

## What is the optimal intake of vitamin C?

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### Abstract

Vitamin C is an essential nutrient which humans can't produce. Vitamin C has many important functions in the body, such as immune-system stimulation, growth and repair of tissue, sustain cardiovascular and bone health and protecting cells from oxidative stress by neutralizing harmful free radicals.

To ensure adequate vitamin C levels intake recommendations are set.

A minimum of 10 mg/ day is needed to prevent scurvy, the clinical manifestation of vitamin C deficiency. Some countries like UK and Australia and the FAO/WHO\* refer to this and set recommendations of 40–45 mg/day including a safety margin.

Later findings showed that vitamin C is essential for further functions, especially for the immune system. In addition, kinetic studies in healthy men showed that the saturation of neutrophil leukocytes and plasma needs higher vitamin C intakes. Based on the content parameters of plasma level, neutrophil saturation, and minimal urinary loss, the intake recommendations were increased in some countries. The IoM (US) increased the vitamin C recommendations (RDA) to 90 mg and 75 mg/ day and EFSA to 110 mg and 95 mg/ day for men and women, respectively.

It's recommended to define intake recommendations based on functional parameters because vitamin C levels should be at a level that assures optimal functioning of all processes requiring vitamin C. Lack of overt deficiency does not necessarily indicate adequacy of intake. Up to now no sufficient evidence exists for a functional parameter.

Recent science from an in-vitro and a human intervention study in healthy men investigated the effects of vitamin C on the leukocyte function. The results support neutrophil motility as a suitable functional parameter. The observed effects indicate to increase the intake recommendation to 200 mg/ day for healthy persons. This is in line with established knowledge from pharmacokinetic, observational, and intervention studies. Plasma vitamin C saturation occurs at a daily intake of 200 mg/ day and a recent review showed that supplementation of at least 200 mg/ day reduced the duration of common cold significantly in children as well as in adults. Additionally, it could be shown that incidences of cardiovascular disease were lowest with vitamin C intakes of at least 200 mg/ day.

These findings indicate that an increase of current intake recommendations to 200 mg/ day would be beneficial for the function of the immune system, thus for human health.

### Conflict of Interest

I am consulting ingredient, food and supplement companies