Supplements Don’t Prevent Cancer, Studies Show

Fred Hutch research finds some supplements offer little benefit, some may increase cancer risk and some can interfere with treatment.

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Dietary supplements are wildly popular, but large clinical trials and other research by Fred Hutch Cancer Center scientists show that many common dietary supplements offer little proven benefit for cancer prevention, and in some cases may even increase cancer risk.

“It would be nice if we had a pill that we could take that could protect us from disease,” said Garnet Anderson, PhD, director of Fred Hutch’s Public Health Sciences Division (PHS) and holder of the Fred Hutch 40th Anniversary Endowed Chair. “But it’s not that easy.”

Initially created to treat nutritional deficiencies, dietary supplements are now sold as a panacea for nearly all ills — including cancer — and unlike drugs used to treat disease, they face few regulatory hurdles. There’s no rigorous vetting process to get U.S. Food and Drug Administration (FDA) approval; supplements have no FDA approval process. The FDA only gets involved if they’re shown to be unsafe, misbranded or adulterated once they’re on the market.

Yet in 2025 alone, U.S. consumers spent an estimated $60 billion (or more) on dietary and over-the-counter supplements, their popularity fueled by an aging population and a burgeoning wellness industry replete with charismatic online influencers.

Who wouldn’t want to simply take a “magic pill” to boost a flagging immune system, sharpen a foggy mind and/or protect them from — or even eliminate — cancer?

Unfortunately, it’s not that simple. That’s why in addition to researching and developing cures for cancer, Fred Hutch scientists have drilled down into a slew of supplements to see whether they offer any protection against disease. Their data point to a consistent theme: supplements have not been shown to prevent cancer and, in some cases, may actually increase cancer risk.

What’s more, some supplements can interfere with cancer treatments, something not all patients realize. Many people assume they’re harmless, even beneficial, and don’t think to tell their doctors.

Curious about the benefits (and potential harms) of dietary and other over-the-counter supplements? Read on for their findings:

Supplements are not the same as food

First and foremost, most large research organizations including the American Cancer Society advise against taking supplements as a way to prevent cancer. In fact, not taking dietary supplements for cancer prevention is one of AICR's (American Institute for Cancer Research) top 10 cancer prevention tips.

Why not get your vitamins and minerals in pill form? Isn't it more efficient?

"Research shows that supplements don't offer the same benefits as eating whole foods," the AICR advises. "When you eat whole foods, your body absorbs a range of vitamins, minerals, amino acids and other compounds that work together to protect your health. But when vitamins, minerals, fiber and other food substances are isolated into supplements, they may not be absorbed as well by our bodies."

In other words, getting your beta-carotene from carrots and sweet potatoes is fine, but taking beta-carotene in pill form is not. Read on to discover why.

Some supplements can increase cancer risk

Cancer prevention is a big part of Fred Hutch's research, and the scientists here have conducted many large randomized clinical trials — the gold standard in science — to determine if dietary supplements are helpful for the prevention of cancer and other diseases. Some of those trials had unexpected results.

The Selenium and Vitamin E Cancer Prevention Trial (SELECT) was launched in 2001 to see if Vitamin E and selenium supplementation could prevent prostate cancer in men. Contrary to expectations, the data showed no protective benefit. Instead, they found vitamin E supplements increased prostate cancer risk by 17% and selenium raised the risk of high-grade prostate cancer in some men.

The Carotene and Retinol Efficacy Trial (CARET), another NCI-funded trial led by Fred Hutch, was launched to study the cancer prevention capabilities and safety of a daily combination of the antioxidant beta-carotene and retinyl palmitate (Vitamin A) in people at risk for lung cancer. Instead of helping, they found beta carotene and vitamin A supplements increased lung cancer incidence and death among heavy smokers or workers exposed to asbestos.

Fiber is definitely your friend

What does work? Research consistently points to dietary fiber — found in fruits, vegetables, legumes, whole grains, nuts and seeds — as the remedy that improves health in a number of ways.

“Fiber has so many roles and provides so many different benefits for our bodies,” said Fred Hutch registered dietitian Suz Stein, MDM, RD, in this video. “In terms of cardiovascular health, fiber can help lower cholesterol by drawing it out of our body. Fiber is also really important in terms of keeping us regular, it helps with blood sugar control, it helps our gut microbiome and is really amazing for cancer prevention.”

