae in a medium of fresh water and minerals. Recycled water drips over the tubes to maintain the optimum temperature for growth, even in the height of summer.

Towards the end of the cultivation cycle, Algatechnologies adjusts the growth conditions to 'stress' the microalgae, causing them to produce astaxanthin, a bright red natural antioxidant. Once the astaxanthin is ready to be harvested, the solid biomass and water are separated in a physical, non-chemical process using centrifuges.



Microalgae produces astaxanthin, a natural red carotenoid, when 'stressed'

Preserving precious resources

What is it that makes Algatechnologies' AstaPure® sustainable? Quite simply, it is the way in which it is produced, harnessing and preserving nature and precious resources. This approach is highlighted by the careful manner in which Algatechnologies manages consumption of energy and water.

The sophisticated photobioreactors used by Algatechnologies to cultivate the microalgae are highly productive in terms of the space required and the volumes produced, thereby minimizing the use of land and water. In addition Algatechnologies is located in the Arava desert on non-arable land and contributes to local communities in terms of job creation.

Solar power is the primary source of energy for Algatechnologies. This is supplemented with surplus power produced by other businesses as a by-product of their operations. Algatechnologies has also invested heavily in LED lights to minimize energy consumption in its indoor cultivation areas.

Fresh water is a precious resource everywhere, but especially in the desert. All the water for the AstaPure® production process is sourced locally from a borehole before being desalinated and purified. What's more, Algatechnologies purifies and recycles 80% of the water it uses on site, minimising overall water consumption.

The microalgae biomass is harvested, its cells are cracked and dried, and the astaxanthin flakes are extracted using super critical CO₂ technologies, with no solvents. Algatech's Arava facility is uniquely situated in a region absent of any heavy industries and other causes of pollution.

Thanks to the environmentally-friendly process used to produce AstaPure®, Algatechnologies is proud to be a leader in the global trend for natural and safe antioxidants, produced using sustainable technologies and supported by solid science.



Algatechnologies uses solar power to grow microalgae in photobioreactors

Highly versatile

AstaPure® is a highly versatile astaxanthin ingredient available in multiple delivery formats, for a wide range of applications. It is 100% vegan, certified by Non-GMO Project Verification, Halal and Kosher. Algatechnologies is certified GMP, HACCP and ISO 9001-2008.

AstaPure® is available in free-flowing, highly stable gelatin or vegetarian beadlets for use in hard shell capsules and tablets. Algatechnologies also offers AstaPure® oleoresins in concentrations of 5%, 10% and 20%, ideal for use in soft gel capsules and topical cosmetics (oil in water).

A range of stable easy-to-use formulations are also available to suit specific applications, as follows:

- AstaPure® liquid emulsion is an astaxanthin developed for clear beverages, drink mixes and suspensions
- AstaPure® water soluble powder is an astaxanthin perfect for drink mixes, suspensions, liquid supplements, sachet powder beverages and effervescent tablets
- AstaPure® 4mg softgel capsules are shipped in bulk for private label products

Full cell protection

There is a large and growing body of scientific research that supports the health benefits of antioxidant carotenoid compounds in general, and astaxanthin in particular.

Astaxanthin is a natural carotenoid pigment. It is what gives microalgae-eating shrimp and salmon their orange-pink colour. Its unique properties enable it to provide effective antioxidant protection for the full cell membrane, which some other antioxidants cannot do. Studies comparing the antioxidant potential of several other antioxidants, including other carotenoids, have consistently shown that astaxanthin is the most potent when tested in solutions, membrane models and cell cultures.

Studies have found astaxanthin to be one of nature's most powerful anti-inflammatories. According to findings from double-blind, placebo-controlled animal and human clinical trials, astaxanthin naturally inhibits many known inflammation mediators, which means it can ease inflammation and pain without negative side effects.

Overall, natural astaxanthin's distinct chemical structure makes it an outstanding antioxidant. Twenty-five years of scientific research into supplementation with astaxanthin – including laboratory tests, blood tests and animal models, as well as more recent human trials – has demonstrated that this unique structure helps astaxanthin to deliver health benefits in a number of key areas. On the next page, we outline some of these benefit areas.



SPORTS NUTRITION – Research has shown a correlation between strenuous exercise and the over-production of both free radicals and oxidative stress. This can reduce antioxidant system efficiency and damage muscles, which can delay workout recovery time. Researchers have found that astaxanthin may support muscle function and endurance, and could help athletes to combat the impact of heat stress on their performance.

SKIN HEALTH – When skin is exposed to sunlight, ultraviolet rays cause damage by generating free radicals, which degrade the skin's natural collagen scaffold. Studies have demonstrated the ability of astaxanthin to neutralise free radicals and boost skin moisture and elasticity, while decreasing the appearance of fine lines and age spots.



EYE HEALTH – Certain parts of the eye are light sensitive, and indeed it is this that enables us to see. However, ultraviolet light can also damage the eye's delicate structures by generating destructive reactive oxygen species (ROS). Research into eye health has consistently demonstrated astaxanthin's ability as an antioxidant to neutralise ROS and other free radicals.

CARDIOVASCULAR HEALTH – Research has shown that astaxanthin may prevent oxidative stress and slow the progression of atherosclerosis (the build-up of plaque on arterial walls). In addition, astaxanthin increases 'good' cholesterol levels (HDL) and lowers 'bad' cholesterol levels (LDL).



A detailed scientific review, with full references, is available free of charge from Algatechnologies. Please email info@algatech.com to request a PDF copy.

Your trusted partner

In today's market consumers are looking for supplements that deliver proven health benefits in an environmentally sustainable way. As an established global leader in astaxanthin, Algatechnologies works with supplement manufacturers to develop and market products with AstaPure® in more than 40 countries worldwide. Growing customer demand recently inspired us to make a major investment in our business, to double our production capabilities and implement a programme of efficiencies.

Algatechnologies is ready to partner with ethically-minded supplement brands who wish to capitalize on one of today's key growth trends: sustainability. Get in touch with us today to find out more.

For more information about AstaPure® natural astaxanthin:

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