

SUGAR SUBSTITUTES — ARE THEY SAFE?



Introduction

Artificial sweeteners can help consumers cut down on calories and control weight, help to manage chronic conditions such as diabetes, and potentially prevent cavities. To date six artificial sweeteners are approved by the Food and Drug Administration (FDA). These include aspartame, saccharin, acesulfame-K, neotame, tagatose and sucralose. The agency regulates artificial sweeteners, which must be approved as safe before they can be marketed. The FDA evaluates a sweetener's composition and properties, how much is likely to be consumed, and various types of safety studies. For each of the sweeteners, the typical amount used by an individual is well within levels that can be consumed safely. Here are some general facts about the safety of sugar substitutes, as well as an individual look at each one.

Real Facts About Sugar-Substitutes

- Low calorie sweeteners do not increase the risk of cancer. Even though this has been a point of debate, studies have shown that these sweeteners do not initiate or promote cancers, even among high intake users.
- Sugar Substitutes do not increase the risk of other diseases. In contrast, these sweeteners can be a potentially useful tool in the management of calorie and carbohydrate intake, promoting overall health management.
- All approved sweeteners are safe for pregnant and nursing mothers. However, the advice of a physician or dietitian is recommended to make sure the dietary plan containing sugar substitutes meets the desired goals for calories and nutrients.

Approved Sweeteners

Aspartame (NutraSweet[®], Equal[®])

Aspartame was first approved in 1981. It is 200 times sweeter than sugar, with a caloric value similar to sugar (4 kcal/gram). However, since small amounts are used in foods it is considered essentially free of calories. In the mid-1990's, a researcher raised concerns that a rise in brain cancer incidence was linked to aspartame use. However, after intense testing both in animals and humans, there has been no link to aspartame and cancer. There has also been no evidence to support any other side effects connected to the sweetener.

One safety exception is for people who have phenylketonuria (PKU), a rare genetic condition in which the body cannot metabolize the amino acid phenylalanine (a component of aspartame). These people should avoid the sweetener altogether.

Saccharin (Sweet'N'Low[®], SugarTwin[®])

Saccharin was discovered in 1879, and was considered safe until 1977, when the FDA proposed a ban on the substance due to concerns about rats that developed bladder cancer after receiving high doses. This prompted the agency to put a ban on the sweetener, as well as a warning on labels. Further studies have since shown that the bladder tumors found in the rats were related to a mechanism in rats not found in humans. Due to these findings, it is no longer listed as a potential cancer-causing agent, and the requirement for the warning label has been removed.

Acesulfame-K (Sunnet[®], Sweet One[®])

Acesulfame-K is 200 times sweeter than sugar, with no calories. It was first approved by the FDA in 1988 for specific uses including as a tabletop sweetener. In 1998, it was then approved for use in beverages. In December 2003, it was approved for general uses in foods, but not in meat or poultry. There have not been any health problems, including cancer, associated with the substance despite more than 15 years of extensive studies. It is not broken down by the body and is eliminated unchanged by the kidneys. Therefore diabetic patients may safely use the product without it affecting their blood glucose levels.

Neotame and Tagatose

The newest of the low-calorie sweeteners, it was approved by the FDA in 2002 as a general purpose sweetener. It is approximately 7000 times sweeter than sugar. Prior to its approval, neotame was subjected to well over 100 scientific studies. These studies found no link to disease and use of the product. Tagatose was recently approved in 2001. It is a low-calorie sweetener derived from lactose, a carbohydrate found in many dairy products.

Sucralose (Splenda[®])

Sucralose is the only non-calorie sweetener made from real sugar. To produce the substance, scientists alter the structure

of the sugar molecule, making it much sweeter than sugar. Unlike sugar the body does not recognize it as a carbohydrate, so it does not cause dental caries. Also, sucralose cannot be digested, absorbed or metabolized for energy, nor affecting blood glucose levels, thus making it safe for diabetics. It can also be used safely by people with phenylketouria. In reviewing studies over the past 20 years, it has not been shown to cause cancer, reproductive, or neurological risks to humans.

Polyols

The most common polyols listed on labels are: erythritol, lactitol, mannitol, sorbitol and xylitol. Polyols offer many benefits. They taste like sugar but have fewer calories than sugar. They don't promote tooth decay and produce a low glycemic response. Thus, consumers, especially those with diabetes, may choose to use them. But, consume those foods that contain them in moderation because they may cause a laxative effect similar to prunes or other high fiber foods.

Unapproved Sweeteners

Other sugar substitutes not yet approved by the FDA include the following:

Alitame (Aclamate)

The sweetener is 2000 times sweeter than sugar. A petition for its broad range in food has been filed. Safety studies have shown no link between the substance and disease.

Cyclamate

This sweetener, 30 times sweeter than sugar, was banned in 1970 after concerns that studies showed a saccharin-cyclamate combination caused cancer in mice. Further studies on cyclamate alone have shown no connection between the substance and cancer, and now there is a petition with the FDA for reapproval.

Stevia

A natural alternative sweetener, Stevia is an herb that is much sweeter than sugar and calorie-free. Though it has received FDA approval it is sold as a dietary supplement. It is available in health food stores, in powdered extract or liquid form. However, be sure to avoid the alcohol-based forms.

Take on Sugar Substitutes

No artificial sweetener should play a major role in a healthful diet. Even if all of these sweeteners were given the green light for safety tomorrow, they would still fall short when it comes to good nutrition. Like sugar, sugar substitutes, and many of the foods that contain them contribute little or nothing in the way of nutrients, and also take the place of more nutritious foods in the diet. Limit yourself to a couple of servings a day.

Questions of safety aside, can sugar substitutes help you lose weight? Rising obesity rates would suggest not. Though there is some evidence aspartame can be helpful, most experts agree that sugar substitutes in general are neither the cause nor the cure for obesity.

Consider these points when deciding about using sugar substitutes:

- Read labels; sugar substitutes are now found in hundreds of products.
- Vary your choices or use products containing more than one sweetener. Because some sweeteners enhance each other's sweetness, blends often use less of each, reducing your exposure to any one sweetener.

References

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