

James L. Holly, M.D.

Diet, Exercise and Cancer The American Cancer Society Nutrition and Exercise Guide Part IV: Nutrients, Cancer and Other Questions

By James L. Holly, MD

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The American Cancer Society has published guidelines for diet and exercise in regard to decreasing your risk of developing various cancers. Part III and IV of this series address specific foods or nutrients in regard to cancer causation and/or cancer prevention.

Because people are interested in the relationship specific foods or nutrients have to specific cancers, research on dietary factors and cancer risk is often widely publicized. Health professionals who counsel patients should emphasize that no one study provides the last word on any subject, and that individual news reports may overemphasize what appear to be contradictory or conflicting results. In brief news stories, reporters cannot always put new research findings in their proper context. The best advice about diet and physical activity is that it is rarely, if ever, advisable to change diet or activity levels based on a single study or news report, especially if the data are reported as "preliminary findings." The following questions and answers address common concerns about diet and physical activity in relation to cancer.

Does aspartame cause cancer?

Aspartame is a low-calorie artificial sweetener that is about 200 times sweeter than sugar. Current evidence does not demonstrate any link between aspartame ingestion and increased cancer risk. People with the genetic disorder phenylketonuria should avoid aspartame in their diets.

Does beta-carotene reduce cancer risk?

Because beta-carotene, an antioxidant chemically related to Vitamin A, is found in vegetables and fruits, and because eating vegetables and fruits is associated with a reduced risk of cancer, it seemed plausible that taking high doses of beta-carotene supplements might reduce cancer risk. In three major clinical trials, people were given high doses of synthetic beta-carotene in an attempt to prevent lung cancer and other cancers. Two studies found beta-carotene supplements to be associated with a higher risk of lung cancer in cigarette smokers, and a third found neither benefit nor harm from beta-carotene supplements. Therefore, consuming vegetables and fruits that contain beta-

carotene may be helpful, but high-dose beta-carotene supplements may be harmful, especially for cigarette smoker.

Is calcium related to cancer?

Several studies have suggested that foods high in calcium might help reduce the risk for colorectal cancer, and calcium supplementation modestly reduces the formation of colorectal adenomas. There is also evidence, however, that a high calcium intake, primarily through supplements, is associated with increased risk for prostate cancer, especially for prostate cancers that are more aggressive. In light of this, both men and women should strive to consume recommended levels of calcium intake, primarily through food sources. Recommended intake levels of calcium are 1000 mg/day for people aged 19 to 50 and 1200 mg/day for people over 50 years old. Dairy products are excellent sources of calcium, as are some leafy vegetables and greens. People who obtain much of their calcium from dairy products should select low or nonfat choices to reduce intake of saturated fat. Those wishing to take calcium supplements should consult with their health care provider.

Do fluorides cause cancer?

Extensive research has examined the effects of fluorides given as dental treatments, or added to toothpaste, public water supplies, or foods. Fluorides do not increase cancer risk.

What is folic acid and can it prevent cancer?

Folic acid (closely related to folate or folacin) is a B vitamin found in many vegetables, beans, fruits, whole grains, and fortified breakfast cereals. Since 1998, all grain products have been fortified with folic acid. Folic acid deficiency may increase the risk of cancers of the colorectum and breast. Current evidence suggests that to reduce cancer risk, folic acid is best obtained through consumption of vegetables, fruits, and enriched grain products.

Can garlic prevent cancer?

The health benefits of the allium compounds contained in garlic and other vegetables in the onion family have been publicized widely, mostly because garlic has very small effects on blood cholesterol levels. Garlic is currently under study for its ability to reduce cancer risk. Insufficient evidence exists at this point to support a specific role for this vegetable in cancer prevention.

If our genes determine cancer risk, how can diet help prevent cancer?

Damage to the genes that control cell growth and maturation can either be inherited or acquired during one's lifetime. Certain types of mutations or genetic damage can increase the risk of cancer. Nutrients in the diet can protect DNA from being damaged. Physical activity, weight control, and diet might delay or prevent the development of cancer in

people with an increased genetic risk for cancer. The many interactions between diet and genetic factors are an important and complex topic of widespread current research interest.

Will lycopene reduce cancer risk?

