

Why your body needs **VITAMIN C**



FROM FIGHTING COLDS TO CANCER, THE SPOTLIGHT HAS SHONE ON VITAMIN C'S POTENTIAL HEALTH POWERS FOR OVER A CENTURY. BUT HOW EXACTLY DOES IT WORK AND WHICH FOODS PROVIDE THE RICHEST SOURCES? **ANNA-MARIE MULDOWNEY** FINDS OUT

Since its discovery 100 years ago, vitamin C has provoked huge interest in its protective and healing properties. Without it in our daily lives, our health would take a serious nose-dive, and it is the one essential nutrient most of us dose up on to stave off the common cold and flu.

Our Experts



Dr Carrie Ruxton is a dietitian at the Health Supplements Information Service (hsis.org)



Charlotte Stirling-Reed is a nutrition consultant, and runs SR Nutrition (srnutrition.co.uk)



Dr Michelle Braude is founder of nutrition consultancy service The Food Effect (thefoodeffect.co.uk)

THE FACTS

Also known as ascorbic acid, vitamin C is involved in the production of collagen, crucial for the maintenance of healthy connective tissue. It is a unique nutrient in the healing process and contributes to healthy blood vessels, bone and neurological function as well as supporting the immune system. In the gut, vitamin C increases the amount of iron we absorb.

An antioxidant, vitamin C also helps to protect cells from damage by free radicals, which form naturally within the body, and increase our risk of chronic diseases, such as heart disease, arthritis and cancer. So how do we ensure we're getting enough of this wonder stuff and what happens if we don't?

"Vitamin C is a water-soluble vitamin, so we don't store it in the body," says dietitian Dr Carrie Ruxton. "This means we need to take in vitamin C daily to top up our levels. Symptoms of deficiency include poor wound healing, mouth ulcers and bleeding gums, dry skin, nosebleeds and increased infections."

Signs can also include muscle and joint pain plus weakness and fatigue. While scurvy these days is rare because diet has improved, it can still occur. Groups at particular risk include those who don't eat any fruit or vegetables, the isolated elderly, and smokers or those

with an alcohol or drug dependency whose habits can deplete levels.

According to the Department of Health, adults need 40mg daily (for children, it's 30mg) to remain healthy, which you should be able to achieve by eating a varied and balanced diet.

Vitamin C is found in a wide variety of fruit and vegetables, with good sources including citrus fruits, berries, pineapple, papaya, mango, kiwis, peppers, broccoli, cauliflower, brussels sprouts, kale, spinach, tomatoes and potatoes.

GOOD SOURCE

Despite its reputation for being the vitamin C king, the 69.7mg that a medium orange provides is actually less than many of its counterparts, but still perfectly adequate to achieve your recommended daily intake.

Nutrition consultant Charlotte Stirling-Reed, who runs SR Nutrition, says: "Just one kiwi fruit or a single orange should be enough to get you well on your way to meeting your daily recommended intake. Therefore, if you're eating plenty of fruits and vegetables and aiming for your five or more a day, it's incredibly unlikely you'd be deficient in vitamin C."

For the optimum boost, raw is best or lightly cooked, explains Charlotte. "High temperatures can destroy vitamin C quite easily, so it's a good idea to avoid

overcooking vegetables and to steam them where possible."

And while there's nothing wrong with trying the latest vitamin C-rich superfood to add variety, they can work out as an unnecessary expense.

"If you're eating a variety of foods and getting your portions of fruit and vegetables, don't worry too much about expensive products as a way of getting your vitamin C intake," advises Charlotte. "Simply start the morning with a bowlful of oats, yoghurt and berries - or porridge and berries for when it's cold. Add some vegetables and salad at lunch and have a small glass of orange juice alongside your meal in the evening. It's that simple."

TOP IT UP

If you like to top up on your vitamin C by popping a supplement, official government advice is to not take too much as this could be harmful.

Signs of excessive vitamin C intake can include stomach pain, diarrhea and flatulence. A study also found a link between taking excessive amounts and kidney stones. Dr Carrie Ruxton explains: "If you have too much vitamin C, painful kidney stones can develop. So, unless you have a cold, stick to the European recommendation of 80mg which you will find in over-the-counter vitamin supplements. Eating too much fruit, a natural source of vitamin C, isn't linked to kidney stones.

