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Cancer Prevention and Diet
By: James L. Holly, MD

"You are what you eat!" How often have you heard that? As science begins to "catch up" with Grandmother, we are learning more and more about how what we eat affects our quality and, often, our quantity of life. In that regard, let's look at how what you eat can affect your probability of developing cancer. You may be surprised.

Cancer is the second leading cause of death in Americans. Cancer is the result of cells replicating or reproducing themselves without regulation. These abnormal or cancerous cells then destroy vital organs and result in death. Prevention of cancer in a person who has never had cancer is called “primary” prevention. Primary prevention is the focus of this article.

This article discusses whether certain dietary ingredients may be beneficial in connection with the reduction of risk of developing cancer. However, this information is provided solely to aid patients in discussing such issues with their health care providers. It is not advised nor is this information intended to advocate, promote, or encourage self-use of this information for cancer-risk reduction.

Finally, some studies suggest an association between high blood or levels of a particular dietary ingredient with a reduced risk of developing cancer. Even if such an association were established, this does not mean that dietary supplements containing large amounts of the dietary ingredient will necessarily have a cancer risk reduction effect.

Prevention of a recurrence in a cancer patient who is in remission is called “secondary” prevention. Whether the information in this article would be helpful to people interested in secondary prevention is, for the most part, unknown. However, the information presented here is unlikely to help people who were ever diagnosed with metastatic cancer (also known as stage IV, or advanced, cancer).

Dietary changes that may be helpful: The following dietary changes have been studied in connection with cancer.

Alcohol

Alcohol consumption significantly increases the risk of cancers of the mouth (oral/oropharyngeal cancer), throat (esophageal cancer), and voice box (laryngeal cancer), particularly in conjunction with cigarette smoking. Most studies documenting these associations also report that former drinkers have significantly lower risks for these cancers compared with current drinkers. Strong correlations between alcohol consumption and the risk of having liver cancer have also been reported.

Little is known about the effect of alcohol intake on the risk of female cancers other than breast cancer. Of the few published studies, findings have been inconsistent.

Fiber

Whole grains (such as rye, brown rice, and whole wheat) contain high amounts of insoluble fiber—the type of fiber some scientists believe may help protect against a variety of cancers. In an analysis of the data from many studies, people who eat relatively high amounts of whole grains were reported to have low risks of lymphomas and cancers of the pancreas, stomach, colon, rectum, breast, uterus, mouth, throat, liver, and thyroid. Most research focusing on the relationship between cancer and fiber has focused on breast and colon cancers.

Consuming a diet high in insoluble fiber is best achieved by switching from white rice to brown rice and from bakery goods made with white flour or mixed flours to 100% whole wheat bread, whole rye crackers, and whole grain pancake mixes. Refined white flour is generally listed on food packaging labels as “flour,” “enriched flour,” “unbleached flour,” “durum wheat,” “semolina,” or “white flour.” Breads containing only whole wheat are often labeled “100% whole wheat.”

Vegetarianism

The following two possibilities are both strongly supported by research findings:

Some foods consumed by vegetarians may protect against cancer.
Eating meat may increase the risk of cancer.
Compared with meat eaters, most, but not all,12 studies have found that vegetarians are less likely to be diagnosed with cancer. Vegetarians have also been shown to have stronger immune function, possibly explaining why vegetarians may be partially protected against cancer. Female vegetarians have been reported to have lower estrogen levels compared with meat-eating women, possibly explaining a lower incidence of uterine and breast cancers. A reduced risk for various cancers is only partly, not totally, explained by differences in body weight, smoking habits, and other lifestyle issues.

Fruits and Vegetables

Consumption of fruits and vegetables is widely accepted as lowering the risk of most common cancers. Many doctors recommend that people wishing to reduce their risk of cancer eat several pieces of fruit and several portions of vegetables every day. Optimal intakes remain unknown.

Most doctors also recommend that people should not consider supplements as substitutes for the real thing. Some of the anticancer substances found in produce have probably not yet been discovered, while others are not yet available in supplement form. More important, some research, particularly regarding synthetic beta--carotene, does not support the idea that taking supplements has the same protective value against cancer as does consumption of fruits and vegetables.

Flavonoids

Flavonoids are found in virtually all herbs and plant foods. Consumption of flavonoid- rich onions and apples contain large amounts of one flavonoid called quercetin. Consumption of flavonoids in general, or quercetin-containing foods in particular, has been associated with protection against cancer in some, but not all, preliminary studies.

