

## VITAMIN E

For a time, vitamin E supplements looked like an easy way to prevent heart disease. Promising observational studies, including the Nurses' Health Study (1) and Health Professionals Follow-up Study, (2) suggested 20 to 40 percent reductions in coronary heart disease risk among individuals who took vitamin E supplements (usually containing 400 IU or more) for least two years. (3)

The results of several randomized trials have dampened enthusiasm for vitamin E's ability to prevent heart attacks or deaths from heart disease among individuals with heart disease or those at high risk for it. In the GISSI Prevention Trial, the results were mixed but mostly showed no preventive effects after more than three years of treatment with vitamin E among 11,000 heart attack survivors. (4) Results from the Heart Outcomes Prevention Evaluation (HOPE) trial also showed no benefit of four years worth of vitamin E supplementation among more than 9,500 men and women already diagnosed with heart disease or at high risk for it. (5) Based on these and other studies, the American Heart Association has concluded that "the scientific data do not justify the use of antioxidant vitamin supplements [such as vitamin E] for CVD risk reduction."

A recent scientific analysis raised questions about whether high doses of vitamin E supplements might increase the risk of dying. (7) The authors gathered and re-analyzed data from 19 clinical trials of vitamin E, including the GISSI and HOPE studies; they found a higher rate of death in trials where patients consumed more than 400 IU of supplements per day. While this meta-analysis drew headlines when it was released, there are limitations to the conclusions that can be drawn from it. Some of the findings are based on very small studies; furthermore, many of the high-dose trials of vitamin E included in the analysis were done on people who had chronic diseases, such as heart disease or Alzheimer's disease. So it is not clear that these findings would apply to healthy people.

It's entirely possible that in secondary prevention trials, the use of drugs such as aspirin, beta blockers, and ACE inhibitors mask a modest effect of vitamin E, and that it may have benefits among healthier people. But large randomized controlled trials of vitamin E supplementation in healthy people have yielded mixed results. In the Women's Health Study, which followed 40,000 women for 10 years, vitamin E supplements of 600 IU every other day did not significantly reduce the risk of so-called "major cardiac events" (non fatal heart attack, non-fatal stroke, or cardiovascular death); when these major cardiac events were analyzed separately, however, vitamin E supplementation was linked to a 24 percent lower risk of cardiovascular death. (8) And among women ages 65 and older, vitamin E supplementation reduced the risk of major cardiac events by 26 percent.

The SU.VI.MAX trial, meanwhile, found that seven years of low-dose vitamin E supplementation (as part of a daily antioxidant pill) reduced the risk of cancer and the risk of dying from any cause in men, but did not show these beneficial effects in women; the supplements did not offer any protection against heart disease in men or women. (9) It's possible that vitamin E may have potential benefits in certain subgroups of the general population: A recent trial of vitamin E in Israel, for example, showed a marked reduction in coronary heart disease among people with type 2 diabetes who have a common genetic predisposition for greater oxidative stress. (10)