"If you are fighting a cold, it would be hard to achieve the therapeutic dose of 500-1000mg of vitamin C from the diet, so it's a good idea to take a supplement, combined with zinc for effectiveness. Stop these high doses after 10 days."

Despite extensive research, it has not been demonstrated that vitamin C reduces the number of colds you catch, but it may reduce the severity and duration of illness. It has also been shown to halve the frequency of colds in studies examining people under considerable short-term physical stress.

Dr Michelle Braude, founder of The Food Effect (thefoodeffect.co.uk), says vitamin C plays a vital role in enhancing the immune system and should be topped up during periods of infection. "Vitamin C has been shown to enhance white blood cell function and activity, as well as increase antibody levels and responses, which in turn play a key role in enhancing immune systems.

"The urinary excretion of vitamin C is increased during times of physiological, emotional, psychological or chemical

stress, signifying an increased need for vitamin C during such times. I advise extra vitamin C in the form of supplementation or increased intake of vitamin C-rich foods to keep the immune system working properly during times of stress."

THE WHOLE STORY?

From the common cold to cardio health, there is still work to be done in fully appreciating how much Vitamin C has to offer in the treatment of illness, as the latest cancer research suggests.

The use of vitamin C in cancer therapy has a patchy history, but the results of a study announced last month suggest that the way the vitamin has been used for this purpose guarantees failure.

Scientists at the University of Iowa (UoI) in the US believe that the enormity of its potential may lie in the way and how much vitamin C is given; that in very high doses and administered intravenously, vitamin C kills cancer cells while leaving normal cells unharmed.

Most therapies to date involve taking the nutrient orally, but the UoI study has shown that bypassing the gut and delivering vitamin C directly into the blood can create a concentration up to 500 times higher - crucial to its ability to blitz cancer cells.

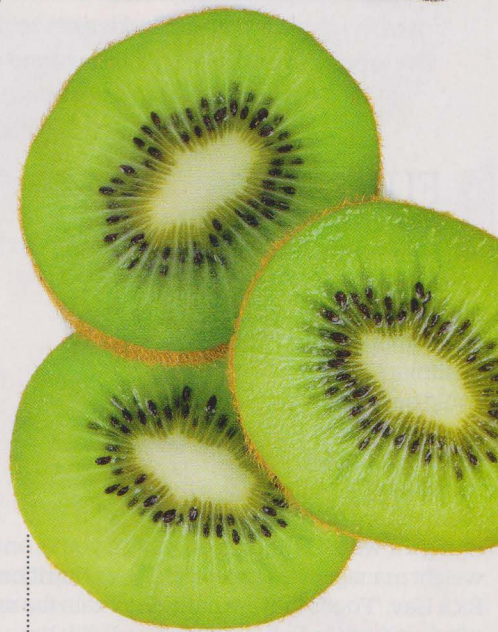
NEW BEGINNINGS

Garry Buettner, professor of radiation oncology at the UoI, tells *Healthy Diet* that such a high concentration is not possible with vitamin C supplements and that administering via IV causes a key reaction: "Each molecule that oxidises produces a molecule of hydrogen peroxide. We think it is this hydrogen peroxide that has the potential to improve some cancer treatments. Normal tissue can handle this extra hydrogen peroxide without damage."

The approach is now being tested in clinical trials for pancreatic and brain cancer, combined with traditional

Trolley Dash

- **Boots Vitamin C 200mg, 99p, available nationwide**
- **Vitabiotics Ultra Vitamin C, £5.95, ultravits.com**
- **Holland & Barrett Effervescent Vitamin C and Zinc, £3.39, Holland & Barrett**



chemotherapy and radiation methods. The results are awaited with huge anticipation. But one thing's for sure; a century on, the medical and scientific interest in vitamin C shows no signs of abating.

5 best vitamin C-rich foods

- 1 **Red bell pepper 190mg**
- 2 **Kiwi 137mg**
- 3 **Broccoli 132mg**
- 4 **Papaya 88.3mg**
- 5 **Kale 80.4mg**

