

Creating Health & Nutrition Fact Sheets



Sugar Substitutes

Nutrition Information

The United States Dietary Guidelines emphasize “choose and prepare foods and beverages with little added sugars or caloric sweeteners.” One way to meet this goal for those who want to control weight gain and diabetes is to use sugar substitutes. All have zero calories per serving, except sugar alcohols (2.4 calories per gram). Refer to the table on the next page for the most commonly used sugar substitutes.

Does the Use of Sugar Substitutes Mean a Food is Low Calorie?

Labels of foods that contain sugar substitutes may say “sugar

free,” “calorie free,” or “reduced calories.” These statements on the front of the package are the first sign of a low-calorie food and regulated by the Food and Drug Administration (FDA).

- A sugar-free food has less than ½ gram of sugar per serving.
- A calorie-free food has less than 5 calories per serving.
- A reduced-calorie food has at least one-quarter fewer calories than the original food.

Not all “sugar-free” or “reduced-calorie” foods are low in calories. The food may contain extra fat, which provides 9 calories per gram. A sugar-free food doesn’t always save all that many calories compared to the food it is replacing. Examine the Nutrition Facts labels on all low-calorie foods to know

what you’re really eating. Use of artificially sweetened foods in moderation can be a part of a healthy diet.

What’s the Difference Between Natural and Artificial Sweeteners?

Sugar substitutes can be categorized into natural and artificial sweeteners. Natural sweeteners, like stevia and monk fruit, are derived from natural sources (compounds in the stevia plant and extract from monk fruits are used to make these sweeteners sweet). Sugar alcohols occur naturally in certain fruits and vegetables. They are found in processed foods and generally are not used when preparing food at home. Artificial sweeteners, like saccharin, aspartame, and sucralose, are formed through a chemical process, often in a laboratory.

Are They Safe?

According to the American Diabetes Association, American Heart Association, and National Cancer Institute, there is no significant evidence that any of the sugar substitutes approved for use in the United States cause cancer or other serious health problems. When the FDA approves the use of or generally recognizes a sweetener as safe, they have carefully researched how it’s made, what foods it will be used in, and whether or not it is potentially harmful to a person’s health. The table on page 2 is a current list of all

Tip
Using sugar substitutes may help reduce your intake of sugar and calories.



Product	Safety	Number of sugar substitute packets to reach ADI ¹	Number of 12-oz cans of diet soda to reach ADI ¹	Sugar equivalent (a) 2 tsp (b) 1 cup	Cook or bake
Natural sweeteners					
Monk fruit (trade names: Monk Fruit in the Raw, PureLo)	Safe for all	Not specified	Not specified	(a) 2 tsp or 1 packet (b) 1 cup or 24 packets	Cook Bake
Stevia (made from steviol glycosides in the stevia plant) (trade names: Truvia ² , PureVia, Stevia in the Raw)	Safe for all	150-lb adult: 30 50-lb child: 10 ³	Information not available	Varies by brand	Cook Bake
Artificial sweeteners					
Sucralose (trade name: Splenda)	Safe for all	150-lb adult: 68.2 50-lb child: 22.8	150-lb adult: 4.8 50-lb child: 1.6	(a) 2 tsp or 1 packet (b) 1 cup or 24 packets	Cook Bake
Saccharin (trade names: Sweet Twin, Sweet'N Low, Necta Sweet)	Not safe for pregnant women	150-lb adult: 8.6 50-lb child: 2.8	150-lb adult: 2.4 50-lb child: 0.8	(a) 1 packet (b) 24 packets	Cook Bake
Aspartame (trade names: Nutra-Sweet, Equal, Sugar Twin)	May not be safe for people with phenylketonuria; use in moderation during pregnancy	150-lb adult: 97.4 50-lb child: 32.4	150-lb adult: 17 50-lb child: 5.6	(a) 2 tsp or 1 packet (b) 1 cup or 24 packets	Add only after cooking; not for baking
Acesulfame-K (trade names: Sweet One, Sunett)	Safe for all, use in moderation during pregnancy	150-lb adult: 20.4 50-lb child: 6.8	150-lb adult: 25.6 50-lb child: 8.6	(a) 1 packet (b) 12 packets	Cook Bake
Sugar Alcohols ⁴ (sorbitol, xylitol, lactitol, mannitol, erythritol, maltitol)	May cause bloating, gas, and diarrhea	Information not available	Information not available	Varies	Cook; not for baking
Neotame (trade name: Newtame) ⁴	Safe for all	Information not available	Information not available		Cook Bake
Advantame ⁴	Safe for all	Information not available	Information not available		Cook Bake

¹ ADI is the acceptable daily intake set by the Food and Drug Administration.

² Truvia is a blend of stevia leaf extract and erythritol (a sugar alcohol).

³ Set by Joint FAO/WHO Expert Committee on Food Additives; only approved as dietary supplement in the United States per FDA.

⁴ Sugar alcohols, neotame, and advantame are mostly used by food and drink manufacturers to sweeten processed foods, including but not limited to dairy drinks, frozen desserts, beverages, candies, and chewing gum.

sugar substitutes that are generally recognized as safe by the FDA. Use this table to find the acceptable daily intake (ADI), set by the FDA, for each sugar substitute.

