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Supplements and cancer prevention: A cautionary tale

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Government regulators and the scientific community should work to ensure that they give clear guidance to the public about dietary supplements and cancer risk, according to a commentary published April 25 in the *Journal of the National Cancer Institute*.

Evidence from animal, in vitro and observational studies has suggested that taking dietary supplements may lower cancer risk. However, the small number of randomized controlled studies, the gold standard in evidence-based medicine, has not confirmed this—and some studies have actually shown that supplements may increase cancer risk. Still, the supplement industry is booming, with estimated annual sales at $30 billion in the U.S.

To examine the potential role of dietary supplements and cancer risk, Maria Elena Martinez, Ph.D., of the University of California San Diego Moores Cancer Center and colleagues, looked at observational studies of several supplements, including anti-oxidants, folic acid, vitamin D, and calcium. Several observational studies found that diets high in fruits and vegetables were associated with lower risk of certain cancers, including respiratory and gastrointestinal. Specifically, with respect to anti-oxidant supplements, the authors found that: "The importance of oxidative stress for carcinogenesis does not establish that the administration of supplemental antioxidants will protect against the carcinogenesis that oxidative stress may induce." Furthermore, they write, "Supplementation by exogenous antioxidants may well be a two-edged sword; these compounds could, in vivo, serve as pro-oxidants or interfere with any of

a number of protective processes such as apoptosis induction." Indeed, several antioxidant trials the researchers examined reported increased cancer risks with supplementation. They looked at trials with supplements using folic acid, vitamin D and calcium, among other compounds.

The researchers caution against taking dietary supplements for cancer prevention, adding that many expert committees and organizations have concluded that nutritional supplements have little or no benefit in cancer prevention. They say that more randomized control trials—spanning many years instead of just a few—are needed to verify the effect of nutritional supplementation in cancer risk.

Meanwhile, people continue to take supplements, spurred by manufacturers' suggestions that supplements are healthy at best and harmless at worst. Furthermore, believers in supplements assume that they are well regulated, the authors write. "These beliefs underscore the need for efforts by scientists and government officials to encourage the public to make prudent decisions based on sound evidence with respect to use of dietary supplements for cancer prevention."

Provided by Journal of the National Cancer Institute

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