



# Sugar and Sugar Substitutes

## HOW SUGAR WORKS

Although natural sweeteners are more appealing and healthier than chemically refined sugars and syrups, the fact remains that all sweeteners are not nutritious and their use should be moderate. Sugar influences dietary imbalances by crowding out more nutritious foods and by using up valuable nutrients through sugar metabolism. Using sweeteners in conjunction with nutritionally sound foods can help reduce the rise in blood sugar levels and provide nutrients needed to metabolize sugar.

Unlike whole foods that are digested slowly and changed into forms of sugar that the body can use, concentrated sweeteners are absorbed quickly into the bloodstream causing a rapid rise in the body's blood sugar level. The pancreas usually responds by overproducing insulin. This causes the blood sugar to rapidly fall, creating a variety of symptoms including fatigue, irritability, lack of concentration and ... the desire for more sugar. [Click here for more information on these side effects.](#)

## Natural Sweeteners

By using natural sweeteners in a moderate way, we can have our cake and eat it too. When sweeteners are needed, choose among the least processed and most natural alternatives to white sugar.

## Fruit Juice Sweeteners

These offer good flavor, slower more uniform digestion and added nutrients. There are more and more delicious products such as breakfast cereals and cookies that use fruit juice (usually white grape) exclusively as a sweetener.

## Malted Rice or Barley Syrups

These are produced by using malt enzymes to convert the starch in barley and rice into a sweet syrup. Malt syrups are better tolerated by those who have blood sugar disorders because their principal sugar, maltose, does not stimulate insulin production. Malt syrups are about 25% less sweet than sugar, and can successfully replace sugar in many recipes. Reduce the liquid by half the amount of malted grain syrup used in the recipe.

## Honey

Raw and unfiltered, is a whole unprocessed food. You only need to use half as much honey because it's twice as sweet as sugar. Of all the sweeteners, honey needs the least amount of refining and therefore is most deserving of the often misused label "natural".

## Molasses

This is a thick dark liquid produced during the refining of white sugar. Blackstrap molasses is the remaining liquid after the sucrose crystals have been removed. It contains a significant amount of minerals, including iron. Barbados molasses is sweeter and milder than blackstrap but contains only a fraction of the minerals. It is made from the whole sugar cane. Look for molasses that does not use sulfur as a preservative.

## Pure Maple Syrup

This is a delicious whole food made by boiling maple sap. A traditional favorite drizzled on pancakes or waffles, maple syrup adds a superb flavor to baked goods.

## Sucanat

This is made from organically grown sugar cane juice. Nothing is added, only the water is removed. Sucanat contains the natural complex sugars, molasses, and up to 3% vitamins and minerals. It is comparable to white sugar in sweetness and use.

## REFINED SWEETENERS

### White Sugar

This is a processed crystalline by-product of the sugar cane. The cane is chemically stripped of its minerals and bleached. White sugar is quickly absorbed. Brown sugar is white sugar flavored with molasses.

### Turbinado Sugar

This is sometimes mislabeled "raw sugar". It is slightly less processed than white sugar. It is steam-cleaned rather than bleached. True raw sugar is not sold in the United States because it is unsanitary.

### Fructose

This is not actually made from fruit but from sugar by breaking down the sucrose molecule into fructose and glucose. Its claim to fame is that it reaches the bloodstream more slowly than other kinds of sweeteners and does not affect insulin secretions and blood sugar levels dramatically. Fructose is about 60% sweeter than sugar, but this is greatly reduced when cooked. Because it is only 55% fructose, high fructose corn syrup (commonly found in sodas) needs insulin to be metabolized.

## ARTIFICIAL SWEETENERS

Artificial sweeteners perpetuate cravings for sweets by keeping one's sweet tolerance level high. The current popular artificial sweetener, aspartame (NutraSweet) is 200 times sweeter than sugar. Some people are sensitive to aspartame and have reacted with headaches, depression, irritability or dizziness. Product advertising commonly claims that aspartame is a "natural" product. Its two ingredients, phenylalanine and aspartic acid are amino acids, but they are not found combined in nature as in the laboratory. The long-term effects of aspartame is not known.

## SUGAR ALCOHOLS

### Sorbitol, Mannitol, Xylitol

These are sugar alcohols. They act similarly to all sugars when broken down during digestion. Sorbitol and mannitol are derived from corn glucose and while half the calories of sugar, they are only half as sweet. Sorbitol is commonly found in diabetic food because it has a slow absorption rate and needs little if any insulin. Although xylitol has the same calories as sugar, it neutralizes acids in the mouth and may help reduce cavities.

### Sugar Content of Various Foods

<u>Food</u>	<u>Spoons of sugar per serving</u>
Pork and beans, 1 cup	5
Fruit yogurt, 8 oz.	8
Cola, 16 oz.	12
Chocolate cake, iced, 4 oz.	10
Ice cream, 1 cup	6
Glazed doughnut	6
Chocolate milk, 8 oz.	6
Peanut butter and jelly sandwich	7
Pecan pie, 5 oz.	12
Gelatin, 1 cup	8
Kool-Aid, sweetened, 8 oz.	6
Chewing gum, 7 sticks	4
Sweetened cereal, 2 oz.	7
Chocolate bar, 2 oz.	7
Thick shake, 11 oz.	9
Orange soda, 12 oz.	12
Jelly beans, a handful	8
Liquers/cordials, 2 oz.	4