



VITAMIN C A DAILY HEALTH ESSENTIAL

What is vitamin C?

Vitamin C is our body's primary water-soluble antioxidant, which helps to promote the body's overall functioning.

Main functions

Vitamin C is needed for the growth and repair of tissues in all parts of our bodies. We need it to form collagen, which is an important protein used to make skin, scar tissue, tendons, ligaments and blood vessels. We also need vitamin C for the absorption of iron from plant foods such as cereals, bread and pasta.

In addition, Vitamin C is essential for the healing of wounds, as well as for the repair and maintenance of cartilage, bones and teeth.

Antioxidant role

Vitamin C is an antioxidant. Antioxidants are nutrients that block some of the potentially damaging free radicals, which are natural by-products that result when our bodies transform food into energy. Free radicals are unstable oxygen molecules which can damage cells. The build-up of these by-products over time can contribute to the development of various health conditions, such as cancer and heart disease, and a host of inflammatory conditions like arthritis. So vitamin C has an important role to play in helping to protect us against these conditions.¹

Antioxidants also help reduce the damage to our bodies caused by toxic chemicals and pollutants such as cigarette smoke.

"Vitamin C is one of the vitamins that are essential in helping to neutralise potentially damaging free radicals in the body," notes HSIS spokesperson Pamela Mason. "We know that antioxidants perform a general preventative role by maintaining good health and there are numerous studies supporting this contention," she continues. "They are particularly important for the protection of cell membranes, as well as maintaining healthy skin, heart and circulation, nerves, muscles and red blood cells."

Other functions

Vitamin C is a natural antihistamine and blocks the effect of inflammatory substances produced by the body in response to numerous allergies. It has also been shown to

¹ From Reader's Digest Guide to Vitamins, Minerals and Supplements published in 2000.

fight severe respiratory infections in the elderly and to help overall respiratory health in people with asthma.^{2& 3}

For people with type-1 diabetes, which, as a disease status interferes with the transport of vitamin C into cells, high doses of vitamin C may prevent complications of the disease, such as eye problems and high levels of cholesterol.

If your diet constantly lacks vitamin C then eventually you may experience dry and splitting hair; gingivitis (inflammation of the gums) and bleeding gums; rough, dry, scaly skin; decreased wound-healing rate; easy bruising; nosebleeds; weakened enamel of the teeth; swollen and painful joints; anaemia; decreased ability to ward off infection; and, possibly, weight gain because of slowed metabolic rate and energy expenditure.

The most severe form of vitamin C deficiency is known as scurvy, which can be fatal. This was common among sailors at one time who had little fresh food on long journeys but is thankfully now rare and usually only affects older, malnourished adults.

Proven efficacy

Vitamin C has been clinically proven to offer a variety of significant health benefits including:

- Cancer. Vitamin C accumulates in the central nervous system tissue where it protects against lipid peroxidation and plays a role in neurotransmitter synthesis, demonstrating anti-tumoral activity. It also assists in an anti-stress function.⁴
- Stomach cancer. Yale School of Medicine researchers published a report in October 2001 that found that regular use of vitamin C supplements was associated with a 40 per cent reduction in the risk of cancer in the middle and lower parts of the stomach.⁵
- Blood lead levels. Men who ingest a gram of vitamin C per day lowered their blood levels of lead within a week. More modest effects were also noted at 200mg doses.⁶
- Strokes and vitamin C. The results of a study of 2,000 men and women, monitored over a 20-year period, suggested that people with a high vitamin C intake greatly reduce the risk of having a stroke.⁷
- Vascular dementia. The results of a long-term study of 3,385 men have shown that those who take vitamin C and E supplements at least once a week were up to 89 per cent less likely than those not taking supplements to develop vascular dementia: this is a relatively frequent form of mental

² Tecklenburg SL et al; reference on file

³ Respir Med 2007; 101:1770-8.