Fred Hutch’s Heather Greenlee, ND, PhD, MPH, a professor in the PHS and Clinical Research divisions, said fiber is especially protective against colorectal cancer and advises we eat 30 grams or more of it a day (only around 10% of Americans meet this fiber goal).

“Emphasize plant foods,” she said. “They’re packed with fiber and nutrients, including those that are anti-inflammatory. And plant protein is more affordable than meat. It’s also lower in saturated fat and higher in fiber.”

Heather Greenlee, ND, PhD, MPHCourtesy of Fred Hutchinson Cancer Center

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What about fiber laxatives? A 2014 Fred Hutch study looking at laxative use found soluble-fiber laxatives offered the same protective effects as dietary fiber, which reduces colorectal cancer risk by diluting carcinogens in the stool, encouraging growth of healthy bacteria in the colon and increasing stool transit time.

Non-fiber laxatives, however, were a problem. People who took non-fiber laxatives increased their risk of developing colorectal cancer by nearly 50%. Fiber-based laxatives lowered the risk of colorectal cancer by 56%.

Can supplements cause harmful interactions?

Absolutely, it’s one reason why Fred Hutch cancer researchers have continued to study their use.

A 2008 Fred Hutch study found that up to 81% of cancer survivors use dietary supplements and that up to 68% of those who do, don’t tell their oncologists. That’s a huge problem because, as study author Cornelia Ulrich, PhD, pointed out “some vitamins, such as folic acid, may be involved in cancer progression while others, such as St. John’s wort, can interfere with chemotherapy.”

Research has shown that St. John’s wort reduces the effectiveness of cyclosporine, an immunosuppressive drug used in stem-cell and solid organ transplantation, as well as indinavir, a protease inhibitor used to treat HIV infection. There are other documented interactions, as well, which is why Fred Hutch has continued to investigate dietary supplements and what effect (good, bad or ugly) they may have on people undergoing cancer therapy.

Even the expense of supplements can cause issues for patients.

“Supplements are not inexpensive,” McMillen said. “And the expense of these unproven supplements can impact the dollars people have to spend on real food. It’s a real scenario.”

Greenlee, medical director of Fred Hutch’s Integrative Medicine Program, said some patients don’t realize supplements can potentially reduce the effectiveness of cancer treatment or cause complications, pointing to these potential interactions at the 2024 San Antonio Breast Cancer Symposium:

- Fish oils and omega-3a supplements, said to provide anti-inflammatory support, can cause bleeding.

- Turmeric supplements, touted as “anti-cancer therapy,” can cause bleeding, as well as estrogenic activity and CYP interactions (often implicated in drug-drug interactions).

- Melatonin supplements can also cause bleeding, CYP1A2 interactions (linked to cancer risk) and also has estrogenic properties.

- Medicinal mushrooms supplements (including turkey tail, lion’s mane, reishi) are taken for immune support, but they can cause bleeding, CYP interactions, liver damage and more.

Sharing is caring (for yourself)

Sharing information about supplement use with your cancer care team is key, Greenlee said, to ensure there are no adverse interactions between their use and treatment.

“Fred Hutch clinical pharmacists can help patients understand interactions and contraindications during cancer treatment,” she said, adding that the Integrative Medicine Program has dedicated pharmacists to help patients understand what supplements are safe to use during treatment.

In addition to researching how supplements’ metabolic pathways can hip check cancer treatments, Greenlee and colleagues are also trying to identify trustworthy resources on these interactions, publishing data last year on the national natural product database NatMed. Additional studies on the long-term effects of supplement use in cancer patients are currently underway.

The bottom line? If you’re using supplements, keep your doctors in the loop. And caveat emptor — buyer beware. Online influencers make millions hawking these pills.

“Just because something is natural doesn’t mean it’s safe,” Greenlee said. “We know there’s a lot of interest in the use of dietary supplements. But there are also many misleading health claims.”

SIDEBAR:

Cancer and nutrition: What you need to know

Debunking Common Nutrition & Physical Therapy Myths, Fred Hutch dietitians and physical therapy experts debunk common myths.

What is fiber? Fred Hutch clinical dietitians Ray Palko and Suz Stein explain fiber, why it’s important, and how it can affect cancer risks.

What’s the psychology behind using dietary supplements? Listen to Fred Hutch’s Dr. Jonathan Bricker, holder of the Endowed Chair in Cancer Prevention, discuss what’s behind our tendency to turn to the “quick fix” for cancer prevention in this new episode of Fred Hutch’s Bench to Bedside and Beyond podcast.

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