

Is Beta Carotene Safe?

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Front page news was made earlier this year when a study by the U.S. National Cancer Institute and the National Public Health Institute of Finland was published, indicating that beta carotene raised the incidence of lung cancer in male smokers.

The Study

The study group consisted of 29,133 male smokers from Finland. Their ages ranged from 50 to 69 years. Their cigarette use averaged more than one pack a day for 36 years. Over a six year period, random groups received either (1) 50 mg of vitamin E (approximately 66 IU); (2) 20 mg of beta carotene (approximately 33,333 IU); (3) 50 mg of vitamin E and 20 mg of beta carotene; or (4) a placebo.

The Results

The following results are what the popular press picked up:

1. The beta carotene group had 18 percent more cancer with a 15 percent higher death rate.
2. The group that took beta carotene and vitamin E did not have a reduced incidence of lung cancer.
3. The group that took vitamin E only did not have a reduced incidence of lung cancer.
4. The vitamin E group had more deaths from hemorrhagic stroke than the other three groups.

Headlines across the country included statements like "antioxidants don't work," "beta carotene increases cancer risk," and "vitamins are worthless."

The following results are what the press failed to report:

1. Within the placebo group, those with the highest blood levels of beta carotene and vitamin E had the lowest risk for developing cancer (it comes as no surprise that this subgroup consumed a diet high in fruits and vegetables).
2. The vitamin E group had a lower incidence of prostate cancer than the other group.
3. The overall death rate of the vitamin E group was NOT HIGHER than the other groups.

The Conclusions

The authors concluded that in this study there was no reduction in lung cancer in male smokers after supplementing their diets with beta carotene and vitamin E. They further concluded that these nutrients may even have a harmful effect. This was highly publicized in the press. What was not publicized were these two quotes from the authors:

1. "There are no known or described mechanisms of toxic effects of beta carotene, no data from studies in animals suggesting beta carotene toxicity, and no evidence of serious toxic effects of this substance in humans."
2. "In light of the totality of the data available on the relationship between the intake of antioxidant vitamins and a corresponding reduction in cancer, an adverse effect of beta carotene seems unlikely and may well be, in spite of formal statistical significance, due to chance."

The Problems

The doctors and scientists who designed this study were surprised at the results. After analysis, I feel there were some problems that may have led to these unexpected findings:

1. Pre-existing pathology. After 36 years of at least 20 cigarettes a day, there would be considerable damage to lung tissue. In some people, this damage would probably include the presence of precancerous conditions.
2. Too little, too late. If these smokers would have taken multiple antioxidants for the 36 years they smoked, one has to wonder if the mutagenic process would have been retarded or eliminated in some cases. Furthermore, the levels of antioxidants used in this study were too low. Dr. Brian Leibovitz, editor of the Journal of Optimal Nutrition, stated that more appropriate daily intake for a "challenge group" like the one studied should have been at least 120 mg a day of beta carotene and 1500 IU per day of vitamin E.
3. Synthetic vitamins. Dr. Robert Atkins states that in 12 studies with natural beta carotene, cancer protective effects have been observed. He raises the point that in this study synthetic beta carotene was used. The vitamin E used in this study was also of synthetic nature, and the literature says synthetic E is not as potent as the natural form.
4. Lack of biochemical or biological sense. University of California Berkeley Wellness Letter, a conservative publication on nutrition and fitness, raises the issue that with our current knowledge base, it just doesn't make sense that antioxidants and/or beta carotene, in particular, could cause or exacerbate the cancer process.
5. Alcohol. How many heavy smokers do you know who do not drink? Dr. Jeffrey Bland raises this very interesting question about the other lifestyle habits of these Finnish men. Long-term alcohol use can impair the liver's ability to metabolize vitamin A and beta carotene. Thus, if these heavy smokers were also drinkers, the beta carotene they were ingesting orally may not have been properly delivered to the target tissues. Remember that in the placebo group, those smokers who had the highest blood levels of beta carotene and vitamin E had

the lowest levels of cancer.

Comments

When this study was published, both sides of the nutritional science debate quickly began their public relations "spin." Conservative groups who (to put it nicely) are vitamin skeptics were quoting this study like the gospel and seemed genuinely happy at the results. Ironically, these are the same folks who (every time a positive vitamin study is published) warn the public not to believe a single study, but to look at all the evidence before making a decision on using a supplement. Conversely, the nutritional far left who routinely creatively extrapolate any mild positive in any study as a fact were crying medical/pharmaceutical conspiracy. Those of us in the middle just want the truth. If beta carotene is harmful, I certainly want to know about it, and will definitely report it to you. However, as Dr. Jeffrey Bland states, in the last five years alone there have been 23 well-respected studies showing the positive benefits of antioxidants in protecting against heart disease and chronic illness. Although this study raises some legitimate questions, I do not agree with conservative groups such as the Center for Science in the Public Interest who (based on this study) recommended that their readers take no more than 3 mg (5000 IU) of beta carotene a day. They also recommended that the "most cautious approach would be to take no vitamin E, although 30 mg is likely to be safe." For my personal safety, I will continue to live dangerously with 25,000 IU of beta carotene and 500 IU of vitamin E per day. Finally, if I was a smoker these amounts would be, at minimum, doubled.

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