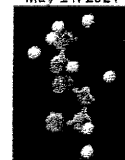


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#### FOR IMMEDIATE RELEASE

Orthomolecular Medicine News Service, December 3, 2009

### Vitamin C As An Antiviral: It's All About Dose

(OMNS, December 3, 2009) One of the most frequent questions from Orthomolecular Medicine News Service readers is, *Just how much vitamin C should I take?*

Our bodies cannot make vitamin C (ascorbate), although most animals can. We must get it from our food and from supplements. But how much do we really need? Persistent arguments on this question may be settled by looking at how much vitamin C animals manufacture in their bodies. The answer is: quite a lot. Most animals make the human body-weight equivalent of 5,000 to 10,000 milligrams a day. It is unlikely that animals would have evolved to make this much vitamin C if they did not need it and use it. Indeed, cells in many human body tissues concentrate vitamin C by 25-fold or more over blood concentration.

Each person's need for vitamin C differs because of differences in genetics and individual biochemistry [1,2,3]. Further, our bodies undergo different stresses, and we certainly eat different foods. Therefore, the daily need for ascorbate to maintain health for an adult varies between 2,000 - 20,000 mg/day. Linus Pauling personally took 18,000 mg of vitamin C daily. Although he was often ridiculed for this, it is interesting to note that Dr. Pauling had two more Nobel prizes than any of his critics. He died at age 93. Abram Hoffer, MD, a colleague of Pauling's, took megadoses of vitamin C and successfully gave it to thousands of patients over 55 years of medical practice. Dr. Hoffer died at age 91.

#### Antiviral Function

When we are challenged with a viral infection, our need for vitamin C can rise dramatically, depending on the body's immune function, level of injury, infection, or environmental toxicity such as cigarette smoke [4,5]. Ascorbate at sufficiently high doses can prevent viral disease and greatly speed recovery from an acute viral infection. Surprising to some, this was originally observed by physicians in the 1940s and has been verified and re-verified over the last 60 years by doctors who achieved quick and complete recovery in their patients with ascorbate mega-doses [5]. The effective therapeutic dose is based on clinical observation and bowel tolerance. Clinical observation is essentially "taking enough C to be symptom free, whatever that amount may be." Bowel tolerance means exactly what you think it means: the amount that can be absorbed from the gut without causing loose stools. [5,6]. Very high doses, 30,000 - 200,000 mg, divided up throughout the day, are remarkably non-toxic and have been documented by physicians as curing viral diseases as various as the common cold, flu, hepatitis, viral pneumonia, and even polio. [4,5,7]. On first reading this may sound incredible. We invite interested persons to read further, starting with the references listed below, and especially Dr. Frederick R. Klenner's Clinical Guide to the Use of Vitamin C. This short book is posted in its entirety at [http://www.seanet.com/~alexs.ascorbate/198x.smith-lh-clinical\\_guide\\_1988.htm](http://www.seanet.com/~alexs.ascorbate/198x.smith-lh-clinical_guide_1988.htm).

#### Mechanism For Ascorbate Antiviral Effect

Several mechanisms for vitamin C's antiviral effect are known or suggested from studies [4,8]. The antioxidant property of ascorbate promotes a reducing environment in the bloodstream and tissues, enhancing the body's response to oxidative stress from inflammation [9], thereby helping to fight microbes and viruses that propagate in stressful conditions [10]. Ascorbate has been shown to have specific antiviral effects in which it inactivates the RNA or DNA of viruses [11,12,13], or in the assembly of the virus [14].

Vitamin C is also involved in enhancing several functions of the immune system. Ascorbate can enhance the production of interferon, which helps prevent cells from being infected by a virus [15,16]. Ascorbate stimulates the activity of antibodies [17], and in megadoses seems to have a role in mitochondrial energy production [18]. It can enhance phagocyte function, which is the body's mechanism for removing viral particles and other unwanted debris [4]. White blood cells, involved in the body's defense against infections of all types, concentrate ascorbate up to 80 times plasma levels, which, if you take enough vitamin C, allows them to bring huge amounts of ascorbate to the site of the infection [4]. Many different components of the immune response, B-cells, T-cells, NK cells, and also cytokine production, all with

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