

how sweet it is

Answers to frequently asked questions about sugar and artificial sweeteners.

Natural and artificial sweeteners continue to find their way onto the tips of people's tongues. In fact, so many new sweeteners have made their way to market that the American Dietetic Association (ADA) released a Position Paper in 2004 to help nutrition experts educate consumers on the health implications of these products (ADA 2004).

With all this sweet talk, it's no wonder that our clients are confused about which sweeteners to use and which to avoid. That's why we are offering the following answers to the most common questions that our own clients pose about sweetener use.

Question: Are foods that contain artificial sweeteners healthier than those that use natural sugar?

Answer: Consuming products that contain artificial sweeteners instead of pure sugar can be an effective way for clients to control their weight and even to manage conditions like diabetes, if used in moderation. Artificial sweeteners enhance the taste of foods and beverages without adding the extra calories that natural sugar would provide. However, consumers do need to use artificial sweeteners judiciously. Many artificially sweetened products, such as hot cocoa mixes, frozen desserts and baked goods, contain empty calories without offering the additional nutritional benefit of pure sugar. While the calories in artificial sweeteners do provide needed energy, extra pounds can still creep up on you if the energy consumed exceeds what you use. The bottom line for clients is to read food labels carefully in order to determine the number of calories per serving, regardless of whether the sweetener used is natural or artificial.

Question: Is there any new research on the safety of artificial sweeteners?

Answer: The U.S. Food and Drug Administration (FDA) has issued a list of acceptable food additives, which it calls "generally recognized as safe" (GRAS) (FDA 1998). See "Sweet Options" on the next page for the artificial sweeteners that meet the GRAS standard.

Despite this government sanction, however, clients still raise concerns about any potential link between cancer and artificial sweeteners, especially aspartame and saccharin. According to the National Cancer Institute (NCI), such concerns have not been supported in controlled human studies (NCI 2003). In addition, the FDA points to scientific evidence that aspartame in particular does not contribute to brain tumor development (Henkel 2004). Moreover, after investigating the relationship between saccharin consumption and bladder cancer risk, the NCI determined that there was insufficient evidence for concern (NCI 2003). Other researchers who reviewed epidemiological studies linking saccharin to bladder cancer also found no cause for concern in human subjects (Weihrauch & Diehl 2004). However, more studies are needed to consider whether these study findings apply to "heavy" saccharin users (those who consume six or more servings of saccharin or two or more 8-ounce servings of diet drinks daily) (NCI 2003).

In light of the existing scientific literature, warning labels were removed from saccharin's packaging in 2000 because of insufficient data supporting a risk to humans (NCI 2003). Furthermore, the ADA's 2004 Position Paper on artificial sweeteners concluded that consumers can safely enjoy products with these sweeteners in combination with a well-balanced diet (ADA 2004). That said, clients need to understand that the key is moderation when it comes to any sweetener. The goal should be to eat a varied and balanced diet that includes whole, unprocessed foods. This cannot be achieved if you are focusing solely on foods that contain artificial sweeteners.

Question: Is Splenda® a form of sugar, and is it safe to use, especially for diabetics?

Answer: Certain types of Splenda are actually a blend of natural sugars, such as maltodextrin and sucralose (Hanko & Rohrer 2004). Sucralose is 600 times sweeter than sugar yet contains no calories (Henkel 2004). However, products made with Splenda can vary greatly in terms of ingredients and calories. For example, Splenda Sugar Blend for Baking differs from Splenda No Calorie Sweetener or Splenda Granular, in that the baking variety *does* contain sugar and, thus, calories. A half-cup of Splenda Sugar Blend for Baking replaces a full cup of sugar; in those amounts the Splenda contains 384 calories and 96 grams (g) of carbohydrate, whereas the sugar contains 768 calories and 192 g of carbohydrate (www.splenda.com).

As far as the safety of Splenda products goes, more than 100 scientific studies indicate that the product is safe for use by humans (FDA 1998). More than 50 countries have approved the use of sucralose, which has been widely used in Canada and Australia since the early 1990s (Grotz et al. 2003). Splenda has been available in the United States since 1998 and was approved by the FDA as a general-purpose sweetener in 1999 (Henkel 2004). Prior to its approval, literally hundreds of studies were reviewed for evidence of carcinogenic, reproductive and neurological effects in animals and humans (FDA 1998).

When it comes to people with either type 1 or type 2 diabetes, sucralose appears to be safe. Grotz et al. evaluated the safety of a dose of 7.5 milligrams per kilogram of body weight per day for 3 months and studied whether such a dose would affect glycemic control in subjects with type 2 diabetes. Sucralose ingestion was found to be safe and well tolerated. According to Katherine Mulligan, MS, RD, a certified diabetes educator and a clinical instructor of medical dietetics at Ohio State University, "Splenda is a great nonnutritive

sweetener alternative for those with diabetes.” Mulligan adds that Splenda tastes a lot like pure sugar and can be used for baking, both of which can benefit people with diabetes.

Question: What the heck is high-fructose corn syrup, and is it safe to use?

Answer: High-fructose corn syrup (HFCS) is an extra-sweet, inexpensive sweetener used mostly in soft drinks and fruit juices. Since its debut in the 1970s, its use has grown in popularity within the food industry. HFCS now accounts for close to one-half of the caloric sweeteners taken in by Americans (Bray, Nielsen & Popkin 2004). For a list of popular foods that commonly contain HFCS, see “Hidden High-Fructose Corn Syrup” on the next page.

