Antioxidants Don't Lower Heart Risk

Study Examines Vitamins C, E, Beta-Carotene for Preventing Heart Attack, Stroke

By Salynn Boyles
WebMD Medical News

Reviewed by Louise Chang, MD

Aug. 13, 2007 -- Vitamins C, E, and beta-carotene are not effective for preventing heart attacks, strokes, or related deaths, according to one of the longest studies ever to examine the cardiovascular impact of antioxidant supplements.

The study included more than 8,000 women at high risk for cardiovascular disease who took the vitamin supplements, either alone or in combination, for close to a decade.

During this time no evidence emerged of a benefit for antioxidant supplementation.

The findings are consistent with other major studies showing antioxidants and other nutritional supplements to be ineffective for the prevention of heart disease and strokes, cardiovascular nutrition expert Alice Lichtenstein, DSc, tells WebMD.

Some of these studies even found specific supplements to be harmful, although the latest study did not.

"Right now we are all being very cautious about dietary supplements," says Lichtenstein, who directs the cardiovascular nutrition lab at Boston's Tufts University. "These supplements don't seem to have clear advantages in people who aren't deficient, and there is a concern that overdoing them may have adverse consequences."

Antioxidants and the Heart

Oxidative damage at the cellular level is thought to play an important role in heart and vascular disease by promoting inflammation. The thinking has been that antioxidants like vitamin C, E, and beta-carotene could protect against cardiovascular disease by reducing oxidative stress.

Researcher Nancy R. Cook, ScD, and colleagues from Harvard Medical School and Brigham and Women's Hospital in Boston tested the theory in their study, published in the latest issue of the journal *Archives of Internal Medicine*.

A total of 8,171 women were recruited who had had either a heart attack or stroke or who had at least three cardiac risk factors such as having high cholesterol, diabetes, or high blood pressure, being a current smoker, and being obese.

The average age of the women at recruitment was 60, and they were followed for an average of 9.4 years.

During this time, the women took either vitamin C, vitamin E, beta-carotene, a combination of the antioxidants, or placebo. There were 274 heart attacks, 298 strokes, 889 bypass surgeries or angioplasties, and 395 deaths due to cardiovascular causes.

None of the vitamins, either alone or in combination, were found to significantly impact any of these cardiovascular outcomes.

Women who took vitamins C and E did have slightly fewer strokes, but it was not clear if the association was real or a function of the study design.

"Overall we found no benefit on the primary combined end point for any of the antioxidant agents tested, alone or in combination. We also found no evidence for harm," Cook and colleagues wrote in the Aug. 13/27 issue of the *Archives of Internal Medicine*.

"While additional research into combinations of agents, particularly for stroke, may be of interest, widespread use of these individual agents for cardiovascular protection does not appear warranted."

Healthy Diet Lowers Risk

While the intervention studies examining antioxidant supplements for protection against heart attacks and strokes have proven disappointing, study after study has also shown that eating a nutrient-rich diet can lower risk, says Lichtenstein, who is a spokeswoman for the American Heart Association.

"Isolating individual components of a healthy diet hasn't worked, but it does appear that a diet that includes plenty of fruits, vegetables, and whole grains is protective," she says.

Study co-author JoAnn Manson, MD, who is chief of preventive medicine at Brigham and Women's Hospital, agrees.

"This research underscores the importance of focusing on proven methods for preventing cardiovascular disease, including physical activity, healthy diet, controlling high blood pressure and high cholesterol, maintaining healthy weight, and avoiding tobacco," she says in a news release.

The Council for Responsible Nutrition (CRN), a supplement industry trade group, states in an email to WebMD that this study contradicts several recent studies of antioxidant supplements, which showed that antioxidants and vitamin E may adversely affect mortality.

This study showed that there was no overall effect on mortality, the CRN states.

"This study is an interesting addition to the current scientific literature, and more research should be done, particularly to detect the effects of antioxidants on longer latency diseases, such as cardiovascular disease and cancer," Andrew Shao, PhD, vice president of scientific and regulatory affairs for the CRN, says in the email.