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Innovative VETERINARY CARE

MENTAL HEALTH FIRST AID FOR VETERINARY TEAMS

A PSYCHOLOGICALLY HEALTHY WORKPLACE IS ESSENTIAL TO GOOD MENTAL HEALTH. LEARN HOW A STAFF MEMBER OR MANAGER TRAINED IN MENTAL HEALTH FIRST AID CAN BENEFIT YOUR VETERINARY TEAM. — P. 28

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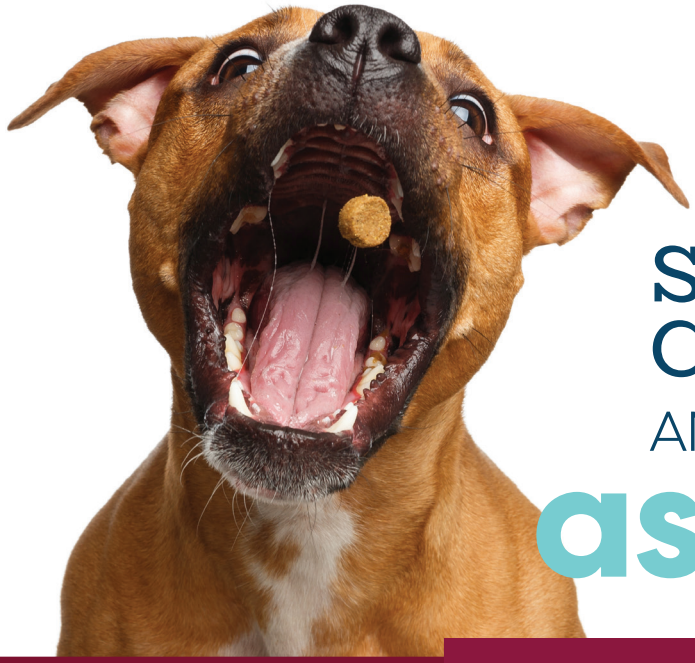


SUPPORT CANINE HEALTH AND AGING WITH astaxanthin

BY KAREN HECHT, PHD

As nature's most powerful antioxidant, astaxanthin benefits canine endurance, aging, vision health and more.

Antioxidants are a beneficial part of the animal diet because they help neutralize potentially harmful free radicals. Free radicals are reactive molecules produced both as by-products of the body's natural physiology, and as a result of interaction with the environment. Both endogenous and dietary antioxidants work together to control and balance the level of free radicals in the body. When this balance is tipped in favor of free radical accumulation, oxidative stress and damage can occur to healthy cells. Oxidative stress can happen anywhere in the body, including in muscles, eyes, skin, and brain.

OXIDATIVE STRESS IN BOTH AGING AND ACTIVE DOGS

Managing oxidative stress with antioxidants in healthy aging dogs is an approach that has been studied and shown to have benefits for learning and cognition. Additionally, studies have shown that an antioxidant-rich diet helps combat levels of oxidation in both aging and exercising dogs.

- **Aging dogs** tend to have the balance tipped toward oxidative stress. As a dog ages, his body's own antioxidant function deteriorates, and free radicals begin to accumulate. Older dogs accumulate oxidized proteins and lipids, which can affect canine health in many ways. In one study, dogs with senile dementia had 400% more oxidized protein and 250% more oxidized lipids in their brains, compared to their age-matched healthy counterparts.

- **Active and working dogs** also experience significant oxidative stress. Aerobic exercise in both untrained and trained dogs can cause free radical accumulation. This is because muscles produce energy using mitochondria, which are the powerhouses of the cell. Mitochondria burn oxygen, carbs and fat to produce energy, but the energy production also produces free radical by-products. The more active the dog and the more energy consumed, the more free radicals are produced. This leads to damage of healthy muscle tissue, which can affect endurance, performance and recovery.

