

# Vitamin C

L-ascorbic acid, also known as vitamin C, is water soluble and strongly reducing. Humans (as well as other primates and guinea pigs) cannot synthesize it, since they lack L-gulonolactone oxidase activity, therefore it must be obtained from food. L-ascorbate is involved in the hydroxylation of collagen, the synthesis of carnitine, the metabolism of tyrosine, acts as an antioxidant, supports the immune system, iron absorption, has an effect on beta-oxidation of fatty acids, increases the activity of microsomal enzymes, accelerates the detoxification of xenobiotics. Reducing the effects of ascorbic acid are due to its easy oxidation to dehydroascorbate:

## Source

Fruits, vegetables (including potatoes), liver. Average losses in cooked foods are 30%. The daily recommended dose for adults: 100 mg. When the determination is considered, in addition to prevention of deficiency symptoms, as well as strengthening the immune system and prevention of degenerative diseases. Increased need for considerable physical exertion, psychological stress, alcohol abuse and drugs, some diseases (e.g. diabetes, renal insufficiency, infection). Intake of 150 mg/day is recommended for smokers.

## Deficit

Ascorbic acid deficiency - scurvy (scurvy) - now appears only in extreme conditions. With a slight lack of preclinical manifestations we see in our country (fatigue, prolonged convalescence, impaired wound healing and decreased resistance to infection).

- Laboratory evaluation of the situation: the level of vitamin C in plasma. Clinical symptoms appear with values  $\leq 10 \mu\text{mol/L}$ , an indicator of low intake of vitamin C are considered to values below  $37 \mu\text{mol/L}$ . In terms of prevention of atherosclerosis and tumors are regarded as desirable values  $\geq 50 \mu\text{mol/L}$ .

## Surplus

Signs of excess food are not. Approximately 1% of the unused vitamin C is converted to oxalate, the risk of urinary calculi, but low in healthy subjects. The care the daily intake should not exceed 1000 mg. Very high doses (5 g) can cause diarrhea. At high ascorbate intake (about grams per day), most of the substance excreted in the urine. It can then interfere with many clinical biochemistry determinations by routine chemical urinalysis.

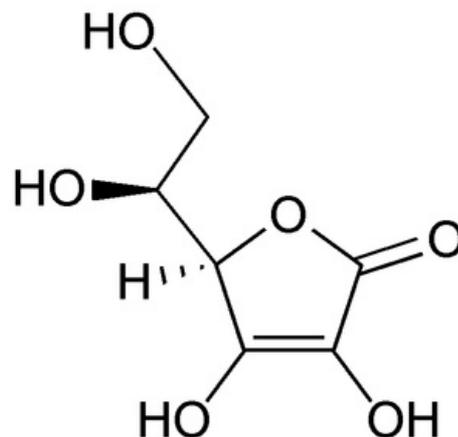
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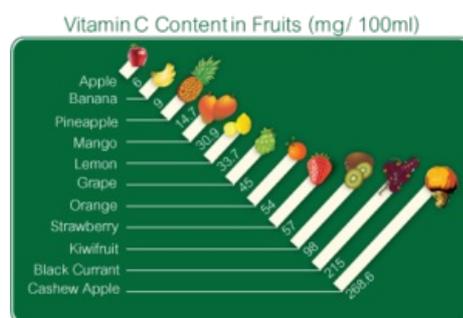
- Fat Soluble Vitamins
- Water Soluble Vitamins

### Bibliography

- BENCKO, Vladimir, et al. *Hygiene and epidemiology: selected chapters*. 2. edition. Prague. 2008. ISBN 80-246-0793-X.



Vitamin C structure



Vitamin C in fruits



Scurvy