# bark & whiskers

Dog Tips Cat Tips

# Aging and Disease Hate This - And It's Not the Least Bit Toxic

It's nature's special gift to you — and highly valuable for your animal companions too. Plays a key role in longevity. A 7-year study of 90 old to very old kitties links it to less disease, higher muscle mass, better body weight, better quality of life and significantly longer life span.

#### Reviewed by Dr. Becker

### **STORY AT-A-GLANCE**

- Free radicals cause damage in the form of oxidative stress in your pet's body, and oxidative stress and the inflammation it causes are directly linked to aging and disease
- Free radicals are unavoidable since they occur naturally as the result of metabolic, cellular and immune system functioning, as well as certain external factors
- Your dog's or cat's body is designed to absorb nutrients from fresh, living foods very efficiently. Antioxidants are contained in the vitamins in fresh foods
- Antioxidants neutralize free radicals before they can harm your pet's body, which is why it's so important to offer your dog or cat a nutritionally balanced fresh food diet rich in antioxidants
- Antioxidants play a key role in longevity, and high levels of circulating antioxidants are commonly seen in the "oldest old" among us

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If you pay attention to matters of health and aging, you've no doubt heard the term free radicals, which are unstable molecules that travel around the body looking to bond with stable molecules in order to steal an electron and stabilize themselves. When they are successful, they create new unstable molecules.

Free radicals are unavoidable because they're produced during normal metabolic, cellular and immune system activity, as well as by external factors such as strenuous exercise, a poor diet, stress, pollution and even sunlight.

Free radicals cause altered gene expression and damage to cell membranes, leading to oxidative stress and

inflammation, which is associated with aging and disease.

The good news is that nature provides a very powerful weapon against this degenerative process in the form of antioxidants, which neutralize the effect of free radicals and help to protect the heart, brain and other organs from oxidative stress.

### Antioxidants Provide Huge Health and Longevity Benefits for Pets

Antioxidants are molecules that gobble up toxic free radicals floating around in your pet's body before they can harm healthy cells and tissue, thereby reducing oxidative stress and DNA damage.

Antioxidants play a key role in longevity, and high levels of circulating antioxidants are commonly seen in the "oldest old" among us. Several studies of older dogs have proved the benefits of an antioxidant-rich diet for the aging canine brain.<sup>1,2,3,4</sup>

The results of a seven-year study of 90 kitties aged 7 to 17 who were fed an antioxidant-rich diet showed fewer decreases in lean muscle mass; improved body weight, lean body mass, skin thickness and red cell quality; decreased incidence of disease; general improvement in quality of life; and significantly longer life span.<sup>5</sup>

The same is true for dogs. The more free radicals the body makes, the more antioxidants the body requires, and research shows puppies may have antioxidant deficiencies.

Most commercially available pet foods, even those of very high-quality, contain synthetic vitamins and minerals that provide minimal nutrition, not optimum nutrition.

The table below highlights the differences between nutrients in the diet dogs used to eat versus what's considered "acceptable" (AAFCO minimum nutrient requirements) now:

	AAFCO	Ancestral
Calcium (g)	1.25	5.7
Phosphorus (g)	1.0	3.3
Potassium (g)	1.5	2.0
Sodium (g)	0.2	1.0
Magnesium (g)	0.15	0.4
Iron (mg)	10	43
Copper (mg)	1.0	6.0
Manganese (mg)	1.3	3.1
Zinc (mg)	20	24
Vitamin E (IU)	12.5	23

As you can see, AAFCO recommendations may sustain life, but they do not nourish animals in the way nature intended. Your dog's or cat's body is designed to absorb nutrients from fresh, living foods very efficiently. Antioxidants are contained in the vitamins in fresh foods, including:

- Vitamin A and carotenoids, which are found in bright colored fruits and veggies like apricots, broccoli, cantaloupe, <u>carrots</u>, peaches, squash, sweet potatoes and <u>tomatoes</u>
- Vitamin C, found in citrus fruits and strawberries, as well as green peppers, broccoli and green leafy vegetables
- Vitamin E, found in nuts, seeds and whole grains
- Selenium, found in protein sources like fish, chicken, beef and eggs

