

Real Science vs. Marketing Science

Does vitamin E supplementation increase the risk of prostate cancer?

IS IT REAL SCIENCE?

The science of nutrition is the study of nutrients and the body's handling of them. Within the nutritional community, disagreement often occurs among legitimate scientists who are interpreting legitimate scientific data. This type of disagreement among experts is certainly confusing to lay people who are trying to figure out what type of diet to eat, and which dietary supplements to take to assist them in achieving their health goals. Obtaining accurate scientific information becomes even more difficult when the source of the data is "marketing science" rather than real science.

In the case of marketing science, many so-called "experts" may have part, but not all of their facts correct. This partial correctness often lends credibility to claims which are not, in fact, accurate. Other times, the "experts" are not experts at all, but rather individuals who are proselytizing their personal beliefs about dietary supplements which, frequently, are not only incorrect but often have no basis whatsoever in scientific fact. This series of Real Science vs. Marketing Science will attempt to provide a fair, unbiased view on many issues relating to nutrition and dietary supplement science.

The Selenium and Vitamin E Cancer Prevention Trial (SELECT) involved 35,000 men randomly assigned to receive either: 1) selenium (L-(+)-Selenomethionine) plus synthetic vitamin E (dl-alpha-tocopheryl acetate), 2) selenium plus placebo, 3) synthetic vitamin E plus placebo, or 4) two placebos. When originally published in 2008,¹ the results indicated that after almost five and half years, no significant differences were observed between any of the groups in relation to prostate cancer risk.

A new analysis in JAMA

Now, a new analysis of the study's participants published in JAMA² indicates that synthetic vitamin E supplements alone were associated with a 17% increase in the risk of prostate cancer, but that no increase in risk was observed in the combination selenium-vitamin E group. So what does all

this mean? Should men stop taking their vitamin E supplements? No.

Other studies about vitamin E and prostate cancer

First of all, you should be aware that this is not the first study to look at the relationship between vitamin E and prostate cancer. A placebo-controlled intervention study that was designed to look at the effect of vitamin E supplementation on lung cancer development noted a 34% reduction in the incidence of prostate cancer in smokers given daily supplements of 50 mg of synthetic alpha-tocopherol daily.³ A meta-analysis that combined the results of this study with three other randomized controlled trials associated vitamin E supplement use with a 15% lower risk of prostate cancer.⁴

The importance of using antioxidants together

Secondly, what the recent JAMA analysis really shows is that men should take selenium with their vitamin E (preferably the natural form which is more biologically active). In fact, this new analysis is reminiscent of the flawed 1994 study in which smokers using beta-carotene were thought to be at a greater risk of lung cancer (*N Engl J Med* 1994;330:1029–35). However, a more thorough follow-up analysis which looked at the diets and other dietary supplements taken, revealed that the smokers' actual danger was due to low total antioxidant levels; not to the fact that they took beta-carotene (*Am J Epidemiol* 2004;160(1):68-76). This makes sense given the fact that antioxidants function interdependently, and so should be taken together.

Here's how it works: antioxidants quench free radicals by donating or accepting one of their electrons. In the process, however, the

antioxidant becomes a free radical—albeit one that is generally less harmful than the original. For this reason, it makes sense to use a variety of antioxidants together so that you are less likely to end up with a lot of a certain free radical which was generated when a specific antioxidant donated or accepted an electron. This is consistent with comments from Duffy MacKay, N.D., Vice President, Scientific and Regulatory Affairs, Council for Responsible Nutrition (CRN) about the JAMA analysis. Dr. Duffy said, “This reinforces the theory that vitamins work synergistically and that drug-like trials of nutrients, when used in isolation from other nutrients, may not be the most appropriate way to study them.”⁵

In addition, consider that selenium, as part of glutathione peroxidase, also supports the activity of vitamin E in limiting the oxidation of lipids. Furthermore, studies indicate that selenium and vitamin E tend to spare one another and that selenium can prevent some of the damage resulting from vitamin E deficiency in models of oxidative stress. The bottom line is that vitamin E and selenium should be used together, just like calcium and vitamin D should be used together.

Research bias

Dr. Duffy made another comment and the JAMA analysis which is worth noting: “Finally, at the end of the study, there is a gratuitous dig about dietary supplements being ‘unregulated,’ which, aside from being false, forces us to engage in discussion that goes beyond what the study itself says. It concerns us that underlying bias from the publication about the dietary supplement industry and the fact that these products are not regulated like drugs may provide an ulterior motive for which studies are published and how study results are presented.”⁶

Conclusion

Don’t stop taking your vitamin E, just make sure to take selenium with it. In fact, take a broad spectrum of different antioxidants.

References

- ¹ Scott M. Lippman SM, Klein EA, Goodman PJ, et al. Effect of Selenium and Vitamin E on Risk of Prostate Cancer and Other Cancers: The Selenium and Vitamin E Cancer Prevention Trial (SELECT). *JAMA* 2009;301(1):39-51. Published online December 9, 2008. doi: 10.1001/jama.2008.864.
- ² Klein IM, Thompson Jr CM, Tangen JJ, et al. Vitamin E and the Risk of Prostate Cancer: The Selenium and Vitamin E Cancer Prevention Trial (SELECT). *JAMA* 2011; 306(14):1549-1556.
- ³ Heinonen OP, Albanes D, Virtamo J, et al. Prostate cancer and supplementation with alpha-tocopherol and beta-carotene: incidence and mortality in a controlled trial. *J Natl Cancer Inst.* 1998;90(6):440-446.
- ⁴ Alkhenizan A, Hafez K. The role of vitamin E in the prevention of cancer: a meta-analysis of randomized controlled trials. *Ann Saudi Med.* 2007;27(6):409-414.
- ⁵ JAMA Study Links Vitamin E, Prostate Cancer. Natural Product Insider. Retrieved October 12, 2011 from <http://www.naturalproductsinsider.com>.
- ⁶ JAMA Study Links Vitamin E, Prostate Cancer. Natural Product Insider. Retrieved October 12, 2011 from <http://www.naturalproductsinsider.com>.