Vitamin E and All-Cause Mortality

A prominent nutrition researcher reviews a key study connecting vitamin E with mortality and finds there is a questionable basis for the conclusions being made.

By Edward Blonz, Ph.D.

Editor’s Note: This material, originally published in December 2004, also appears on Dr. Blonz’s website at http://askdrblonz.com/q&a/col506.html.

In my columns, including one recent piece, I had written that vitamin E can be a beneficial addition to a regular supply of naturally occurring antioxidants from whole foods. I suggested that those interested in taking vitamin E from a dietary supplement should consider selecting the form that comes as “mixed tocopherols” (d-alpha, d-beta, d-delta and d-gamma).

Since then, a vitamin E study was released in the November 2004 issue of the Annals of Internal Medicine. This study concluded that taking high doses of vitamin E can contribute to a risk of death, referred to in the study title as “all-cause mortality.”

Press accounts touted this finding with sensational headlines such as “Vitamin E linked to higher death rates” and “Vitamin E may shorten lifespan.” I wanted to provide a little perspective on this new report as I do not think the evidence justifies these conclusions.

First, we always should appreciate that headlines can exaggerate the most sensational, sexy, controversial slant of a story. Health-related headlines are no exception. A story title may have little relevance to the big picture, but if succeeds in grabbing your attention, it has served its purpose from the publication's standpoint. (Different publications, of course, have different policies in this regard.) Think how attracted we are to the tabloids as we wait in line at the market.

This particular paper on vitamin E did not come from new research. Rather, it was the result of a systematic review of research studies that had already been conducted. The process is referred to as a meta-analysis. It is a way to combine a number of studies investigating a similar issue, checking to see if there is a significant trend that comes out in the big picture that was missed in the individual studies.

This new vitamin E report relied on a qualified group of studies conducted between 1966 and 2004, each of which investigated vitamin E, alone or in combination with other nutrients or drugs. These were designed to check if the individual treatments might be of benefit for a number of health conditions, including heart disease and certain cancers. The studies had not focused on mortality, looking instead at whether vitamin E might help. Data on health outcomes (which, of course, can include death) was often collected.

The meta-analysis combined mortality data from selected studies and concluded that doses up to 200 IU (International Units) per day of vitamin E were fine, but those over
400 IU per day should be avoided because they were associated with an increased risk of death.

My concern with the conclusions stem from the fact that many of the studies being considered had utilized the synthetic (also known as "all-RAC-", or dl-) alpha tocopherol for their vitamin E treatment. Included among these were the ones with the greatest number of participants and those that showed the connection between E and mortality. Another concern was that some of these studies had administered the synthetic vitamin E in combination with synthetic beta-carotene.

There was an initial romance with beta carotene as a possible beneficial compound, with higher blood levels in epidemiological studies being associated with positive health benefits. Studies testing additional supplements of synthetic beta carotene have been largely disappointing, some have shown negative correlations. The higher blood levels in the epi studies were more likely a marker of vegetable intake and not indicative of effects from this individual compound. All of the studies in the vitamin E meta analysis that used a high dose of synthetic vitamin E with synthetic beta-carotene also showed most significant connection with mortality.

Studies make their conclusions based on statistical analyses, and those used in the meta analysis were reportedly of only borderline significance. It would have helped to examine the relative effects from synthetic versus natural sources of vitamin E, and with and without the potential interference from beta carotene. Also, the meta analysis focused on death from any cause. All the studies administered vitamin E as some form of alpha tocopherol. Studies have show how excess alpha tocopherol (in any form) can inhibit the absorption of gamma tocopherol and lower blood gamma tocopherol levels is correlated with increased risk of certain cancers.

It is unclear how this will all play out. Vitamin E, technically, can come from a synthetic compound. But there is a difference between taking a vitamin to satisfy a deficiency, and using extra amounts to prevent chronic illness. If there is a take-home message, it is first to acknowledge that this new report does provide important new information to consider. We should not overdo it with any vitamin or mineral, and it never makes sense to think that adding individual nutrients to an otherwise poor diet can make everything better. Finally, the lessons with beta carotene and vitamin E argue that it makes practical and intuitive sense to opt for dietary supplements that contain all the related nutrient elements as they are found in food.

______________________________________________________________________

About the Author

Dr. Ed Blonz holds an M.S. and a Ph.D. in nutrition from the University of California at Davis, and has more than 25 years of experience in the fields of nutrition, foods and health. He is the author of seven books and his nationally syndicated column, "On Nutrition," goes to more than 600 newspapers in the U.S. and Canada. To contact Dr. Blonz, send an e-mail to: incoming@blonz.com.