

Increase in RDA for vitamin C could help reduce heart disease, stroke, cancer

July 16 2012



Oranges and kiwi fruit are both rich sources of Vitamin C. (Photo by Bob Nichols, courtesy of U.S. Department of Agriculture)

The recommended dietary allowance, or RDA, of vitamin C is less than half what it should be, scientists argue in a recent report, because medical experts insist on evaluating this natural, but critical nutrient in the same way they do pharmaceutical drugs and reach faulty conclusions as a result.

The researchers, in *Critical Reviews in Food Science and Nutrition*, say there's compelling evidence that the RDA of vitamin C should be raised to 200 milligrams per day for [adults](#), up from its current levels in the [United States](#) of 75 milligrams for women and 90 for men.

Rather than just prevent the [vitamin C deficiency](#) disease of scurvy, they say, it's appropriate to seek optimum levels that will saturate cells and tissues, pose no risk, and may have significant effects on [public health](#) at almost no expense – about a penny a day if taken as a dietary supplement.

"It's time to bring some common sense to this issue, look at the totality of the scientific evidence, and go beyond some clinical trials that are inherently flawed," said Balz Frei, professor and director of the Linus Pauling Institute at Oregon State University, and one of the world's leading experts on the role of vitamin C in optimum health.

"Significant numbers of people in the U.S. and around the world are deficient in vitamin C, and there's growing evidence that more of this vitamin could help prevent chronic disease," Frei said. "The way clinical researchers study micronutrients right now, with the same type of so-called 'phase three randomized placebo-controlled trials' used to test [pharmaceutical drugs](#), almost ensures they will find no beneficial effect. We need to get past that."

Unlike testing the safety or function of a prescription drug, the researchers said, such trials are ill suited to demonstrate the disease prevention capabilities of substances that are already present in the human body and required for normal metabolism. Some benefits of micronutrients in lowering chronic disease risk also show up only after many years or even decades of optimal consumption of vitamin C – a factor often not captured in shorter-term clinical studies.

A wider body of metabolic, pharmacokinetic, laboratory and demographic studies suggests just the opposite, that higher levels of vitamin C could help reduce the chronic diseases that today kill most people in the developed world – heart disease, stroke, cancer, and the underlying issues that lead to them, such as high blood pressure, chronic

inflammation, poor immune response and atherosclerosis.

"We believe solid research shows the RDA should be increased," Frei said. "And the benefit-to-risk ratio is very high. A 200 milligram intake of vitamin C on a daily basis poses absolutely no risk, but there is strong evidence it would provide multiple, substantial health benefits."

An excellent diet with the recommended five to nine daily servings of fruits and raw or steam-cooked vegetables, together with a six-ounce glass of orange juice, could provide 200 milligrams of vitamin C a day. But most Americans and people around the world do not have an excellent diet.

Even at the current low RDAs, various studies in the U.S. and Canada have found that about a quarter to a third of people are marginally deficient in vitamin C, and up to 20 percent in some populations are severely deficient – including college students, who often have less-than-perfect diets. Smokers and older adults are also at significant risk.

Even marginal deficiency can lead to malaise, fatigue, and lethargy, researchers note. Healthier levels of vitamin C can enhance immune function, reduce inflammatory conditions such as atherosclerosis, and significantly lower blood pressure.

- A recent analysis of 29 human studies concluded that daily supplements of 500 milligrams of vitamin C significantly reduced blood pressure, both systolic and diastolic. High blood pressure is a major risk factor for heart disease and stroke, and directly attributes to an estimated 400,000 deaths annually in the U.S.
- A study in Europe of almost 20,000 men and women found that mortality from cardiovascular disease was 60 percent lower when

comparing the blood plasma concentration of vitamin C in the highest 20 percent of people to the lowest 20 percent.

- Another research effort found that men with the lowest serum vitamin C levels had a 62 percent higher risk of cancer-related death after a 12-16 year period, compared to those with the highest vitamin C levels.

Laboratory studies with animals – which may be more accurate than human studies because they can be done in controlled conditions and with animals of identical genetic makeup - can document reasons that could explain all of these findings, Frei said.

Critics have suggested that some of these differences are simply due to better overall diet, not vitamin C levels, but the scientists noted in this report that some health benefits correlate even more strongly to [vitamin C](#) plasma levels than fruit and vegetable consumption.

Scientists in France and Denmark collaborated on this report. Research at OSU on these issues has been supported by the National Center for Complementary and Alternative Medicine, a division of the National Institutes of Health.

Provided by Oregon State University

Citation: Increase in RDA for vitamin C could help reduce heart disease, stroke, cancer (2012, July 16) retrieved 27 April 2024 from <https://medicalxpress.com/news/2012-07-rda-vitamin-heart-disease-cancer.html>

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