



Addressing Age-Related Challenges Through Astaxanthin Supplementation



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Abstract

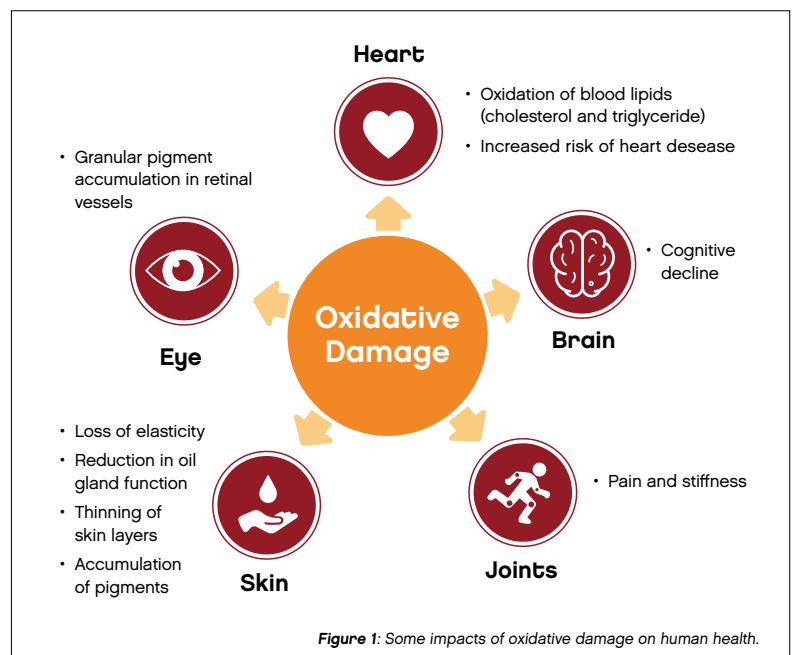
Research has repeatedly demonstrated that antioxidants help support the body's defenses, and counteract the damaging effects of reactive oxygen species (ROS). As people age, the body's antioxidant defense system becomes weaker, and more susceptible to certain health conditions that are associated with oxidative stress. However, many individuals do not get adequate levels of antioxidants through diet alone. Consequently, antioxidant supplementation is often required.

Some recent human clinical studies demonstrate that natural astaxanthin is one of the most powerful antioxidants for supporting a number of health issues, including: improving cognitive function in healthy seniors; delaying aging through reduced oxidative damage of blood lipids and the skin; and delaying age-related vision degeneration.

Beginning at any age, dietary supplementation with astaxanthin can help combat oxidative stress, and promote better health and wellbeing throughout life.

The Role of Oxidative Damage in Aging

From a biological point of view, aging involves the accumulation of oxidative damage in cells and tissues. Younger people are naturally better protected from free radicals and other reactive oxygen species (ROS) through balanced activity of the mitochondria, efficient antioxidant and DNA repair systems, and active protein degradation machinery. Aging, on the other hand, is generally accompanied by mitochondrial dysfunction leading to increased free radical production that, in turn, leads to an overloading of the defense systems and oxidative damage of cellular components ^[1]. Oxidative stress and an imbalance of pro-oxidants and antioxidants, can impact several health issues (see **Figure 1**).



Several decades of dietary research findings ^[2,3,4] suggest that consuming greater amounts of antioxidant-rich foods can help support a healthy lifestyle throughout the lifespan. Antioxidants help to counteract the damaging effects of ROS, and promote a healthy oxidative balance. Although dietary intake is a very important source of antioxidants, many seniors don't get sufficient amounts of antioxidants through diet alone. This is primarily due to the decreased intake of antioxidant-rich food, along with less efficient nutrient absorption, and diminished retention. Consequently, antioxidant supplementation can help balance ROS and reduce oxidative stress, helping seniors to live healthier lives.

Consumers Around the World are Living Longer

Nearly all countries around the world are experiencing significant growth in the number of seniors in the population, and this growth is projected to accelerate in the next decades (Figure 2). According to the United Nations, one in eight people worldwide was age 60 years or over in 2015. By 2030, older individuals are projected to account for one in six people globally. By 2050, one in every five people will be aged 60 years or over ^[5].

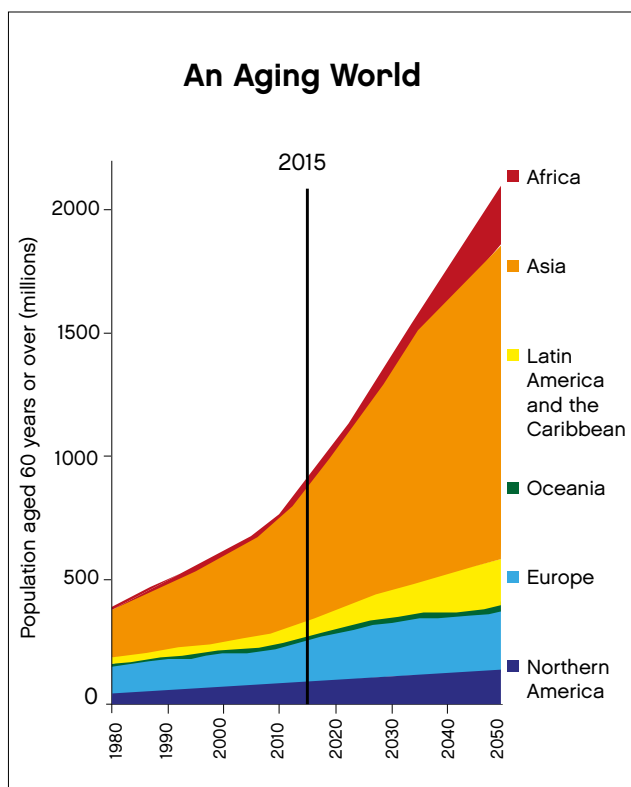


Figure 2: Population aged 60 years or over, by region, 1980-2050. Source: United Nations, World Population Prospects: The 2015 Revision, 2015

The normal aging process is accompanied by numerous health challenges, which vary between people due to nutrition, genetics, lifestyle, environment, and life events. In order to minimize rising healthcare costs, and help to ensure that the aging population remains as healthy and active as possible, there is a

responsibility within the natural products industry to support these individuals, and help everyone age with better health and more comfort.