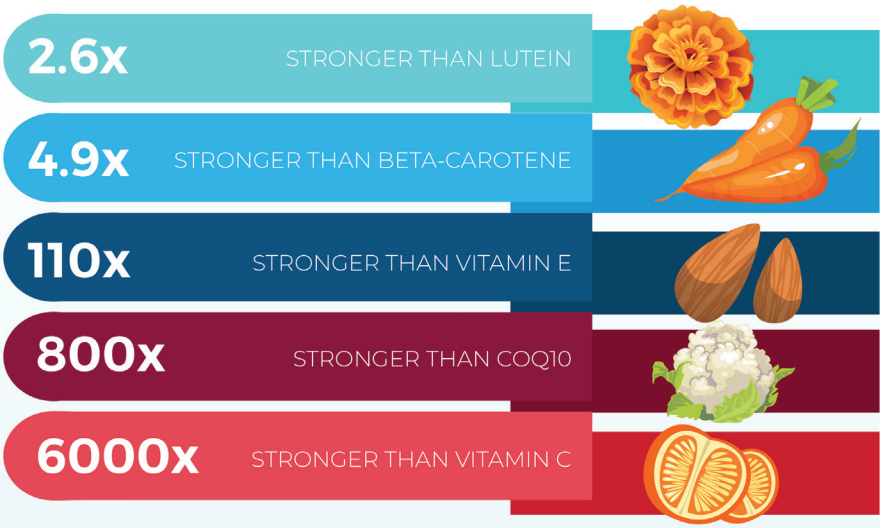
ASTAXANTHIN, A NATURAL ANTIOXIDANT

Daily antioxidants are known to support canine health in a variety of ways, including promoting a healthy immune response, supporting eye health in aging dogs, and contributing to a normal inflammatory response. There are many dietary antioxidants to choose from, and a varied diet containing many antioxidants is beneficial since they all work somewhat differently.

Antioxidants like natural astaxanthin and vitamin E can boost a dog's antioxidant capacity, helping to address reactive oxygen species (ROS) and control oxidative stress.

Natural astaxanthin is a targeted mitochondrial ingredient whose antioxidant activity is reported to be higher than that of beta carotene, lutein and vitamin E. Natural astaxanthin has some features that make it unique among antioxidants:

NATURAL ASTAXANTHIN IS:



- It is one of nature's most powerful antioxidants, which means it is very good at quenching free radicals, in particular singlet oxygen. One study revealed that astaxanthin is 6,000 times stronger than vitamin C, 110 times stronger than vitamin E, and even three to five times stronger than its cousin carotenoids, lutein and beta carotene.

- Astaxanthin is a fat-soluble antioxidant that can access cell membranes, unlike water-soluble antioxidants. This is important because cell membranes are made of lipids, which are especially sensitive to oxidation. Natural astaxanthin has a unique structure that can span the cell membrane from end to end for better membrane coverage and antioxidant protection.

- It favors all membranes, but as much as 50% of all membrane-bound astaxanthin has been found in mitochondrial membranes, the energy-producing parts of the cell that also produce free radicals as a by-product of their metabolic activity. This means that natural astaxanthin is poised at the site of free radical production to help neutralize these unstable molecules before they start a chain reaction that can damage healthy mitochondria and tissue.

Natural astaxanthin is red in color and belongs to the family of antioxidants called carotenoids, which are most commonly found in fruits and vegetables. However, unlike carotenoids such as beta-carotene found in carrots, lycopene found in tomatoes, and lutein found in spinach, natural astaxanthin is found in red-colored seafoods like lobster, crab, shrimpand salmon. For dogs and people, the main dietary source of natural astaxanthin is wild salmon. However, salmon is a rare protein in commercial dog food, and a dog would have to consume four filets of wild king salmon daily to get a beneficial amount of astaxanthin. This is why supplementation with quality, natural astaxanthin is important.

The many ways natural astaxanthin supports canine health

- **EXERCISE**: Astaxanthin's ability to lower oxidative stress, reduce exercise-induced inflammation, facilitate carbohydrate sparing, and promote lipid utilization in muscles during exercise makes it a powerful health supplement for canine muscle recovery and endurance.

- **AGING**: Natural astaxanthin has been shown to inhibit lipid peroxidation in cell membranes, scavenge excess ROS, and improve overall mitochondrial function, making it an ideal supplement to keep canines active and well into their golden years.

- **VISION**: Astaxanthin possesses a remarkable ability to cross the blood-retinal barrier and reach the eye. It is clinically proven to support dynamic focus in humans, and combined with other ingredients, has been shown to help stabilize the refractive index in aging dogs. A formulation containing natural astaxanthin also alleviated dry eye symptoms in dogs, reduced ocular inflammation, and increased tear production.

- **COGNITION**: Astaxanthin is known to cross the blood-brain barrier, and support nourishing blood flow. In numerous studies, astaxanthin blocked the activation of NF-kB, reduced markers of systemic inflammation and supported healthy neurons in animals. In addition, natural astaxanthin supports cognitive function, especially memory retention and spatial memory in humans.

Dr. Karen Hecht is the Scientific Affairs Manager at AstaReal Inc., producer and purveyor of the most studied brand of natural astaxanthin. She studied algal molecular biology as a postdoctoral associate at the Pacific Northwest National Laboratory. Dr. Hecht earned her PhD in Biological Sciences at the University of Pittsburgh, and a BSc in Biochemistry from the University of Toronto. Dr. Hecht has spoken at conferences, on radio shows, and podcasts on the subject of natural astaxanthin as an ingredient for animal and human health.