

Vitamins can cause cancer—REALLY??

This week, supplement consumers were bombarded with headlines that attacked the very bedrock of their belief in the efficacy of vitamins—undermining their conviction that taking them confers disease protection and longevity.

(As if this week's assault on Dr. Oz as well as FDA hearings on whether to make homeopathic remedies prescription-only weren't enough! But more on those subjects in the future. . .)

CBS News trumpeted:



“Consumers are always looking for ways to minimize their cancer risk, which is one reason why many turn to over-the-counter vitamin and mineral supplements. But new research finds that while companies promote dietary supplements for their cancer-prevention benefit, some may end up doing more harm than good.”

Certainly these are charges not to be taken lightly. We are constantly learning, sometimes decades after their introduction, about unforeseen harmful effects of *drugs*. So we doctors of integrative medicine must maintain constant vigilance over the supplements we recommend, and stay abreast of the latest research. We can't be too quick to deny the potential for harm, even though supplements are naturally-derived and have less potential for toxicity than synthetic drugs.

But it's long been a concern of mine that, since vitamins and minerals are essential for growth, they might at least, in theory, support the growth and proliferation of precancerous or cancer cells. So let's look at the evidence.

The current study by the University of Colorado Cancer Center was presented at a forum of the American Association for Cancer Research (AACR) Annual Meeting 2015, which means it hasn't yet been published, so no one has had a chance to properly review and challenge it. It is common practice in the academic community to debate the conclusions of major scientific studies before sweeping public recommendations can be offered, but in this case, there was a rush to judgment to capture lurid headlines, as if the cancer link were a *fait accompli*.

The study is not new, but a *mélange* of old studies, some of which have been refuted and discredited. Meta-analyses like the Colorado Cancer Center study are notorious for introducing bias by cherry-picking research that supports a predetermined conclusion.

The suggestion that synthetic beta carotene might act as a cancer promoter dates back to the early 1990s, and is based on research involving male Finnish cigarette smokers, many of whom were alcoholic—not really representative of typical supplement users. Nevertheless, most quality supplement manufacturers have backed away from using cheap, synthetic beta carotene in their products, and instead have substituted mixed carotenoids which more closely mirror the spectrum of natural carotenoids found in fruits and vegetables.

The Colorado study touts the recent SELECT study that showed a failure of the combination of vitamin E and selenium to prevent prostate cancer. But all cancer prevention trials to date using vitamin E have used the *wrong form* of vitamin E: alpha tocopherol. When gamma tocopherol-rich vitamin E was compared to alpha-tocopherol, it was found to confer protection against cancer. The reason may be that

high doses of alpha tocopherol may displace valuable gamma tocopherol.

Most manufacturers of high-quality supplements recognize that alpha-tocopherol-only supplements are obsolete, and have supplanted them with mixed tocopherols, rich in the gamma tocopherol fraction.

As for selenium, other than the SELECT trial in which it was paired with vitamin E, there is no evidence that it promotes cancer. Instead, some studies support its cancer-protective effects, while others don't. There remains controversy over the optimal form and dosage of selenium for cancer, and for which specific cancers it may be protective.

When it comes to B vitamins, folic acid is sometimes fingered as a potential cancer culprit. But for a long time it was actually thought that folic acid was preventive because it is essential for methylation, a process that keeps tumor-promoting genes in check. Studies referenced in the Colorado Cancer Center study indicate the opposite, that folic acid might promote intestinal polyps or colon cancer.

Nevertheless, a recent study of 5400 women taking folic acid, B6 and B12 showed no increase in colon cancer incidence. The reason for conflicting findings may derive from our new understanding of methylation. Most manufacturers are now substituting body-ready methylfolate for synthetic folic acid in their supplements. This is because somewhere around 30-40% of the population are inefficient metabolizers of folic acid (based on their faulty MTHFR genes) and folic acid is less effective for them; alternatively, high levels of un-metabolized folic acid might accumulate and drive carcinogenesis.

At this point, it's jumping the gun to conclude that B vitamins are either protective or promoting of cancer. But since methylation and proper DNA transcription go hand-in-hand, it's not unreasonable to expect that further research will reveal a protective role for the right type of B vitamins. Alternatively, it may turn out to be wise to use B vitamins for prevention of cancer, but to issue a caution flag for their use after cancer has been detected and treated. We just don't know yet.

For a more thorough discussion of these issues, listen to my recent podcast with Dr. Lise Alschuler. She is author of *The Definitive Guide to Cancer* and developer of line of vitamin supplements specifically designed for cancer survivors—Prothrivers. Dr. Alschuler believes that certain vitamins and minerals should be emphasized for cancer survivors, but others kept to a minimum. Therefore, ordinary one-size-fits-all multis might be less desirable for cancer patients than targeted supplementation.

Keep in mind that much of our understanding of the relationship between nutrition and cancer is a work-in-progress, but we must not succumb to alarmist assertions like those of the Colorado Cancer Center study that "Vitamins can cause cancer." To do so would be to poison the well for tens of millions of supplement users who are deriving enormous benefits from quality products that are constantly being updated to keep up with the latest scientific findings.

For another comprehensive critique of the Colorado Cancer Center study, check out this blog by Lise Alschuler ND: [Is Supplement Use Linked to Increased Cancer Risk?](#)