

SWEETENERS

you might find in your food

There are many different sweeteners in our food supply today that might be used as an alternative to table sugar. Here is some basic information about some of the most popular caloric, low-caloric sweeteners, including real sugar as a comparison.



CALORIC									
Sugar	Agave	Brown Rice Syrup	Coconut Sugar	Date Sugar	Dextrose	Fruit Juice Concentrate	High Fructose Corn Syrup (HFCS)	Honey	Maltodextrin
SOURCE: Sugar beet and sugar cane plants	SOURCE: Agave Plant	SOURCE: Rice	SOURCE: Flower of the coconut plant	SOURCE: Dates	SOURCE: Corn	SOURCE: Fruit varieties	SOURCE: Corn	SOURCE: Nectar collected by bees	SOURCE: Corn or Wheat
SUGARS: Sucrose	SUGARS: Fructose (55-90%), glucose	SUGARS: Glucose, maltose, maltotriose	SUGARS: Sucrose, glucose, fructose	SUGARS: Glucose, fructose, sucrose	SUGARS: Glucose	SUGARS: Sucrose, glucose, fructose	SUGARS: Fructose (55% or 42%), glucose (45% or 58%)	SUGARS: Fructose, glucose	SUGARS: Glucose
Calories per teaspoon: 15	Calories per teaspoon: 21	Calories per teaspoon: 16	Calories per teaspoon: 15	Calories per teaspoon: 11	Calories per teaspoon: 16	Calories per teaspoon: ~16	Calories per teaspoon: 17	Calories per teaspoon: 20	Calories per teaspoon: 15
GI: moderate	GI: low	GI: high	GI: low	GI: low	GI: high	GI: unknown	GI: moderate	GI: low ↔ high	GI: high

SWEETNESS COMPARED TO SUGAR

Standard for sweetness	30-40% sweeter	30% less sweet	Equal sweetness	Less sweet	25% less sweet	Less sweet	120-160 times sweeter	variable	10% as sweet
PRODUCTION After sugar beet and sugar cane plants are harvested, sugar is removed from the plant through crushing, cutting and boiling. It is then filtered, washed and crystallized to produce the sugar we find in our pantries.	PRODUCTION The leaves of the plant are cut and crushed to extract the sap. The sap is filtered, heated and treated enzymatically to convert the fructans (not very sweet) to fructose and glucose.	PRODUCTION Rice dextrin is produced by removing the hemicellulose, protein and lipid fractions from the brown rice. The rice dextrin then goes through further steps to convert polysaccharides to predominantly monosaccharides.	PRODUCTION Made from sap of the coconut blossom. Sap is collected and boiled down to a thick syrup, cooled into blocks and broken into granulated sugar.	PRODUCTION Made from powdering dried dates.	PRODUCTION Dextrose is produced from cornstarch, though starch can come from any kind of plant. The process involves enzymatic breakdown of the starch polymers to single glucose units, which is similar to how our bodies break down starch.	PRODUCTION Made by evaporating most of the water from the fruit puree, concentrating the natural sugar content.	PRODUCTION Corn syrup is made from cornstarch. The cornstarch is processed enzymatically by glucose isomerase to convert some of the glucose into fructose. To develop HFCS, this process is taken further to convert more glucose.	PRODUCTION Produced by bees, honey is harvested by bee keepers and the filtered/ processed commercially. Taste, color and flavor all depend on the types of flowers the bees have collected nectar from. Basic commercial honey tends to be a mix of different nectars to help ensure consistency and flavor.	PRODUCTION Produced by processing starch (most commonly corn), using acids or enzymes to break it down.
NOTES While all green plants make sucrose through photosynthesis, sugar beet and cane plants make the greatest quantities of sugar.	NOTES Takes about seven years for the sugar content of the plant to reach a reasonable level for harvesting.	NOTES A mild-flavored sweetener, also known as a maltose-based sweetener or rice malt syrup.	NOTES Considered a partially refined sugar and is similar in color, flavor and sweetness as brown sugar. May retain a small amount of micronutrients.	NOTES Looks a lot like brown sugar but cannot simply replace brown sugar in recipes as it does not dissolve in water or melt, and therefore does not incorporate well into mixtures.	NOTES Most commonly used in beer making.	NOTES Can contain traces of vitamins and minerals.	NOTES The higher fructose variety is often used in soft drinks and the lower fructose version is used more in cakes.	NOTES GI ranges are dependent on where the honey has been collected. Commercial honey blends tend to be high (GI>70).	NOTES Commonly added to processed foods to provide bulk and texture and help blend ingredients together.

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Calorie free? In order for tabletop sweeteners to be used like regular table sugar, they are often mixed with a bulking agent such as maltodextrin or erythritol. These bulking agents add just a few calories when you use these non-caloric sweeteners. One packet of Equal or Splenda contains 4 calories and the sweetness of two teaspoons of sugar.

Source: Barclay A, Sandall P, Schwede-Slavin C. The Ultimate Guide to Sugars and Sweeteners: discover the taste, use, nutrition, science and lore of everything from agave nectar to xylitol. New York, NY: The Experiment, LLC; 2014.

