

## Free Radical Damage and Its Effects on Your Senior Dog

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As your dog gets older, free radicals speed up aging and contribute to conditions like cancer, arthritis, and cardiovascular disease. Free radical damage can be offset by components called antioxidants.

Free radicals are molecules or atoms which are missing an electron. Electrons are normally paired and spin in opposite directions to balance each other. A free radical is created when one electron in a pair is dislodged. The molecule with an unpaired electron (the free radical) now grabs an electron away from a nearby molecule, to stabilize itself. A new free radical is created, which then seeks to stabilize itself. As this process continues within a cell, it causes damaging oxidation. While normal cellular processes lead to free radical damage, it is also caused by environmental toxins like air pollution. As your dog ages, the cumulative effect of free radical damage can be very detrimental.

Oxidative stress, or the increase in free radicals, can affect multiple organ systems, including the heart, eye, liver, kidney, and brain. Fortunately, antioxidants can support the health of these organs.

Antioxidants are compounds that give up one of their electrons to neutralize a free radical. Although the body produces some antioxidants, other important sources include vegetables and fruit, whole grains, nuts and seeds. It is important to provide antioxidants from multiple sources, including [vitamins](#) such as A, C, and E, minerals such as selenium and zinc, bioflavonoids such as rutin, and carotenoids such as lycopene.