
CANCER FACTS

National Cancer Institute • National Institutes of Health
Department of Health and Human Services

Artificial Sweeteners

Key Points

- Artificial sweeteners are regulated by the U.S. Food and Drug Administration (FDA).
- There is no evidence that the regulated artificial sweeteners on the market in the United States are related to cancer risk in humans.
- As new sweetening products come on the market, the FDA continues to investigate any possible short- or long-term health risks that these products might create.

Questions about artificial sweeteners and cancer arose when early studies showed that cyclamate, one of several types of artificial sweeteners, caused bladder cancer in laboratory animals. However, results from research studies do not provide clear evidence of an association between artificial sweeteners and human cancer.

Cyclamate

Because the findings in animals suggested that cyclamate might increase the risk of bladder cancer in humans, the U.S. Food and Drug Administration (FDA) banned the use of cyclamate in 1969. More recent animal studies have failed to demonstrate that cyclamate is a



carcinogen (a substance known to cause cancer) or a co-carcinogen (a substance that enhances the effect of a cancer-causing substance). However, other issues must be resolved before cyclamate can be approved for commercial use as a food additive in the United States.

Saccharin

Animal studies have linked saccharin, another artificial sweetener, with the development of bladder cancer. For this reason, Congress required that all food containing saccharin bear the following warning label: “Use of this product may be hazardous to your health. This product contains saccharin, which has been determined to cause cancer in laboratory animals.” Congress also mandated that further studies of saccharin be performed.

The National Cancer Institute (NCI) and FDA have looked at the possible role of saccharin in causing bladder cancer in humans. People in the study (which included a large number of elderly people) who used this artificial sweetener had no greater risk of bladder cancer than people in the population as a whole. However, researchers looked at the data for those people who were heavy saccharin users (6 or more servings of sugar substitute or 2 or more 8-ounce servings of diet drink daily) and found some evidence of an increased risk of bladder cancer, particularly for those who heavily ingested the sweetener as a table top sweetener or through diet sodas. The results of the NCI–FDA study, together with findings of additional research with laboratory animals, suggest that consumption of saccharin is not a major risk factor for bladder cancer in humans. For these reasons, Congress removed the warning label in December of 2000.

Aspartame

Aspartame, an artificial sweetener distributed under several trade names (e.g., Nutrasweet or Equal), was approved in 1981 by the FDA after tests showed that it did not cause cancer in laboratory animals, although not all of the laboratory experiments agreed. Interest in aspartame was renewed by a 1996 report suggesting that an increase in the number of people with brain tumors between 1975 and 1992 might be associated with the introduction and use of this sweetener in the United States. However, an analysis of then-current NCI statistics showed that the overall incidence of brain and central nervous system cancers began to rise in 1973, 8 years prior to the approval of aspartame, and continued to rise until 1985. Moreover, increases in overall brain cancer incidence occurred primarily in people 70 and older, a group that was not exposed to the highest doses of aspartame since its 1981 introduction. These and other data do not point to a clear link, based on animal or human studies, between the use of aspartame and the development of brain tumors. The FDA still considers aspartame safe.

Stevia

In recent years, a sweetening product called stevia (stevioside or steviol) has received much public attention. It is 250 to 300 times sweeter than sugar. To date, the FDA has not approved it for use as a sweetener in the United States, but stevia may be sold as a dietary supplement. Researchers have found that the main chemical in stevia can be converted in the laboratory to a compound that causes changes in genes. More study is needed to learn whether the same changes, which might lead to cancer, could occur in people.

Additional Information

For more information on artificial sweeteners, contact the FDA. The FDA, an agency of the Department of Health and Human Services, regulates food, drugs, medical devices, cosmetics, biologics, and radiation-emitting products. The FDA can be contacted at:

Address: 5600 Fishers Lane
Rockville, MD 20857
Telephone: 1-888-INFO-FDA (1-888-463-6332)
Internet Web site: <http://www.fda.gov/>

###

Sources of National Cancer Institute Information

Cancer Information Service

Toll-free: 1-800-4-CANCER (1-800-422-6237)
TTY (for deaf and hard of hearing callers): 1-800-332-8615

NCI Online

Internet

Use <http://cancer.gov> to reach the NCI's Web site.

LiveHelp

Cancer Information Specialists offer online assistance through the *LiveHelp* link on the NCI's Web site.

This fact sheet was reviewed on 9/3/03