Vitamin C for Preventing and Treating the Common Cold

Robert M Douglas , Harri Hemilä

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Misleading information on the properties of vitamin C

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Author: Steve Hickey
Position: Dr
Institution: Manchester Metropolitan University
E-mail: radicalascorbate@yahoo.com
Additional Authors: Dr Hilary Roberts
Submitted Date: July 04, 2005
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Douglas and Hemila's review[1] covers 60 years of research into vitamin C and the common cold. However, the review omits pharmacokinetic data which invalidates the conclusion that vitamin C is ineffective. This conclusion is not derivable from the data presented.

The dual-phase pharmacokinetics of vitamin C are described by the dynamic flow model.[2,3] Low intakes of ascorbate, leading to blood plasma levels below 70 microM/L, have a half-life of 8-40 days. Higher gram-level intakes have a plasma half-life of 30 minutes.[2] A large oral dose raises blood levels briefly, reaching a peak after 2-3 hours, before decaying back to baseline. Frequent repeated doses allow sustained high plasma levels of about 250 microM/L.[3,4]

Douglas and Hemila reviewed intakes that transiently raise plasma ascorbate above 70 microM/L. A single dose does not raise the median level.[5,6] Daily supplements would thus not increase disease resistance to any great degree.[2,3] Single or twice daily doses will not increase background plasma levels, regardless of the magnitude of the dose.[5,6] Since plasma ascorbate is at background level for the majority of the day, effects will be minimal.

There is widespread confusion of nutritional and pharmacological levels of supplementation.[2] Linus Pauling typically described nutritional gram-level dose to provide a degree of disease prevention.[7] By contrast, pharmacological doses used for treatment are, at minimum, an order of magnitude larger and involve frequent doses. The doses should be at intervals of three hours or less.[2] Treatment doses are described by Cathcart's paper on titration to bowel tolerance.[8] To treat the onset of a cold, the therapy is perhaps a minimum of 10 grams of oral ascorbic acid, followed by at least two grams each hour.[2,

Douglas and Hemila give a misleading impression, by not making it clear that the doses they consider are not pharmacological. They claim that the results one study, giving an 8 gram dose at the start of symptoms, are ??tantalising and deserve further assessment¿¿. However, once this single dose has been excreted, the protective effects will be lost. During illness, ascorbate is depleted rapidly and higher oral intakes are tolerated - up to 200g per day.[8] It wou be surprising if this eight gram dose had a large effect.

Studies on ascorbate require appropriate doses. Douglas and Hemila have only confirmed that 60 years of vitamin C research has largely been wasted, because of confusion between nutritional and pharmacological intakes, and a misunderstanding of the pharmacokinetics. It is essential that high dose studies take into account ascorbate¿¿¿s dual-phase pharmacokinetics. The dosing regime should allow sustained, high plasma levels to be achieved. The claim that vitamin C cannot prevent or cure the common cold is both premature and unwarranted.

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Competing interests declared: We have no financial interest in the sale of vitamins or other supplements.