What Are Sugar Alcohols?

Sugar alcohols are a type of carbohydrate often used by food manufacturers to sweeten

processed foods. They occur naturally in certain fruits and vegetables, but they can also be manufactured. Unlike the other sugar substitutes, sugar alcohols do provide calories, although significantly less than sugar. Sorbitol, erythritol, mannitol, xylitol, maltitol, lactitol, and isomalt are all sugar alcohols. They are used in

a wide range of products, including chewing gums, breath mints, candies, ice cream, baked goods, and fruit spreads.

Shopping Tips

Some sugar substitutes are packaged as “blends” or “mixes” to be used in cooking or baking. These contain a mix of the sugar substitute and actual

sugar. For example, both Splenda and Truvia sell a Sugar Blend and Brown Sugar Blend. Note that these blends are more caloric than the pure sugar substitute and have more carbohydrates. Also, using a blend versus the pure sugar substitute may change the ratio required to substitute for sugar

Apple Crisp with Truvia Natural Sweetener*

Serving size: 1/8 of dish

INGREDIENTS

Filling:

- 4 cups apples, sliced
- 1/2 cup water
- 1 Tbsp + 2 1/4 tsp Truvia natural sweetener (spoonable) or 6 packets Truvia natural sweetener
- 2 Tbsp all-purpose flour
- 1 1/2 tsp ground cinnamon
- 1/2 tsp nutmeg
- Nonstick cooking spray

Crisp:

- 1 cup rolled oats
- 1 Tbsp + 2 1/4 tsp Truvia natural sweetener (spoonable) or 6 packets Truvia natural sweetener
- 1/4 cup all-purpose flour
- 1 1/2 tsp ground cinnamon
- 1/4 cup butter, melted
- 1 1/2 Tbsp brown sugar
- 1/8 tsp salt

DIRECTIONS

Preheat oven to 375°F. For filling: place apples in a large bowl; sprinkle with water, Truvia natural sweetener, flour, cinnamon, and nutmeg; toss to coat the fruit. Spray 9-inch baking dish with nonstick spray; place apple mixture in dish. For crisp: in a separate bowl, combine oats, Truvia natural sweetener, flour, cinnamon, melted butter, brown sugar, and salt; stir to form crumbly mixture. Sprinkle crumb mixture on top of apples. Bake 35 to 40 minutes until apples are tender.

NUTRIENT INFORMATION

180 kcal, 33 g carbohydrate, 3 g protein, 7 g fat, 30 mg sodium, 15 mg cholesterol, 4 g fiber.

*Recipe used with permission from Truvia.

in baking or cooking. It is suggested that when baking with Stevia, use half sugar and half sugar substitute. Keeping half the sugar is important for moisture, browning, and rising.

Sources

ADA Evidence Analysis Library (2011). "The Truth about Artificial Sweeteners or Sugar Substitutes." Retrieved from www.andeal.org/files/Docs/NNSResource-Draft3.pdf.

Calorie Control Council (2014). "Sweeteners and Lite." Retrieved from www.caloriecontrol.org/sweeteners-and-lite.

Cumberland Baking Corp. "Sweet N' Low FAQs." Accessed November 2014 from www.sweetnlow.com/faq/cooking.

Gardner, C., et al. (2012). "Nonnutritive Sweeteners: Current Use and Health Perspectives." *Diabetes Care* 35. Retrieved from care.diabetesjournals.org/content/35/8/1798.full.pdf+html.

In the Raw. "Conversion Charts." Accessed November 2014 from www.intheraw.com/using-itr/conversion-charts.

Mayo Clinic (2014). "Artificial Sweeteners and

Other Sugar Substitutes." Retrieved from www.mayoclinic.org/healthy-living/nutrition-and-healthy-eating/in-depth/artificial-sweeteners/art-20046936?pg=1.

McNeil Nutritionals, LLC. "Splenda Brand Measurement Conversion Chart." Accessed November 2014 from www.splenda.com/cooking-baking/conversion-charts.

Merisant Company. "Equal FAQs." Accessed November 2014 from www.equal.com/equal-sucralose/faqs#classic13.

Pregnancy.org. "Which Sweeteners Are Considered Safe During Pregnancy?" Accessed November 2014 from www.pregnancy.org/article/which-sweeteners-are-considered-safe-during-pregnancy.

Truvia. "Apple Crisp with Truvia Natural Sweetener." Accessed November 2014 from truvia.com/recipes/apple-crisp.

U.S. Food and Drug Administration (2014). "High-Intensity Sweeteners." Retrieved from www.fda.gov/Food/IngredientsPackagingLabeling/FoodAdditivesIngredients/ucm397716.htm.

Prepared by Lynn James, M.S., R.D.N., L.D.N., senior extension educator in Northumberland County, and Lindsay Besecker, nutrition intern. Reviewed by Nancy Rutch, R.D.N., nutrition, diet, and health extension educator in Cumberland County.

extension.psu.edu

Penn State College of Agricultural Sciences research and extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

This publication is available in alternative media on request.

Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to minorities, women, veterans, individuals with disabilities, and other protected groups. Nondiscrimination: <http://guru.psu.edu/policies/AD85.html>

Produced by Ag Communications and Marketing

© The Pennsylvania State University 2015

Code UK181 1/15pod