

Do Antioxidant Supplements Cause Cancer?

The Truth About Vitamins C & E

Author: Dr. Stephen Chaney

MYTHS
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FACTS

I am always amazed at how certain nutrition myths take on a life of their own. A single study gets sensationalized. The study may not be very good, but some nutrition guru publicizes it even though it may be contradicted by other studies that come to the opposite conclusion

Other blogs and news feeds pick it up. It gets repeated over and over until it becomes generally accepted as true. It becomes what I call an "urban nutrition myth". Once these myths become well established they are hard to correct. When contrary information is published, it is ignored because everyone already knows the "truth".

Do Antioxidant Supplements Cause Cancer?

The risks of antioxidant supplements are a perfect example. Most web sites and health experts warn that you should be careful about using antioxidant supplements. You are told that they may just increase your risk of cancer. They may just kill you!

The antioxidant vitamins C and E have generated the most scrutiny in recent years. There were a number of reasons to suspect that they might **decrease** cancer risk:

- 1) They destroy free radicals.
- 2) They decrease cancer risk in animal studies.
- 3) Increase consumption of vitamins C & E is associated with decreased risk of cancer in human population studies.

Because there was so much circumstantial evidence that vitamins C & E might **decrease** cancer risk, there have been a number of double-blind, placebo controlled human clinical trials to test that hypothesis.

- 6 clinical studies showed no effect of vitamin C and/or E on cancer incidence.
- 1 study suggested that vitamin E might decrease prostate cancer risk, and another study suggested that vitamin E might decrease colon cancer risk.
- 1 study (Kristal *et al*, Journal of the National Cancer Institute, doi: 10.1093/jnci/djt456, 2014) suggested that vitamin E alone might increase prostate cancer risk, but when vitamin E was combined with selenium there was no increased risk. I have discussed a likely explanation of those confusing results in a previous "[Health Tips From the Professor](#)".

That's it. Six clinical studies show no effect of vitamins C & E on cancer risk, two studies suggest that vitamin E decreases cancer risk and one study suggests that vitamin E increases cancer risk. Yet all the "experts" are warning that antioxidant supplements might increase your cancer risk. **It has become an urban nutrition myth.**

You may remember that I said that the final characteristic of an urban nutrition myth is that when contrary information is published, it is ignored. In fact, an excellent study showing no effect of vitamins C and E on cancer risk has just been published – and it is being ignored because it doesn't fit the "truth" that most experts have come to believe.

What Does the Latest Study Show?



The study in question (Wang et al, American Journal of Clinical Nutrition, 2014; doi: 10.3945/ajcn.114.085480) was a post-trial follow-up to the Physicians' Health Study II. It followed 14,641 US male physicians (average age 64 at the beginning of the trial) for 10.3 years. The subjects were randomly assigned to receive 400 IU of vitamin E every other day, 500 mg of vitamin C daily, or their respective placebos.

The investigators in charge of the study recognized that cancer takes many years to develop and that the effects of supplementation might not be recognized until years later. Because of that, the subjects were followed for an additional 2.8 years after the close of the trial to allow additional time for cancers to develop.

The results were clear cut:

- Vitamin E supplementation had no effect on the incidence of prostate cancer or total cancers.
- Vitamin C supplementation also had no effect on the incidence of prostate cancer or total cancers.
- Vitamin C supplementation decreased the incidence of colon cancer during the post-trial period by 46%, which was marginally significant.

The Bottom Line:

- 1) You can ignore the dire warnings that antioxidant supplements may increase your risk of cancer. The only case where this appears to be true is for high dose beta-carotene supplements in smokers. The weight of evidence for vitamins C and E suggests that they are unlikely to increase your risk of cancer.
- 2) As I have said previously if there is any risk of antioxidant supplements, it is most likely to arise from using high purity individual antioxidant supplements. I recommend vitamin E supplements containing the full spectrum of tocopherols and tocotrienols, carotenoid supplements containing all the naturally occurring carotenoids, and supplements that combine complementary antioxidant nutrients – vitamin E and selenium, for example.
- 3) That doesn't mean that you should run out and stock up on antioxidant supplements in the hope that they will prevent cancer. The same clinical studies that showed no harm from vitamin C and E supplementation also showed no consistent benefit.
- 4) This is also consistent with my comments in previous "Health Tips from the Professor". For example:
 - It is very difficult to prove, and unreasonable to expect, that supplementation will have a measurable effect on risk of a particular disease like cancer for everyone. People who are healthy and have very low risk of cancer, may experience other benefits from supplementation but are unlikely to experience a measurable decrease in cancer risk.
 - Supplementation is most likely to be advantageous in select populations, generally populations with increased need for a particular nutrient or at highest risk of disease. It is clinical studies looking at the effect of supplementation in these select populations that often show the greatest benefit of supplementation.
 - Supplementation is just one component of a holistic approach for reducing disease risk. Diet, weight control, exercise, adequate rest and stress reduction all play a major role as well. You can't weigh 250 pounds and eat all your meals at McDonald's and expect supplementation to save you from disease.

These statements have not been evaluated by the Food and Drug Administration. This information is not intended to diagnose, treat, cure or prevent any disease.

Dr. Steve Chaney
Health Tips From the Professor