



## Alternative Veterinary Services, LLC

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### What are vitamins and minerals?

A natural vitamin consists of a complex of organic compounds including enzymes, coenzymes, antioxidants, and other co-factors. Vitamins are needed in small amounts to sustain life and metabolic processes (growth, maintenance, and health). Most vitamins need to come from food (plants and animals) because the human body either does not produce them or produces very little. <sup>1</sup> For example, humans (like guinea pigs) are not capable of producing vitamin C and so must get it from food. Dogs, on the other hand, can produce all the vitamin C they need. There currently are a total of thirteen known vitamins and they are classified as fat soluble or water soluble.

It was discovered in the late 1700s and 1800s that certain vitamin deficiencies caused diseases like scurvy (vitamin C deficiency), rickets (vitamin D deficiency) and beri beri (vitamin B1 deficiency). The term “vitamin” was first introduced by Dr. Casimir Funk in 1912. <sup>2</sup>

Minerals are inorganic elements that our bodies need and are essential for health. They occur naturally in soil and water, and are absorbed by plants or eaten by animals. Some examples of essential minerals are calcium, magnesium, iron, zinc, sodium, and potassium. <sup>3, 4</sup>

### What are antioxidants?

Antioxidants are portions of vitamin complexes that help to prevent and repair cell damage in the body. The human body creates “free radicals” as result of many biological processes (e.g., turning food into energy, when exercising, responding to stress, etc.). Free radicals are unstable and “steal” electrons from normal cells, leaving the cells damaged. Over time, this can result in chronic disease. Antioxidants are free radical “fighters” and donate electrons to the free radicals, thereby neutralizing them, without becoming damaged themselves. Vegetables and fruits are the best sources of antioxidants. <sup>5</sup>

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<sup>1</sup> *The Real Truth about Vitamins & Anti-oxidants*, DeCava, Judith A., CNC, LNC, 2<sup>nd</sup> edition, 2006, Selene River Press

<sup>2</sup> *The Discovery of the Vitamins*, Semba, Richard D., Johns Hopkins University School of Medicine, 2012, Hans Huber Publishers (or link: <https://pubmed.ncbi.nlm.nih.gov/23798048/>)

<sup>3</sup> <https://www.nccih.nih.gov/health/vitamins-and-minerals>

<sup>4</sup> <https://www.hsph.harvard.edu/nutritionsource/vitamins/>

<sup>5</sup> <https://www.nccih.nih.gov/health/antioxidants-in-depth>