HFCS is made by combining glucose and fructose from corn syrup (International Food Information Council [IFIC] 2004). There are two forms of HFCS, known as HFCS-55 and HFCS-42, with the number denoting the percentage of fructose, or “fruit sugar.” HFCS-55 is found mostly in beverages, whereas HFCS-42 is used primarily in baked goods. The terms *fructose* and *HFCS* should not be used interchangeably because fructose is found naturally in

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fruits and vegetables, and HFCS is not 100% fructose (IFIC 2004).

Some nutrition experts think there may be a link between the increase in HFCS use and the current global obesity epidemic. According to one recent animal study, fructose may affect the brain’s response to food intake, provoking overconsumption and thereby negatively affecting energy balance (Bray, Nielsen & Popkin 2004). This inability to feel full or satiated may make fructose one more contributor to the obesity epidemic. But keep in mind that many factors contribute to obesity, and advise clients that occasionally eating a product made with HFCS is fine if it is part of a varied, healthy diet and lifestyle.

Question: Can I bake with artificial

sweeteners?

Answer: Yes and no. “No artificial sweetener has the exact properties of real [pure] sugar, so it is impossible to get perfect results when substituting an artificial sweetener for sugar in baking,” warns Kyle Shadix, MS, RD, a professional chef and nutrition instructor at the New York Restaurant School and Art Institute in New York City. That’s because in addition to acting as a sweetener, pure sugar helps with browning during baking and can activate any yeast used in a recipe, allowing baked goods to rise properly.

However, Shadix goes on to say that there is a plethora of new artificial sweeteners made specifically for baking purposes, such as Splenda Sugar Blend for

Sweet Options

The following is a list of artificial sweeteners that have been approved by the U.S. Food and Drug Administration (FDA):

Sweetener	Product Name	Found In	Calories per Gram
saccharin	Sweet 'N Low [®] , Sugar Twin [®] , Sweet 'N Low Brown, Necta Sweet [®]	soft drinks, baked goods, tabletop packets	0
aspartame	NutraSweet [®] , Equal [®] , Sugar Twin [®]	soft drinks, breath mints, chewing gum, frozen desserts, fruit spreads, iced tea, juice drinks, meal replacements, energy bars, protein drinks, pudding, baked goods	4
acesulfame-K	Sunett [®] , Sweet & Safe, Sweet One [®]	tabletop packets, baked goods, frozen desserts, candy, beverages (also mixed with aspartame in diet soft drinks)	0
sucralose	Splenda [®] product line	tabletop packets, baked goods, nonalcoholic beverages, chewing gum, frozen dairy desserts, fruit juices, gelatins and as a general-purpose sweetener for all foods	0
neotame	none	tabletop packets, beverages, baked goods, nonalcoholic beverages, chewing gum, confections and frostings, gelatins, puddings, processed fruits and juices, frozen desserts, toppings, syrup, jam, jelly	0

Sources: ADA 2004; IFIC 2004; www.neotame.com; www.aspartame.org.

Baking and Sugar Lite® from Equal®. These products tend to work best in recipes for pie fillings, cheesecakes and dessert sauces.

“If I had to choose an artificial sweetener for baking, it would most certainly be Splenda Granular, since it is the only one that is heat stable,” says Shadix, who co-owns Culinary Nutrition Consultants Inc. in New York.

Sweet Partings

When it comes to artificial sweeteners, moderation is the key. While there are no current data to indicate that these sweeteners pose a risk to humans, there is also no literature to show that they enhance health in any way. The best way to answer clients' questions about these products is to recommend that they adopt a well-balanced diet composed of whole foods and try to keep all sweeteners to a minimum.

Jenna A. Bell-Wilson, PhD, RD, LD, is an assistant professor in medical dietetics at Ohio State University. She holds a doctorate degree in exercise science and is an international pre-

sender in the areas of nutrition and fitness. She is the nutrition contributing editor for IDEA.

Susan Hanselman is a medical dietetics student at Ohio State University in pursuit of becoming a registered dietitian. She holds a bachelor of arts degree in English and hopes to write about nutrition topics in the future.

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Additional Resources

Check out these websites for more information on artificial sweeteners:

- **American Diabetes Association, www.diabetes.org/home.jsp**
- **American Dietetic Association, www.eatright.org**
- **Center for Science in the Public Interest, www.cspinet.org**
- **International Food Information Council, www.ific.org**
- **U.S. Food and Drug Administration, U.S. Department of Health and Human Services, www.fda.gov**

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Hidden High-Fructose Corn Syrup

Hidden high-fructose corn syrup (HFCS) is an ingredient in many popular foods, with the amount varying from brand to brand. The following list includes foods that may contain different quantities of HFCS.

- **breakfast cereals and instant breakfast drinks**
- **soft drinks, fruit drinks and juices**
- **Worcestershire sauce**
- **Oriental sauces, salad dressings and pasta sauces**
- **crackers, including saltine and graham**
- **granola bars**
- **potato chips and pretzels**
- **chocolate syrup, cocoa and dessert toppings**

Source: Adapted from The Corn Refiners Association 2005 (www.hfcsfacts.com/).