Lycopene is the red-orange carotenoid antioxidant found at high levels in tomatoes and tomato-based foods. Several studies have reported that consumption of tomato products reduces the risk of some cancers. It is uncertain, however, whether lycopene is the micronutrient responsible for this association. Absorption of lycopene is increased when lycopene-rich vegetables are cooked and are consumed together with fat, although only very small amounts of fat are needed for absorption. Even if lycopene in foods is associated with lower risk for cancer, it does not follow that high doses taken as supplements would be either more effective or safe.

Does being overweight increase cancer risk?

Yes. Overweight and obesity are associated with increased risk for cancers of the breast (among postmenopausal women), colon, endometrium, gallbladder, adenocarcinoma of the esophagus, pancreas, renal cell (kidney) carcinoma, and possibly other sites as well.

Do pesticides in foods cause cancer?

Pesticides and herbicides can be toxic when used improperly in industrial, agricultural, or other occupational settings. Although vegetables and fruits sometimes contain low levels of these chemicals, overwhelming scientific evidence supports the overall health benefits and cancer-protective effects of eating vegetables and fruits. At present there is no evidence that residues of pesticides and herbicides at the low doses found in foods increase the risk of cancer.

Does saccharin cause cancer?

High doses of the artificial sweetener saccharin cause the formation of bladder stones that can lead to bladder cancer in rats. Saccharin consumption does not cause the formation of bladder stones in humans. If saccharin would increase cancer risk in humans, it would do so at doses many times greater than amounts typically consumed by people. Large epidemiological studies have not reported increases in bladder cancers among people using saccharin, and saccharin has been removed from the list of established human carcinogens by the US National Toxicology Program.

Do high levels of salt in the diet increase cancer risk?

Studies in other countries link diets containing large amounts of foods preserved by salting and pickling with an increased risk of stomach, nasopharyngeal, and throat cancer. No evidence suggests that salt used in cooking or in flavoring foods affects cancer risk.

What is selenium and can it reduce cancer risk?

Selenium is a mineral needed by the body as part of antioxidant defense mechanisms. Animal studies suggest that selenium protects against cancer, and one experimental trial has shown selenium supplements might reduce the risk of cancers of the lung, colon, and prostate. However, repeated and well-controlled studies are needed to confirm whether selenium is helpful in preventing these cancers. High-dose selenium supplements are not recommended, as there is only a narrow margin between safe and toxic dosages. The maximum dose in a supplement should not exceed 200 micrograms per day. Seafood, meats, and grain products are good sources of selenium.

Does sugar increase cancer risk?

Sugar increases caloric intake without providing any of the nutrients that reduce cancer risk. By promoting obesity and elevating insulin levels, high sugar intake may increase cancer risk. White (refined) sugar is no different from brown (unrefined) sugar or honey with regard to these effects on body weight or insulin.

Can drinking tea reduce cancer risk?

Some researchers have proposed that tea might protect against cancer because of its antioxidant content. In animal studies, some teas (including green tea) have been shown to reduce cancer risk, but epidemiological studies have had mixed findings. Presently, tea has not been proven to reduce cancer risk in humans/

Do trans-saturated fats increase cancer risk?

Trans-saturated fats are produced during the manufacture of hydrogenated oils such as margarine or shortening to make them solid at room temperature. Recent evidence demonstrates that trans-fats have adverse cardiovascular effects, such as raising blood cholesterol levels. Their relationship to cancer risk, however, has not been determined.

Does vitamin A lower cancer risk?

Vitamin A (retinol) is obtained from foods in two ways: preformed from animal food sources, and derived from beta-carotene in plant-based foods. Vitamin A is needed to maintain healthy tissues. Vitamin A supplements, whether in the form of beta-carotene or retinol, have not been shown to lower cancer risk, and high-dose supplements may, in fact, increase the risk for lung cancer.

Does vitamin C lower cancer risk?

Vitamin C is found in many vegetables and fruits. Many studies have linked consumption of vitamin C-rich foods with a reduced risk for cancer. The few studies in which vitamin C has been given as a supplement, however, have not shown a reduced risk for cancer.

Does vitamin E lower cancer risk?

One clinical trial showed that men who took vitamin E (50 mg/day) had a lower risk of prostate cancer compared with men who took a placebo, but this observation has yet to be confirmed.