

## Questions and Answers

### Do Cigarette Smokers Need Vitamin C Supplementation?

**Q** I have been swamped with questions from patients about advertisements for vitamin supplements, particularly those relating to lower serum vitamin C levels found in cigarette smokers. I can find no evidence that cigarette smoking significantly decreases vitamin levels, yet many medical journals accept advertising that seems to imply such a relationship. Will you please discuss the validity of this concept?

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**A** Although the Committee on Dietary Allowances of the Food and Nutrition Board has recently increased the Recommended Dietary Allowance (RDA) of ascorbic acid for adults to 60 mg/day,<sup>1</sup> it is important to remember that this amount can be obtained from a single juice orange. A good diet, which is not hard to achieve, avoids the need for vitamin supplementation.

In a nationwide study of 4,672 Canadians, Pelletier<sup>2</sup> demonstrated that cigarette smokers have lower serum vitamin C levels than nonsmokers. The greater the number of cigarettes smoked, the lower the vitamin C level, with an average reduction of 40% for smokers of greater than a pack a day. Ritzel and Bruppacher,<sup>3</sup> in a study of 4,053 Swiss workers, also found the proportion of vitamin C insufficiency to be greater in smokers. But among those who smoked a pack or more a day, only 5% could be classified as being at high risk for reduced bioavailability of vitamin C (0.2 mg/mL is the level of serum vitamin C below which, if prolonged over four to six months, can result in the clinical picture of scurvy).

Both reports, moreover, found that lowered vitamin C levels in serum can be overcome by higher dietary vitamin C intake (100 mg/day). In other words, while there is little doubt that cigarette smoking can somehow reduce vitamin C in the body, vitamin C stores can be replenished through the diet. Whether vitamin C supplements need to be prescribed for smokers remains to be established. There may even be a potential problem for smokers ingesting excessive vitamin C. Since nicotine is excreted more rapidly in an acidic urine, Schachter<sup>4</sup> suggests that acidification of urine, such as by vitamin C (ascorbic acid) intake, can lead to an increase in the number of cigarettes smoked! Presumably, then, in having to replenish a depleting supply of nicotine, the cigarette smoker may be reinforcing the smoking addiction—and its insidious consequences to health—by consuming vitamin C supplements.

Thus, on the basis of current medical evidence, the need for vitamin C supplementation in smokers who consume an adequate diet is ill defined at best.

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1. *Recommended Dietary Allowances*, ed 9. National Academy of Sciences, 1980, p 75.

2. Pelletier O: Vitamin C and tobacco. *Int J Vitam Nutr Res* 47(suppl 16):147-169, 1977.

3. Ritzel G, Bruppacher R: Vitamin C and tobacco. *Int J Vitam Nutr Res* 47(suppl 16):171-183, 1977.

4. Schachter S: Pharmacological and psychological determinants of smoking. *Ann Intern Med* 88:104-114, 1978.