

NUTRIENTS

Vitamins: Vitamin C

What is it?

Vitamin C, also known as ascorbic acid, is a water-soluble vitamin, which is essential for normal functioning of the body. Unlike most mammals, humans do not have the ability to make their own vitamin C and, therefore, must obtain it through their diet.

Functions - what does it do?

Collagen. Vitamin C is required for the production of collagen, an important structural component of blood vessels, tendons, ligaments, and bone. Deficiency, therefore, leads to poor healing of wounds, fractures, pinpoint bleeding, and bleeding gums.

Antioxidant. Vitamin C is also a highly effective antioxidant. Antioxidants such as vitamin C act to protect your cells against the effects of free radicals, which are potentially damaging compounds produced as by-products of normal metabolism, as well as through exposure to toxins and pollutants (e.g. smoking). Free radicals can cause cell damage that may contribute to the development of cardiovascular disease and cancers, and other diseases.

Vitamin C may also be able to reactivate other antioxidants such as vitamin E so that it can be reused.

Enhanced iron absorption. Vitamin C enhances iron absorption from non-haeme sources, which is found primarily in fruits, vegetables, dried beans, nuts and grain products. Therefore, increasing vitamin C-rich foods can be beneficial to those with poor iron stores.

Immune system. Vitamin C is vital for the function of the immune system and promotes resistance to infection.

Requirements - How much do we need?

Life-Stage (years)	Recommended Dietary Allowance* (mg/day)	
	Males	Females
0 - 0.5	40#	40#
0 - 0.5 (0 - 6 months)	50#	50#
0.5 - 1 (7 - 12 months)	15	15
4 - 8	25	25
9 - 13	45	45
14 - 18	75	65
Ages 19+	90	90
Life-Stage (years)	Pregnancy	Lactation
18 and younger	80	115

19 - 30	85	120
Ages 31 - 50	85	120

*The Recommended Dietary Allowance (RDA) is the average daily dietary intake level that is sufficient to meet the nutrient requirements of nearly all (97-98%) healthy individuals in each life-stage and gender group.

#Adequate Intakes (AI) are used as no RDA is established. The AI is a recommended daily intake level based on observed or experimentally determined approximations of nutrient intake by a group of healthy people who are assumed to be maintaining an adequate nutritional state.

Sources - Where is it found?

Food Groups	Food Sources	Nutrient Density		
		High	Medium	Low
Fruit	Citrus fruit, Cantaloupe, Guava, Pineapple, Strawberries			
Vegetables	Tomatoes, Potatoes, Cauliflower, Green vegetables			
Bread, cereals, rice and pasta	Some fortified breakfast cereals			
Meat, poultry, fish, dry beans, eggs, and nuts				
Milk, yoghurt and cheese				
Fats, oils, and sweets				

Vitamin C is very easily lost in processing and cooking, because it is highly soluble (mixable) and is often discarded in cooking water. It is easily destroyed by air, especially in the presence of heat and an alkaline solution.

Deficiency - When you have too little

Scurvy. Severe deficiency of vitamin C causes scurvy. Symptoms of scurvy include bleeding and bruising easily, hair and tooth loss, joint pain and swelling. These symptoms are due to the loss of the cementing action of collagen resulting in weakening of blood vessels, connective tissue, and bone.

Toxicity - When you have too much

High doses of vitamin C can lead to gastrointestinal disturbances including diarrhoea, and iron toxicity, caused by iron overabsorption.

Life-Stage (years)	Upper Limit+ (mg/day)	
	Males	Females
0 - 0.5 (0 - 6 months)	ND	ND
0.5 - 1 (7 - 12 months)	ND	ND
1 - 3	400	400
4 - 8	650	650
9 - 13	1200	1200
14 - 18	1800	1800
Ages 19+	2000	2000
Life-Stage (years)	Pregnancy	Lactation

18 and younger	1800	1800
19 - 30	2000	2000
Ages 31 - 50	2000	2000

+Upper Limits (UL) = The maximum level of daily nutrient intake that is likely to pose no risk of adverse effects. Unless otherwise specified, the UL represents total intake from food, water, and supplements.

ND = Not determinable due to lack of data of adverse effects in this age group and concern with regard to lack of ability to handle excess amounts. Source of intake should be from food only to prevent high levels of intake.

For further, personalized and more detailed information, please contact a dietitian registered with the Health Professions Council of South Africa. References from the scientific literature used to compile this document are available on request.

Human Nutrition | Menslike Voeding

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