

Sweeteners - sugars

Definition

The term sugar is used to describe a wide range of compounds that vary in sweetness. Common sugars include:

- Glucose
- Fructose
- Galactose
- Sucrose (common table sugar)
- Lactose (the sugar found naturally in milk)
- Maltose (product of starch digestion)

Sugars are found naturally in milk products (lactose) and fruits (fructose). Most of the sugar in the American diet is from sugars added in food products.

Function

Some of the functions of sugars include:

- Provide sweet flavor when added to food.
- Maintain freshness and food quality.
- Act as a preservative in jams and jellies.
- Enhance flavor in processed meats.
- Provide fermentation for breads and pickles.
- Add bulk to ice cream and body to carbonated sodas.

Many foods with added sugars often add calories without nutrients. These foods and drinks are often called "empty" calories. By contrast, foods containing natural sugars (such as fruit) also include vitamins, minerals, and fiber.

Most people know that there is a lot of added sugar in regular soda. However, popular "vitamin-type" waters, sports drinks, coffee drinks, and energy drinks also may contain a lot of added sugar.

Food Sources

Some sweeteners are made by processing sugar compounds. Others occur naturally.

Sucrose (table sugar):

- **Sucrose** occurs naturally in many foods and it is commonly added to commercially processed items. It is a disaccharide, which is made of 2 simpler monosaccharides-- glucose and fructose. Sucrose includes raw sugar, granulated sugar, brown sugar, confectioner's sugar, and turbinado sugar. Table sugar is made from sugar cane or sugar beets.

left when the liquid from the juice of the sugar cane evaporates.

- Brown sugar is made from sugar crystals that come from molasses syrup. Brown sugar can also be made by adding molasses back to white granulated sugar.
- Confectioner's sugar (also known as powdered sugar) is finely ground sucrose.
- Turbinado sugar is a less refined sugar that still retains some of its molasses.
- Raw and brown sugars are no healthier than granulated white sugar.

Other commonly used sugars:

- **Fructose (fruit sugar)** is the naturally occurring sugar in all fruits. It is also called levulose, or fruit sugar.
- **Honey** is a combination of fructose, glucose, and water. It is produced by bees.
- **High fructose corn syrup (HFCS)** and **corn syrup** are made from corn. Sugar and HFCS have almost the same level of sweetness. HFCS is often used in soft drinks, baked goods, and some canned products.
- **Dextrose** is chemically identical to glucose. It is commonly used for medical purposes such as in IV hydration and parenteral nutrition products.
- **Invert sugar** is a natural form of sugar which is used to help keep candies and baked items sweet. Honey is an invert sugar.

Sugar alcohols:

- **Sugar alcohols** include **mannitol, sorbitol, and xylitol**.
- These sweeteners are used as an ingredient in many food products that are labeled "sugar-free", "diabetic", or "low carb". These sweeteners are absorbed by the body at a much slower rate than sugar. They also have about one half of the calories of sugar. They should not be confused with sugar substitutes that are calorie free. Sugar alcohols may cause stomach cramps and diarrhea in some people.
- **Erythritol** is a naturally occurring sugar alcohol found in fruit and fermented foods. It is 60% to 70% as sweet as table sugar, but has fewer calories. Also, it does not result in as much of a rise in blood sugar after meals or cause tooth decay. Unlike other sugar alcohols, it does not cause stomach upset.

Other types of natural sugars:

- **Agave nectar** is a highly processed type of sugar from the *Agave tequiliana* (tequila) plant. Agave nectar is about 1.5 times sweeter than regular sugar. It has about 60 calories per tablespoon compared to 40 calories for the same amount of table sugar. Agave nectar is not healthier than honey, sugar, HFCS, or any other type of sweetener.
- **Glucose** is found in fruits in small amounts. It is also a syrup made from corn starch.
- **Lactose** (milk sugar) is the carbohydrate that is in milk. It is made up of glucose and galactose.
- **Maltose** (malt sugar) is produced during fermentation. It is found in beer and breads.
- **Maple sugar** comes from the sap of maple trees. It is made up of sucrose, fructose, and glucose.
- **Molasses** is taken from the residue of sugar cane processing.
- **Stevia sweeteners** are high intensity extracts derived from the stevia plant that are recognized as safe by the FDA. Stevia is 200 to 300 times sweeter than sugar.
- **Monk fruit sweeteners** are made from the juice of the monk fruit. They have zero calories per serving and are 150 to 200 times sweeter than sugar.

Table sugar provides calories and no other nutrients. Sweeteners with calories can lead to tooth decay.

Large amounts of sugar-containing foods can contribute to excess weight gain in children and adults. Obesity increases the risk for type 2 diabetes, metabolic syndrome, and high blood pressure.

Sugar alcohols such as sorbitol, mannitol, and xylitol may cause stomach cramps and diarrhea when eaten in large amounts.

Recommendations

Sugar is on the United States Food and Drug Administration's (FDA) list of safe foods. It contains 16 calories per teaspoon or 16 calories per 4 grams and can be used in moderation.

The American Heart Association (AHA) recommends limiting the amount of added sugars in your diet. The recommendation extends to all types of added sugars.

- Women should get no more than 100 calories per day from added sugar (about 6 teaspoons or 25 grams of sugar).
- Men should get no more than 150 calories per day from added sugar (about 9 teaspoons or 36 grams of sugar).

The United States Department of Agriculture (USDA) Dietary Guidelines for Americans also recommends limiting added sugars to no more than 10% of your calories per day. Some ways to reduce your intake of added sugars include:

- Drink water instead of regular soda, "vitamin-type" water, sports drinks, coffee drinks, and energy drinks.
- Eat less candy and sweet desserts such as ice cream, cookies, and cakes.
- Read food labels for added sugars in packaged condiments and sauces.
- There is currently no daily recommendation for the naturally occurring sugars found in milk and fruit products, but too much of *any* sugar can have negative effects on your health. It is important to have a balanced diet.

The American Diabetes Association nutrition guidelines state that you do not need to avoid all sugar and foods with sugar if you have diabetes. You can eat limited amounts of these foods in place of other carbohydrates.

If you have diabetes:

- Sugars affect blood glucose control the same as other carbohydrates when eaten at meals or snacks. It is still a good idea to limit foods and drinks with added sugar, and to check your blood sugar level carefully.
- Foods that contain sugar alcohols may have fewer calories, but be sure to read the labels for the carbohydrate content of these foods. Also, check your blood sugar level.

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