Tomatoes

Tomatoes contain lycopene -- an antioxidant similar in structure to beta-carotene. Most lycopene in our diet comes from tomatoes, though traces of lycopene exist in other foods. Lycopene inhibits the proliferation of cancer cells in test tube research.

A review of published research found that higher intake of tomatoes or higher blood levels of lycopene correlated with protection from cancer in 57 of 72 studies. Findings in 35 of these studies were statistically significant. Evidence of a protective effect for tomato consumption was strongest for cancers of the prostate, lung, and stomach, but some evidence of a protective effect also appeared for cancers of the pancreas, colon, rectum, esophagus (throat), mouth, breast, and cervix.

Cruciferous vegetables

Cabbage, Brussels sprouts, broccoli, and cauliflower belong to the Brassica family of vegetables, also known as “cruciferous” vegetables. In test tube and animal studies, these foods have been associated with anticancer activity, possibly due to several substances found in these foods, such as indole-3-carbinol, glucaric acid (calcium D-glucarate), and sulforaphane. In a preliminary human study, people who ate cruciferous vegetables were reported to have a lower-than-average risk for bladder cancer.

Meat (how it is cooked) and childhood cancers

In one report, high consumption of hot dogs was associated with an almost tenfold increase in the risk of childhood leukemia when compared with low consumption. In another report, maternal consumption of hot dogs and childhood consumption of hamburgers or hot dogs at least once per week were associated with a doubling of the risk of cancers in children. A review of nine studies found an association between consumption by pregnant women of cured meat and the risk of brain cancer in their offspring. These associations do not yet constitute proof that eating hot dogs or hamburgers causes cancer in children, and evidence linking cured meat consumption to childhood cancers remains somewhat inconsistent.

In the report studying the effects of eating hot dogs and hamburgers, the association between meat eating and leukemia was weakest among children who took vitamin supplements. Processed meats, such as hot dogs, contain nitrates and nitrites—precursors to carcinogens. Antioxidants found in multivitamins keep nitrates and nitrites from converting into those carcinogens. Therefore, the association between vitamin consumption in children and protection against childhood cancers remains plausible, though unproven.

Fish

Fish eaters have been reported to have low risks of cancers of the mouth, throat, stomach, colon, rectum, pancreas, lung, breast, and prostate. The omega-3 fatty acids found in fish are thought by some researchers to be the components of fish responsible for protection against cancer.

Coffee

Years ago, researchers reported the greater the consumption of coffee in a country, the higher the risk of pancreatic cancer in that country. An analysis of data from studies published between 1981 and 1993 did find some association between high consumption of coffee and an increased risk of pancreatic cancer. Surprisingly, however, the same report found that people drinking only one or two cups of coffee per day had, on average, a lower risk of pancreatic cancer compared with people who never drink coffee.

Most, but not all, published reports have shown coffee drinkers are at increased risk of bladder cancer, though in one case the relationship was found only in men. In another study, the association was found only with caffeinated coffee. A review of 35 trials found a small (7%) increased risk of bladder cancer in coffee drinkers compared with people not drinking coffee—a difference not statistically significant.

Calories

Scientists have known for many years that severe restriction of calories dramatically reduces the risk of cancer in laboratory animals. Scientists speculate that caloric content of the human diet may also affect cancer rates, though much less is known about the effect, if any, of moderate caloric restrictions in humans. In one report, adults with cancer were more likely to have consumed more calories during childhood compared with healthy adults. In other reports, attempts to find associations between reduced intake of calories and cancer have produced mixed results.

Only severe restriction in caloric intake provides significant protection in animal studies. As most people are unlikely to severely restrict calories, the association between caloric restriction and protection from cancer may ultimately prove to only be of academic interest.

Dietary Fat

In studying data from country to country, incidence of ovarian cancer correlates with dietary fat intake. According to preliminary research, consumption of saturated fat, dietary cholesterol (as found in eggs), and animal fat in general correlates with the risk of ovarian cancer.

Preliminary studies suggest dietary fat may correlate with the risk of uterine cancer. Some of the excess risk appears to result from increased body weight that results from a high-fat diet.

Sugar

A preliminary study has reported an association between an increasing intake of sugar or sugar-containing foods and an increased risk of gallbladder cancer. Whether this association exists because sugar directly promotes cancer or because sugar consumption is only a marker for some other dietary or lifestyle factor remains unknown.

Salt

In preliminary research, increasing intake of salt correlates with increased risk of stomach cancer. Associations between foods preserved with salt and the risk of cancers of the head and neck have also been reported.

Remember, it is your life and it is your health.