CALORIC		LOW-CALORIC		NON-CALORIC						
Maple Syrup	Molasses	Allulose	Sugar Alcohols	Acesulfame K	Aspartame	Monk Fruit	Neotame	Saccharin	Stevia	Sucralose
SOURCE: Sap of the maple tree	SOURCE: Sugar cane plant	SOURCE: Corn	SOURCE: Corn	SOURCE: N/A	SOURCE: N/A	SOURCE: Monk fruit (a small melon)	SOURCE: N/A	SOURCE: N/A	SOURCE: Stevia plant	SOURCE: N/A
										
SUGARS: Sucrose, glucose, fructose	SUGARS: Sucrose, glucose, fructose	SUGARS: Allulose	SUGARS: Glucose	SUGARS: Glucose	SUGARS: N/A	SUGARS: Mogrosides	SUGARS: N/A	SUGARS: N/A	SUGARS: N/A	SUGARS: N/A
Calories per teaspoon: 17	Calories per teaspoon: 19	Calories per teaspoon: 1.6	Calories per teaspoon: 0.6-8	Calories per teaspoon: 0	Calories per teaspoon: 0	Calories per teaspoon: 0	Calories per teaspoon: 0	Calories per teaspoon: 0	Calories per teaspoon: 0	Calories per teaspoon: 0
GI: low	GI: moderate	GI: N/A	GI: varies	GI: N/A	GI: N/A	GI: N/A	GI: N/A	GI: N/A	GI: N/A	GI: N/A

SWEETNESS COMPARED TO SUGAR

Slightly less sweet	25-50% less sweet	70% as sweet	30-100% as sweet	200 times sweeter	200 times sweeter	100-250 times sweeter	7,000-13,000 times sweeter	200-700 times sweeter	200-400 times sweeter	600 times sweeter
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<p>PRODUCTION The maple tree is tapped so the sap can be collected in buckets that hang on the tree. The sap is then boiled to reduce the water content, concentrating the sugars.</p> <p>NOTES Contains traces of organic acids, vitamins and some minerals, however not a significant level.</p>	<p>PRODUCTION Molasses is a co-product of sugar refining. It is spun off the raw sugar in a centrifuge. The first spin produces light molasses, while later spins produce darker molasses.</p> <p>NOTES May contain trace amounts of iron, calcium and phosphorus. Sugar beets also naturally contain molasses but it is not used in the food supply.</p>	<p>PRODUCTION Allulose is a "rare sugar" naturally present in wheat, figs and raisins. However, it is manufactured from corn through enzymatic reactions.</p> <p>NOTES Allulose has the same chemical formula as fructose but is arranged differently. It isn't metabolized by the body and may cause similar GI discomfort as sugar alcohols.</p>	<p>PRODUCTION While sugar alcohols can occur naturally, most are produced industrially from sugars (pentoses and hexoses). Sorbitol and xylitol are hydrogenated with a nickel catalyst. Erythritol is made through fermentation of glucose and sucrose.</p> <p>NOTES Sugar alcohols are considered tooth friendly. Excess consumption of sugar alcohols can cause diarrhea. This is because the body ferments them in the gut.</p>	<p>PRODUCTION Acesulfame K, or aceK, is a potassium salt. It is made by combining acetoacetic acid and potassium.</p> <p>NOTES As a tabletop sweetener, it is always mixed with at least one other ingredient to reduce the sweetness to compare to table sugar. Brand name Sweet One or Sunett.</p>	<p>PRODUCTION Aspartame is a methyl ester of aspartic acid/phenylalanine dipeptide. Typically aspartame is made through chemical synthesis.</p> <p>NOTES Breaks down in the body to aspartic acid, phenylalanine and a small amount of methanol. Brand names are NutraSweet or Equal.</p>	<p>PRODUCTION Monk fruit naturally contains sucrose, glucose and the high-intensity sweetener mogroside. Extracting the mogrosides involves crushing the fruit, adding water, filtering and spray drying.</p> <p>NOTES It is challenging stevia as the next "natural" high-intensity sweetener as it is heat stable, acid stable and soluble in water. Also called Lou Han Guo.</p>	<p>PRODUCTION Neotame is a derivative of the amino acids phenylalanine and aspartic acid.</p> <p>NOTES It is heat stable, so it can be used in baking. Brand name is Newtame.</p>	<p>PRODUCTION Saccharin is a sodium salt, made through the oxidation of o-toluensulfaonamide and or/phthalic anhydride.</p> <p>NOTES It can provide a bitter or metallic aftertaste. Saccharin crosses the placenta and is secreted in breastmilk. It is not metabolized in the body and excreted in the urine. Brand name SweetN' Low or Sweet and Low.</p>	<p>PRODUCTION The leaves are boiled, then the liquid is passed through a resin and washed in alcohol to release the sweet glycosides. These are then re-crystallized to produce the commercial product. Seven glycosides have been extracted, the two most commonly used are stevioside and rebaudioside A (Reb A).</p> <p>NOTES Stevia can leave a bitter aftertaste. Stevia consumer products are often mixed with erythritol or sugar.</p>	<p>PRODUCTION Manufactured through chlorination of sucrose in a multistep synthesis.</p> <p>NOTES When combined with maltodextrins (used as bulking agents) there is a small contribution to energy. It is also stable in heat, so can be used in baking. Brand name Splenda.</p>
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Visit sugar.org for more information about sugar.