Effects of Astaxanthin Supplementation on the Aging Process

A powerful antioxidant that is attracting a lot of interest in the "healthy aging" category is natural astaxanthin. It belongs to a family of naturally-occurring organic pigments called carotenoids. Natural astaxanthin is the main carotenoid found in certain aquatic animals. A naturally cultivated form is produced from the microalgae *Haematococcus pluvialis*, and is one of the most powerful natural antioxidants known. It has numerous health benefits that are supported by extensive scientific research, including 50 human clinical trials and more than 1400 peer-reviewed papers ^[6].

Comparison studies have shown that astaxanthin is 6,000 times more powerful than vitamin C, 100 times more powerful than vitamin E, and five times more powerful than β -carotene in trapping energy from singlet oxygen, one of the most common ROS in the body ^[7]. Astaxanthin also has the ability to trap several types of ROS/free radicals. In addition, the way astaxanthin neutralizes harmful ROS/free radicals is more gentle on the body's cells compared to other antioxidants that can actually be harmful because they may turn into highly reactive molecules themselves ^[8].

Natural astaxanthin can help address some age-related challenges, and it has been shown to combat oxidative stress by removing ROS and promoting a healthy oxidative balance.

The following are some of the health benefits of natural astaxanthin that have been demonstrated by human clinical studies:



Astaxanthin supports cardiovascular health by improving blood lipid profiles in healthy seniors. It has a protective effect against cholesterol and triglyceride oxidation ^[9, 10, 11]



Astaxanthin supports normal healthy skin by improving skin elasticity and moisture, reducing hyper-pigmentation and wrinkle formation ^[12, 13]



Astaxanthin improves cognitive function in the healthy seniors ^[14]



Astaxanthin protects the eye by reducing oxidative damage within the eye and improving blood flow in capillaries in the eye ^[15, 16, 17]

A detailed overview of selected clinical studies is available in the appendix.

Conclusion

As we age, our bodies and minds change. There's no getting around this. Healthy aging is not about turning back the clock, or denying the realities of age. It is about optimizing opportunities for health and wellbeing in older age, so seniors can do the things they value for as long as possible.

Health and wellbeing in older age are shaped by events, lifestyle choices and environmental factors throughout life ^[18]. For instance, cardiovascular disease, high blood pressure, and diabetes typically occur in individuals with an unhealthy diet and/or sedentary lifestyle beginning early in life. Therefore, concerns regarding healthy aging must be addressed throughout life, and it is never too late to start supplementing with a powerful antioxidant like astaxanthin. In fact, many Millennials are already concerned about preventing health problems later in life, and are taking steps to preserve their youthful vitality ^[19].

Appendix: Astaxanthin and Healthy Aging

Table 1. Examples of astaxanthin benefits from selected human clinical trials using randomized, placebo controlled approach

Main Finding	Study duration	Age	Study details
Improved lipid profile¹¹	12 weeks	25-60 (men & women)	<ul style="list-style-type: none"> • 12 mg/day astaxanthin doses significantly reduced triglyceride levels and 6 mg and 12 mg doses significantly increased HDL-cholesterol levels • Serum adiponectin was increased by astaxanthin supplementation and changes of adiponectin correlated positively with HDL-cholesterol changes
Improved skin elasticity and integrity¹³	12 weeks	41-60 (women)	<ul style="list-style-type: none"> • Significant improvements in skin elasticity and transepidermal water loss was seen in subjects with photoaged facial skin after 12 weeks with 2 mg astaxanthin supplementation per day • Expression of procollagen type I mRNA increased and expression of metalloproteinase MMP-1 and -12 mRNA decreased
Improved cognitive function¹⁴	12 weeks	45-64 (men & women)	<ul style="list-style-type: none"> • CogHealth battery scores (response time and accuracy) improved in the group receiving 12 mg astaxanthin after 12 weeks • Groton Maze Learning Test scores (executive function) improved earlier in the astaxanthin groups than the placebo group
Delayed age-related vision degeneration¹⁵	4 weeks	30-50 (men & women)	<ul style="list-style-type: none"> • A significant increase of the macular square blur rate was seen 4 weeks after 12 mg astaxanthin ingestion using laser speckle flowgraphy

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About Algalif

Algalif is a microalgae-ingredient supplier from Iceland. We produce Astalif™ Astaxanthin, a powerful natural antioxidant with multiple health benefits and a solid scientific foundation, extracted from *Haematococcus pluvialis*. Manufactured to rigorous quality and sustainability standards at a state-of-the-art, cGMP-compliant, indoor facility, Astalif™ is a specialty ingredient for nutraceuticals with applications in brain health, eye health, healthy aging, cardiovascular health, muscle endurance/recovery, and skin health. For more information, please visit algalif.com or contact us at sales@algalif.com.



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