

A Lifetime of Nutritional Support with Antioxidants

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Antioxidants are particularly known for their role in the control of free radicals in the body. Free radicals damage cellular DNA, RNA and fatty cell membranes. This damage is linked to aging and the development of a variety of inflammatory and degenerative diseases.

“Antioxidants help maintain oxidative balance in the body.”

Free Radicals are a Fact of Life

A free radical is a molecule that contains an unpaired electron. This property renders it dangerous, as it reacts with substrate molecules such as cellular lipids or DNA to obtain the missing electron to stabilize itself.

The presence of free radicals in the body is, however, a fact of life. During normal metabolic reactions and aerobic cellular respiration, free radicals are actually produced, originating from the incomplete consumption of oxygen. They are produced during normal immune function and may also be induced by external environmental factors (Figure 1). Antioxidants help maintain oxidative balance in the body.

What are Antioxidants?

Antioxidants are any substance that, when present at low concentrations compared with the oxidizable substrate (e.g., DNA), significantly delay or inhibit the oxidation of that substrate, therefore helping to protect DNA and lipids from free radical damage. Nutritional and cellular antioxidant systems are in place to manage free radicals and reduce their impact on otherwise healthy cells.

The Antioxidant Nutrients

All the antioxidant systems in the body are dependent upon a dietary supply of key nutrients such as vitamins, carotenoids and trace minerals. The main dietary exogenous antioxidants are carotenoids, such as beta-carotene, vitamin E, vitamin C and the trace element selenium. There are also other antioxidants such as the flavonoids and polyphenols that are naturally found in certain fruits, vegetables and their extracts; one example being tea-polyphenols. These indicate the supportive nature of other dietary antioxidants to the overall mix. They are more than likely to work synergistically alongside the main dietary antioxidant vitamins.

Studies do exist in dogs and cats that indicate a benefit and/or reduction in markers of oxidative load from the provision of dietary supplemental antioxidants. General support from antioxidants in terms of changes in the markers of oxidative status and benefits in general well-being, or life span have

been reported. Evidence exists linking antioxidant intake to many other individual systems of the animal's body.

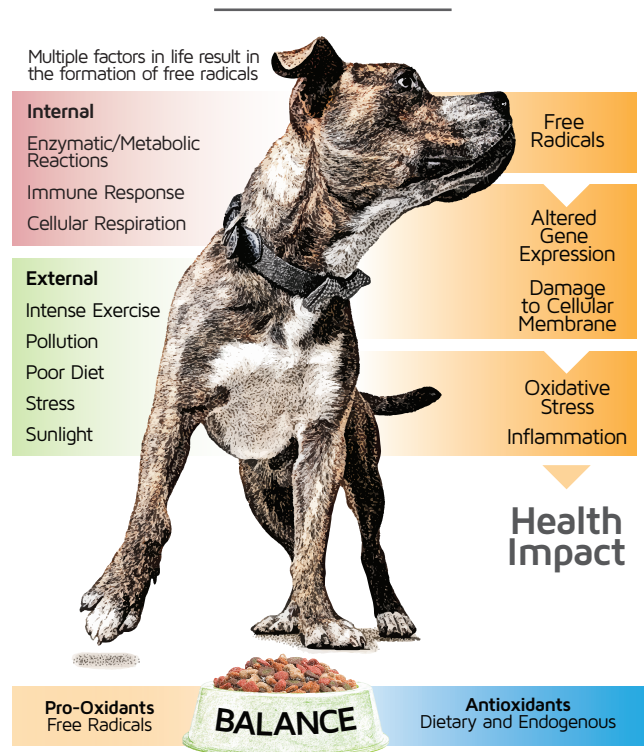


Figure adapted from Marcadenti, et al., 2015.

Figure 1: Overview of the formation of free radicals in the body and the development of oxidative stress. The correct balance between pro-oxidants and antioxidants helps to control the overall damaging impact of free radicals in the body.

Compelled to Use Antioxidants in Companion Animal Products

Compelling data exists to support the addition of dietary antioxidants to companion animal products. Fortunately, pet owners and consumers believe in the benefits of antioxidants, compelling many to purchase products containing antioxidants, or making claims around them. Optimum Vitamin Nutrition guidelines by DSM Nutritional Products reflect values for the antioxidant vitamins E, C and beta-carotene, aimed at benefiting the long-term health and well-being of pets and for the support of functional claims.

HORN Animal Wellness is a proud distributor of DSM Nutritional Products. To learn more about Optimum Vitamin Nutrition, please email animalwellness@ethorn.com.



Jeff Alix is the Global Pet Nutrition Marketing Manager for DSM Nutritional Products. His career in the pet food industry spans more than 33 years with an array of functional disciplines including ingredient and food science, flavor chemistry, sales and marketing. He was a research scientist at Nestle Petcare; technical support and product development at Bioproducts; and held sales, business development and marketing positions for DSM Nutritional Products.