

# Vitamin C in the treatment and/or prevention of obesity

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Obesity has emerged as one of the major health threats worldwide. Moreover, an excessive body fat accumulation, which defines this disease, could lead to several associated clinical manifestations such as cardiovascular events, type 2 diabetes, inflammation, and some types of cancer. The appearance of these co-morbidities has been often related to an unbalanced oxidative stress.

Therefore, antioxidant-based treatments could be considered as interesting approaches to possibly counteract obesity fat accumulation complications. In this context, it has been observed that vitamin C intake (ascorbic acid) is negatively associated with the occurrence of several conditions such as hypertension, gallbladder disease, stroke, cancers, and atherosclerosis, and also with the onset of obesity in humans and animals. Among the possible beneficial effects of ascorbic acid on obesity-related mechanisms, it has been suggested that this vitamin may: (a) modulate adipocyte lipolysis; (b) regulate the glucocorticoid release from adrenal glands; (c) inhibit glucose metabolism and leptin secretion on isolated adipocytes; (d) lead to an improvement in hyperglycemia and decrease glycosylation in obese-diabetic models; and (e) reduce the inflammatory response.

Possibly, all these features could be related with the outstanding antioxidant characteristics of this vitamin. Thus, the present article reviews the up-to-date evidence regarding in vitro and in vivo effects of vitamin C in obesity and its co-morbidities. © 2014, Center for Academic Publications Japan. All Rights Reserved.

Antioxidant

Ascorbic acid

Body weight

Oxidative stress

ascorbic acid

glucocorticoid

leptin

antioxidant

ascorbic acid

glucocorticoid

vitamin

atherosclerosis

cerebrovascular accident

gallbladder disease

glucose metabolism

glycosylation

human

hyperglycemia

hypertension

hypoxia

inflammation

lipid storage

lipolysis

non insulin dependent diabetes mellitus

obesity

oxidative stress

Review

vitamin intake

adipocyte

adrenal gland

animal

drug effects

metabolism

obesity

Animalia

Adipocytes

Adrenal Glands

Animals

Antioxidants

Ascorbic Acid

Glucocorticoids

Humans

Obesity

Oxidative Stress

Vitamins