

Vitamins C and E and beta carotene again fail to reduce cancer risk in randomized controlled trial

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Women who took beta carotene or vitamin C or E or a combination of the supplements had a similar risk of cancer as women who did not take the supplements, according to data from a randomized controlled trial in the December 30 online issue of the *Journal of the National Cancer Institute*.

Epidemiological studies have suggested that people whose diets are high in fruits and vegetables, and thus antioxidants, may have a lower risk of cancer. Results from randomized trials that address the issue, however, have been inconsistent and have rarely supported that observation.

In the current study, Jennifer Lin, Ph.D., of the Brigham and Women's Hospital and Harvard Medical School in Boston, and colleagues tested the impact of antioxidant supplements on cancer incidence in a randomized controlled trial. A total of 7,627 women who were at high risk of cardiovascular disease were randomly assigned to take vitamin C, vitamin E, or beta-carotene.

With an average of 9.4 years of follow-up time, there was no statistically significant benefit from antioxidant use compared with placebo in terms of disease risk or mortality due to cancer. Overall, 624 women developed cancer and 176 died from cancer during the follow-up time. Compared with placebo, the relative risk of a new cancer diagnosis was 1.11 for women who took vitamin C, 0.93 for women who took vitamin

E, and 1.00 for women who took beta carotene. None of these relative risks was statistically significantly different from 1.

"Supplementation with vitamin C, vitamin E, or beta carotene offers no overall benefits in the primary prevention of total cancer incidence or cancer mortality," the authors conclude. "In our trial, neither duration of treatment nor combination of the three antioxidant supplements had effects on overall fatal or nonfatal cancer events. Thus, our results are in agreement with a recent review of randomized trials indicating that total mortality was not affected by duration of supplementation and single or combined antioxidant regimens."

In an accompanying editorial, Demetrius Albanes, M.D., of the National Cancer Institute, reviewed data from previous randomized controlled trials that examined supplement use and cancer incidence. He noted that while the trial data reported by Lin are negative with respect to lowering cancer risk, there is valuable information uncovered that should not be overlooked. There was a trend for a reduction in colon cancer with vitamin E supplementation, which has been observed in other studies. Additionally, beta carotene use was associated with a modest excess of lung cancer, which is consistent with previous reports.

"Null trials or those with unexpected outcomes should not, however, be viewed as failures; they have and will continue to shed light on the causes of cancer and help us discover the means for its prevention," the editorialist concludes.

Citations

Article: Lin J et al., Vitamins C and E and Beta Carotene Supplementation and Cancer Risk: A Randomized Controlled Trial. *J Natl Cancer Inst* 2009;101:14-23.

Editorial: Albanes D, Vitamin Supplements and Cancer Prevention: Where Do Randomized Controlled Trials Stand? *J Natl Cancer Inst* 2009;101:2-4.

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