The Natural Pharmacy Newsletter

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In The News

by Brad Roseborough, R.Ph.

Let's Talk About Vitamin C

Although many of you may take vitamin C for the common cold, there may be a lot of things about vitamin C that you don't know. In this article I will try to give you a more in depth look at some of the benefits and downsides to vitamin C intake.

First of all it is important to note that vitamin C is an essential micronutrient that CANNOT be made in the body by humans. We lack an enzyme (gulonolactone) that is required to make vitamin C. Vitamin C is necessary for the formation of collagen (the underlying support tissue for skin), the formation of connective tissue like ligaments and tendons, and it is important for the absorption of iron. Vitamin C may increase iron absorption by 1.5-10 fold. It also acts as an electron donor for eight human enzymes that are responsible for making collagen, carnitine, norepinephrine, and peptide hormone. Vitamin C is an antioxidant that can decrease oxidative damage to DNA and decrease protein damage. It may also reduce the risk of gastric cancer.

People in most developed countries meet the recommended daily allowance (RDA) because they have a readily available food supply rich in this essential vitamin. The body stores about 1.5 grams of vitamin C (also known as ascorbic acid). The highest levels of this vitamin are found in the brain, pituitary, adrenal glands, leukocytes, and eye tissue. Vitamin C is approximately 70-90% bioavailable and is affected by cooking, heat in general, route of administration, and interaction with preservatives such as sodium bicarbonate. Vitamin C is available as an oral supplement as well as intramuscular, subcutaneous, and intravenous injection. It is removed from the body via the urine as metabolites or unchanged in higher doses. Highest plasma levels are reached with the intravenous vitamin C.

The National Academy of Science created the Institute of Medicine (IOM) to serve as an advisor to the federal government. It's main purpose was to help determine issues pertaining to disease prevention, medical care, research, and education. The IOM established the Food and Nutrition Board (FNB) to provide adequate guidelines for adequate nutrition. It focuses on nutritional deficiencies and imbalances in food components to improve public health.

The FNB sets Dietary Reference Intakes (DRI's), RDA's, Adequate Intake (AI), the Tolerable Upper Intake Level (UL), and the Estimated Average Requirement (EAR). The RDA is established as the reference value that meets 97-98% of healthy individuals sufficient dietary intake level. This is also dependent on gender and age. The highest value at which most individuals do not experience adverse effects is the UL. A side note is due here: it's hard to believe that we need to depend on the federal government and all of its agencies to tell us

that we need to eat more fruits and vegetables but most of our basic nutritional requirements would be met if we if we did this one simple thing.

RDA's for vitamin C are as follows:

Table 1

RECOMMENDED DAILY ALLOWANCES OF VITAMIN C

Group	RDA		
Adult men	90 mg/day		
Adult women	75 mg/day		
Pregnant women	80-85 mg/day		
Lactating women	115-120 mg/day		
Smoker	Additional 35 mg/day		
Adolescents, males 14-18 years	75 mg/day		
Adolescents, females 14-18 years	65 mg/day		
Children	1-3 years	4-8 years	9-13 years
	15 mg/day	25 mg/day	45 mg/day
Infants	0-6 months: 40 mg/day	7-12 months: 50 mg/day	

RDA = Recommended Dietary Allowance.

https://secure.pharmacytimes.com/lessons/201110-01.asp

We have previously cited some of the beneficial qualities of vitamin C but there are some more controversial uses as well. Although there is little evidence to support the use of vitamin C to reduce cancer risk or treat cancer, most studies have been done with modest doses. In order to increase plasma levels before the UL is attained, the IV dose should be considered. Most radiologists and oncologists would suggest that high dose vitamin C may interfere with traditional therapy. There is insufficient evidence that this is the case as there is also insufficient evidence to show benefit.

A study of 14,641 males using 500mg. of vitamin C showed no statistical difference from the control group in preventing cardiovascular events but more studies on different populations and age groups need to be conducted. We also don't know the benefit of higher doses.

An eight year study of over 50,000 females showed that those supplementing with vitamin C over a 10 year period decreased the risk of severe cataracts requiring extraction.

High doses of vitamin C have been shown to increase immune function and decrease the severity and length of the common cold. Other studies have had inconclusive results.

The main side effect to oral vitamin C intake is gastrointestinal distress. Diarrhea may occur in doses of 1000-2000 mg/day. Iron overload from the increased uptake with vitamin C intake could also be a potential problem. There is insufficient evidence that increased intake of vitamin C could cause kidney stones.

References show few if any interactions with prescription medication. One source did site the potential blunting of the benefits of statin (cholesterol lowering drugs) when used in combination with other supplements. Another source indicated that estrogen levels might be slightly increased in those women with low vitamin C levels when vitamin C supplementation was added.

In conclusion, vitamin C is essential to the body and it is responsible for a significant amount of processes in the body. Vitamin C has few side effects and few drug interactions have been cited. A good diet remains the recommended source for adequate vitamin C intake but supplementing with at least 500 mg. per day may be beneficial.

Antioxidants and Glutamine Enhance Wound Healing

A recent article in *Clinical Nutrition* studied 20 patients that had sustained an injury and who had poor wound healing. The patient group that used a combination of ascorbic acid (vitamin C), vitamin E, beta-carotene, zinc, selenium, and glutamine for 14 days noted that wound closure occurred more rapidly in the group that used these antioxidants as opposed to the control group. The study concluded that oral antioxidants and glutamine-containing supplements can shorten time to wound closure in trauma patients with poor wound healing.

Blass SC, Goost H, Tolba RH, Stoffel-Wagner B, Kabir K, Burger C, Stehle P, Ellinger S. Time to wound closure in trauma patients with disorders in wound healing is shortened by supplements containing antioxidant micronutrients and glutamine: A PRCT. Clin Nutr. 2012 Jan 25. Published Online Ahead of Print.