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## **STUDY SHOWS HIGH-DOSE VITAMIN E SUPPLEMENTS MAY INCREASE RISK OF DYING**

Researchers at Johns Hopkins report that use of high-dose vitamin E supplements, in excess of 400 IU (international units), is associated with a higher overall risk of dying. These results should be of concern to the millions of Americans who take vitamin E supplements for perceived health benefits.

The Johns Hopkins team is scheduled to present its findings at the American Heart Association's Scientific Sessions 2004 in New Orleans, La., with simultaneous publication of their study in the [Annals of Internal Medicine](#) online Nov. 10.

The study results showed that people taking vitamin E supplements of 400 IU or more per day had an increased risk of death.

"Our study results do not support the use of high-dose vitamin E supplements. If people are taking a multivitamin, they should make sure it contains no more than a low dose of vitamin E," said study lead author and internist Edgar R. Miller III, M.D., Ph.D., associate professor of medicine at The Johns Hopkins University School of Medicine. "A lot of people take vitamins because they believe it will benefit their health in the long term and prolong life. But our study shows that use of high-dose vitamin E supplements certainly did not prolong life, but was associated with a higher risk of death."

Vitamin E capsules, used as supplements, typically contain 400 IU to 800 IU. The study results indicated that these high-dose supplements were associated with a higher risk of death.

In the current study, the Johns Hopkins team re-analyzed raw data from 19 major clinical trials, sorting information by whether high- or low-dose levels of vitamin E were taken. Nine of these studies tested vitamin E alone; 10 tested its use in combination with other vitamins.

The 19 studies took place between 1993 and 2004 and involved more than 136,000 patients in North America, Europe and China. All of the studies involved use of a control group taking a dummy pill, or placebo. Risk of death was estimated by comparing the death rates in both groups. Follow-up periods ranged from 1.4 years to 8.2 years.

When the data for these trials was re-evaluated, through a process called a meta-analysis, nine of 11 trials involving high-dose vitamin E (400 IU per day, or more) showed an increased risk of death. The other eight trials involved low-dose vitamin E users.

It was unclear whether low amounts (200 IU per day or less) of vitamin E supplements increased a person's risk of death.

Because most of the patients in all of the trials were over 60, and a majority had pre-existing conditions, such as heart disease, the study's application to younger, healthy adults may be limited, the Johns Hopkins researchers point out.

Current United States dietary guidelines do not recommend vitamin E supplementation; however, the guidelines do set an upper tolerable intake limit of up to 1,500 IU per day.

"Policy makers and government regulators should consider lowering this level, perhaps, to an upper limit of 400 IU per day," said [Eliseo Guallar](#), M.D., Dr.P.H., senior author of the study and assistant professor of epidemiology at the [Bloomberg School of Public Health at Johns Hopkins](#). "Additional research is needed to determine the effects, if any, of low-dose levels of vitamin E supplements. As well, there are unresolved questions on the benefits of vitamin E when combined with other antioxidants."

Vitamin E is one of 13 vitamins essential to body metabolism, cell growth and function. It is also known as tocopherol and is an antioxidant important in the formation of red blood cells and the use of vitamin-K-mediated clotting factors. Sources of dietary intake include wheat germ, corn, nuts, seeds, olives, spinach, asparagus and other green leafy vegetables, vegetable oils, and products made from vegetable oils, such as margarine. On average, dietary intake of vitamin E is 10 IU per day. Multivitamin pills usually contain 30 IU to 60 IU of vitamin E.

The research was conducted at Johns Hopkins. Other researchers who participated in this study were Roberto Pastor-Barriuso, Ph.D., Darshan Dalal, M.D., M.P.H.; Rudolph Riemersma, Ph.D; and Lawrence Appel, M.D., M.P.H.

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Johns Hopkins Heart Institute:  
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*(Poster session abstract: High-dose vitamin E supplementation may increase all-cause mortality, a dose response meta-analysis of randomized trials; Ernest N. Morial Convention Center, Exhibit Hall 1-2.)*