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ASCORBIC ACID

In recent years, research has increasingly focused on this latter function, due to suggestions that “oxidative stress” may be a causal factor in the etiology of a variety of important aging diseases such as cancer, cardiovascular disease, and cataract formation. In addition to participating in the formation of collagen, ascorbic acid increases the absorption of inorganic iron, plays an important role in the metabolism of folic acid and some amino acids and hormones, and is an antioxidant.

Ascorbic acid is technically a sugar acid, discovered early in the twentieth century, with L-ascorbic acid being the physiologically essential vitamin C. Vitamin C (ascorbic acid (AA)) is very popular for its antioxidant properties. Consequently, many other important aspects of this multifaceted molecule are often underestimated or even ignored.

Ascorbic acid differs from the other vitamins in that it is required in the diet by only a few species of animals-man, other primates, the guinea pig, an Indian fruit-eating bat, and the red-vented bulbul and some related species of Passeriform birds.4'9 Other species of animals synthesize ascorbic acid (Pauling, 1970).

The highest concentrations of ascorbate in the human body are found in the brain and in neuroendocrine tissues such as adrenal, although the brain is the most difficult organ to deplete of ascorbate. Combined with regional asymmetry in ascorbate distribution within different brain areas, these facts suggest an important role for ascorbate in the brain.

Let us take a look at the impact of ascorbic acid on the human health at some points.

1. **Effects of ascorbic acid on gene expression**

According to the book «Ascorbic acid in the 21st century – more than a simple antioxidant» ascorbate differentially regulates elastin and collagen biosynthesis in vascular smooth muscle cells at the pre-translational level.

2. **Effects of dietary ascorbic acid on in vivo DNA damage.**

Anderson et al. (1997) reported no significant benefit of AA (60 mg–6 g/day) supplementation over 2 weeks using chromosomal aberrations or the comet assay as endpoint markers. However, a statistically significant increase in bleomycin-induced aberrations was found after vitamin C supplementation.

3. Effect on the fat.

Although vitamin C alone does not burn fat, adequate intake can support weight loss. Vitamin C is essential for the synthesis of the molecule L-carnitine, which facilitates the transport of fatty acids into the mitochondria of cells, where fat can be used as an energy source. Thus, adequate intake of vitamin C may promote more efficient utilization of fat as energy, which is beneficial in weight loss (Griffiths, 2001).

To take enough of the vitamin humans should take products full of this vitamin. The best sources of vitamin C are fruits and vegetables, berries, juices such as rose hips, paprika, black and red currants, sea buckthorn berries, cloudberries, strawberries, kiwi, rutabaga, citrus fruits (e.g., pomelo, orange), cabbage (e.g., leafy cabbage, broccoli, cauliflower, kohlrabi), spinach, peach, nectarine, gooseberries.

Vitamin C (ascorbic acid) plays a significant role in the development and functioning of various body systems, including the skin, gums, capillaries, teeth and bones. It is also essential for normal wound healing and increasing the body's resistance to infectious diseases (Naidu, 2003). In addition, vitamin C helps protect the body against stress and spring fatigue, and increases the absorption of non-heme iron derived from plant sources. Thus, its deficiency can lead to weakened immunity and disruption of the normal functioning of various organs and systems.

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