



Sugar Alcohols

Sugar Alcohol Facts

If you've looked lately at the "Nutrition Facts" panel on a pack of sugar-free gum or candy, or a low carbohydrate food product you might be surprised to see that it contains "sugar alcohol." Don't let the name fool you. These ingredients were given this consumer-friendly name because part of their structure resembles sugar and part is similar to alcohol. Despite their name, sugar alcohols do not contain ethanol, which is found in alcoholic beverages.

What is sugar alcohol?

Sugar alcohols, also known as polyols, are ingredients used as sweeteners and bulking agents. They occur naturally in foods and come from plant products such as fruits and berries. As a sugar substitute, they provide fewer calories (about a half to one-third less calories) than regular sugar. This is because they are converted to glucose more slowly, require little or no insulin to be metabolized and don't cause sudden increases in blood sugar. This makes them popular among individuals with diabetes; however, their use is becoming more common by just about everyone as we are all becoming more aware of the negative health effects of being overweight and are using low carbohydrate foods. You may actually be consuming them and not even know it!

Identifying them

Common sugar alcohols are mannitol, sorbitol, xylitol, lactitol, isomalt, maltitol and hydrogenated starch hydrolysates (HSH). Sugar alcohols are not commonly used in home food preparation, but are found in many processed foods. Food products labeled "sugar-free," including hard candies, cookies, chewing gums, soft drinks and throat lozenges often consist of sugar alcohols. They are frequently used in toothpaste and mouthwash too.

Check carbohydrates

So why are sugar alcohols used so often? For one thing, they help to provide the sweet flavor to food in many products marketed towards individuals with diabetes. But, beware! There is often the misconception that all sugar alcohol-containing products are "free foods." Some of these products may still contain significant amounts of carbohydrates. It's important to check the food label for the total carbohydrate contained in the product and talk with a dietitian or your physician to determine how it will best fit into your meal plan.

If a manufacturer uses the term "sugar free" or "no added sugar," they must list the grams of sugar alcohols. If more than one sugar alcohol is used in a product, the "Nutrition Facts" panel will list the amount of sugar alcohol it contains under the total carbohydrate. If just one sugar alcohol is used, the label will list its

specific name, for example, "mannitol" or "hydrogenated starch hydrolysates."

Pros and cons of sugar alcohols

On the *positive* side, sugar alcohols contain less calories (1.5 - 3 calories per gram) than sugar (4 calories per gram), and they do not cause tooth decay like sugar does. Therefore, many "sugar-free" gums including Trident® and Extra® are made with sugar alcohols. Sugar alcohols also add texture to foods, retain moisture better and prevent foods from browning when they are heated.

Unfortunately, there are some *negatives* associated with sugar alcohols. The most common side effect is the possibility of bloating and diarrhea when sugar alcohols are eaten in excessive amounts. There is also some evidence that sugar alcohols, much like fructose (natural fruit sugar) in fruit and fruit juice can cause a "laxative effect." Despite their lower calorie content, weight gain has been seen when these products are overeaten – just like anything else – use them and products containing them - **in moderation**.

The American Diabetes Association agrees with me – they claim that sugar alcohols are acceptable in a moderate amount but should not be eaten in excess! Some people with diabetes, especially Type I diabetics, have found that their blood sugars rise if sugar alcohols are eaten in uncontrolled amounts – imagine that!!

Sugar Alcohols vs. Artificial Sweeteners

Sugar alcohols and artificial sweeteners, such as saccharin (Sweet & Low®) and aspartame (Equal® or Nutrasweet®), are not one and the same. One difference between the two types of sugar substitutes is that the artificial sweeteners contain zero calories whereas sugar alcohols contain from 1.5 to 3 calories per gram. Another issue is diabetes management. Artificial sweeteners do not contain carbohydrates so they do not cause blood sugar to elevate, whereas, sugar alcohols have some effect on blood sugar. Overall, both can be useful in diabetes management when used properly.

Forms of sugar alcohol

- **Mannitol** occurs naturally in pineapples, olives, asparagus, sweet potatoes and carrots. It is extracted from seaweed for use in food manufacturing. Mannitol has 50-70 percent of the relative sweetness of sugar, which means more must be used to equal the sweetness of sugar. Mannitol lingers in the intestines for a long time and therefore often causes bloating and diarrhea.
- **Sorbitol** is found naturally in fruits and vegetables. It is manufactured from corn syrup. Sorbitol has only 50 percent of the relative sweetness of sugar which means twice as much must be used to deliver a similar amount of sweetness to a product. It has less of a tendency to cause diarrhea

compared to mannitol. It is often an ingredient in sugar-free gums and candies.

- **Xylitol** is also called "wood sugar" and occurs naturally in straw, corncoobs, fruit, vegetables, cereals, mushrooms and some cereals. Xylitol has the same relative sweetness as sugar. It is found in chewing gums.
- **Lactitol** has about 30-40 percent of sugar's sweetening power, but its taste and solubility profile resembles sugar so it is often found in sugar-free ice cream, chocolate, hard and soft candies, baked goods, sugar-reduced preserves and chewing gums.
- **Isomalt** is 45 - 65 percent as sweet as sugar and does not tend to lose its sweetness or break down during the heating process. Isomalt absorbs little water, so it is often used in hard candies, toffee, cough drops and lollipops.
- **Maltitol** is 75 percent as sweet as sugar. It is used in sugar-free hard candies, chewing gum, chocolate-flavored desserts, baked goods and ice cream because it gives a creamy texture to foods.
- **Hydrogenated starch hydrolysates (HSH)** are produced by the partial hydrolysis of corn. HSH are nutritive sweeteners that provide 40 - 90 percent of the sweetness of sugar. HSH do not crystallize and are used extensively in confections, baked goods and mouthwashes.