⁴ Documentation in Professor A Fidanza's book titled - LE VITAMINE; 1997

⁵ Yale School of Medicine; October 2001; reference on file

⁶ A 1998 abstract prepared for the American College of Nutrition by Earl C. Dawson of the University of Texas Medical Branch

⁷ Conducted by Tetsuji Yokoyama of Tokyo Medical and Dental University's Research Institute and published in STROKE 2000; 31:2287-94

dysfunction in which parts of the brain are damaged because of problems with blood flow.⁸

- Cataracts. A study published in March 2000 found that vitamin C might provide protection against the development of cataracts, one of the leading causes of blindness amongst adults. It concluded that each 1mg increase in blood vitamin C levels was associated with 26 per cent lower prevalence of reporting a cataract.⁹
- Colds and influenza. A review of 30 major trials found that patients who took vitamin C at the first signs of suffering from a cold recovered more quickly (on average about half a day faster).¹⁰ In addition, the research showed that they experienced milder symptoms. A study of 622 people found that those who took 1,500mg on the first day of a cold and 1,000mg on each of the following four days spent 25 per cent fewer days feeling ill than those who were given placebo.¹¹

VITAMIN C - Where it comes from

Vitamin C is not produced by our bodies, so we need to get it from our food. And because it is water soluble, our bodies can't store it to any great extent, so we need to make sure we get enough vitamin C every day to replace it as it is used.

The main sources of vitamin C are fruit and vegetables. Vitamin C is sensitive to light, air and heat, so in order to keep the maximum vitamin C content it is best to eat fruit and vegetables raw, or lightly cooked, as soon as possible after buying them. Don't discount frozen vegetables: the Food Standards Agency (FSA) stated recently that frozen broccoli and peas have more vitamin C than some fresh vegetables.

However, there is plenty of evidence to show that many people are not getting the vitamins and minerals they need. For example, the latest research data by HSIS reveals that our daily intake of the vital nutrients from fresh fruit and vegetables needed to keep us healthy is less than satisfactory. It shows that three out of four young mothers say they never make an evening meal from scratch. This is in stark contrast with previous generations, with 87% of modern mothers saying their mothers used to make an evening meal from scratch at least five times a week.¹²

In the same HSIS survey, 57% of respondents stated that they do not serve fresh vegetables with the evening meal at least four times a week and nearly half of mums do not include fruit in their children's packed lunch. In fact, the UK population in general do not eat enough fruit or vegetables.¹³ The UK government's most recent National Diet and Nutrition Survey of British adults (2003) showed that, overall, men consumed just 2.4 servings a day of fruit and vegetables while women consumed 2.9

⁸ Researched by Dr. Kamal H. Masaki of the Kuskini Medical Centre in Honolulu and published in March 2000 as: Masaki K et al. NEUROLOGY 2000;54:1265-72

⁹ Simon J, Hudes E - Serum ascorbic acid and other correlates of self-reported cataract among older Americans; Journal of Clin Epidemiol 1999, 52:1207-11.

¹⁰ DOUGLAS RM et al. Vitamin C for preventing and treating the common cold. Cochrane Database Syst Review 2000 (2)CD000980.

¹¹ ANDERSON TW et al. Winter illness and vitamin C: the effect of relatively low doses. Canadian Medical Association Journal 1975;112:823-6.

¹² Omnibus research was conducted by the GfK NOP on behalf of HSIS in February 2006. A total of 1013 women aged 20 to 65 took part.

¹³ <http://www.food.gov.uk/news/newsarchive/2007/jul/lowincome>.

portions. The situation in 19 to 24-year-olds was particularly worrying, with 0% of men and 4% of women in this age group achieving the five-a-day target¹⁴.

As so many people do not manage to eat the recommended amount of fruit and vegetables, vitamin supplements have a vital role to play in ensuring that they get enough vitamin C on a regular basis.

You can purchase either natural or synthetic vitamin C, also called ascorbic acid, in a wide variety of forms, including tablets, capsules and chewables, as well as powdered crystalline, effervescent and liquid forms. Vitamin C can be purchased in dosages ranging from 25mg to 1,000mg.

Doses

The EU's recommended daily allowance (RDA – the amount which is sufficient for most of us to maintain health) for vitamin C is 60mg. The safe upper level (SUL) for long-term supplementation is 1000mg (as determined by the expert group on vitamins and minerals - EVM).

Patients taking regular medications should check with their GP or doctor before taking vitamin supplements.

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¹⁴ NDNS; British adults aged 19-64, 2003.