Phytochemicals also contain antioxidant properties:

- Flavonoids/polyphenols are in cranberries and tea •
- Lycopene is in tomatoes and watermelon
- Lutein sources are dark green vegetables like spinach, broccoli and kale •
- Lignan is found in flax seed and certain other grains •

## Alpha-Lipoic Acid, the Workhorse of Antioxidants

Alpha-lipoic acid (ALA), also known as α-lipoic acid, lipoic acid (LA) and thioctic acid, is an organosulfur compound derived from octanoic acid. It's important not to confuse alpha-lipoic acid with the omega-3 essential fatty acid alphalinolenic acid, especially since both are often abbreviated as ALA.

Alpha-lipoic acid is a naturally occurring antioxidant found in every cell of the body, where its job is to turn glucose into energy.

While other antioxidants work only in water (e.g., vitamin C) or only in fatty tissue (e.g., vitamin E), alpha-lipoic acid is considered a "universal" antioxidant because it's both water- and fat-soluble.

This means it works throughout the body to provide protection to all the cells and organ systems, including the brain, because it also crosses the blood-brain barrier.

Antioxidants are used up as they attack free radicals, but there is evidence that ALA may actually help regenerate other antioxidants and make them active again. Foods containing the highest amounts of **<u>alpha-lipoic acid</u>** include spinach, cow kidneys and hearts and broccoli.

ALA does come in supplement form, but it's very important to work with a **holistic veterinarian** or other knowledgeable source on proper dosing, and focus on food sources first.

Alpha-lipoic acid can be toxic to cats at very low doses, and it's also possible to create toxicity in dogs if too much is given, so again, it's very important to consult with a knowledgeable professional about safe dosages.<sup>6</sup>

## Astaxanthin, 'King of the Carotenoid Family'

Astaxanthin is a naturally occurring, nontoxic, whole food source of vitamin A found in wild sockeye salmon, red trout, shrimp, crab and algae that is hundreds of times more potent than vitamin E, ten times more potent than betacarotene and about five times more potent than lutein as a functional antioxidant.

Astaxanthin fights oxidative stress and free radical damage. It has very strong free radical scavenging abilities and helps protect cells, organs and tissues from oxidative damage.

Astaxanthin provides antioxidants to parts of the body that don't normally receive a lot of antioxidant benefit. It can cross the blood-brain barrier and the blood-retina barrier. This means it can help reduce the potential for diseases of the central nervous system, the spinal cord and the eye.

Astaxanthin also supports immune function thanks to its high levels of beta-carotene. Studies also show astaxanthin supports joint and muscle recovery after exercise, and cardiovascular health in dogs and cats. A study of Beagles concluded that supplementation with astaxanthin improves mitochondrial function in dogs.<sup>7</sup> The study involved both young and geriatric healthy female Beagles. The dogs were fed 20 mgs of astaxanthin daily for 16 weeks.

Fasting blood samples were taken at the start of the study, again at eight weeks and again at completion of the trial. Mitochondrial function improved in both the young and elderly Beagles. In the older dogs, astaxanthin supplementation increased ATP production, mitochondria mass and cytochrome c oxidoreductase activity.

In the young dogs, astaxanthin increased the reduced glutathione to oxidized glutathione ratio. It decreased nitric oxide in all the dogs.

#### **Sources and References**

PetfoodIndustry.com, A Lifetime of Nutritional Support with Antioxidants

- <sup>1</sup> <u>Neurosci Biobehav Rev. 2002 Oct;26(6):679-95</u>
- <sup>2</sup> <u>Neurobiol Aging. 2002 Sep-Oct;23(5):809-18</u>
- <sup>3</sup> <u>Vet Ther. 2004 Spring;5(1):5-16</u>
- <sup>4</sup> <u>Neurobiol Aging. 2002 Sep-Oct;23(5):737-45</u>
- <sup>5</sup> Effect of Nutritional Interventions on Longevity of Senior Cats. JARVM 2007; Volume 5, Issue 3
- <sup>6</sup> <u>Pet Poison Control, Alpha Lipoic Acid (Archived)</u>
- <sup>7</sup> <u>J Anim Sci. 2013 Jan;91(1):268-75</u>