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## Sweeteners – sugar substitutes

Artificial sweeteners are substances that are used in place of sweeteners with sugar (sucrose) or sugar alcohols. They may also be called sugar substitutes, nonnutritive sweeteners (NNS), and noncaloric sweeteners.

### Function

Sugar substitutes can help people trying to lose weight. They provide sweetness to foods and drinks without adding extra calories.

Using artificial sweeteners in place of sugar can also help prevent dental decay and aid in blood sugar control in people with diabetes.

### Food Sources

All artificial sweeteners are chemically processed. They can be added to food and during preparation. You may also add them when you eat. Most diet or low-calorie food products you buy at the store are made using artificial sweeteners.

Aspartame (Equal and NutraSweet):

- A combination of two amino acids -- phenylalanine and aspartic acid
- 220 times sweeter than sucrose
- Loses its sweetness when exposed to heat. It is best used in beverages rather than baking.
- Well-studied, and hasn't shown any serious side effects
- FDA approved

Sucralose (Splenda):

- 600 times sweeter than sucrose
- Used in many diet foods and drinks, chewing gum, frozen dairy desserts, fruit juices, and gelatin
- Can be added to food at the table

- FDA approved

Saccharin (Sweet 'N Low, Sweet Twin, NectaSweet):

- 200 to 700 times sweeter than sucrose
- Used in many diet foods and drinks.
- May have a bitter or metallic aftertaste in some liquids.
- Not used in cooking and baking
- FDA approved

Stevia (Truvia, Pure Via, Sun Crystals):

- Non-caloric plant-based sweetener
- Made from the plant *Stevia rebaudiana*, which is grown for its sweet leaves
- Common names include sweetleaf, sweet leaf, sugarleaf, or simply stevia.
- Rebaudiana extract is approved as a food additive. It is considered a dietary supplement.

Acesulfame K (Sunett and Sweet One):

- An artificial sweetener
- Is heat-stable, so can be used in cooking and baking
- This sweetener can be added to food at the table. It is marketed for this use under the name Sweet One.
- Used together with other sweeteners, such as saccharin, in carbonated low-calorie beverages and other products
- Most similar to table sugar in taste and texture
- FDA approved

Neotame:

- Artificial sweetener
- Used in many diet foods and drinks
- Used as a tabletop sweetener

Monk Fruit (Nectresse):

- The powdered extract of monk fruit, a round green melon that grows in central Asia.
- 150 to 200 times sweeter than sucrose
- Heat stable and can be used in baking and cooking and is more concentrated than sugar (¼ teaspoon or 0.5 grams equals the sweetness of 1 teaspoon or 2.5 grams sugar)

- FDA approved

Cyclamates:

- 30 times sweeter than sucrose
- Banned in the United States because they were shown to cause bladder cancer in animals

## Side Effects

People often have questions about the safety and health effects of artificial sweeteners.

In 2012, the American Heart Association and the American Diabetes Association published a report that concluded that sensible use of NNS could help lower caloric and carbohydrate intake. Further research is still needed. There is also not enough evidence at this time to determine if NNS use leads to weight loss or lower heart disease risk.

More research is also needed on the safety of artificial sweeteners. There is no clear evidence that the artificial sweeteners sold and used in the United States are linked to cancer or coronary heart disease risk in humans.

## Recommendations

The FDA regulates all artificial sweeteners that are sold or used in prepared foods in the United States. The FDA has set an acceptable daily intake (ADI) -- the amount that can be safely eaten each day over a person's lifetime.

The artificial sweeteners aspartame, acesulfame K, saccharin, neotame, and sucralose are all FDA approved.

Aspartame is not recommended for people with phenylketonuria (PKU). Their body is unable to break down one of the amino acids used to make aspartame.

There is limited evidence to support the use of or avoidance of NNS during pregnancy. The use of FDA-approved sweeteners is acceptable in moderation. However, the American Medical Association suggests avoiding saccharin during pregnancy due to possible slow fetal clearance.

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