

# Sweet nothings

## not all sweeteners are Equal

by David Schardt

The sugar-substitute business must be a pretty good place to be these days. Thanks to the obesity epidemic, a growing number of people are trying to cut calories. That means more “diet” this and “no-sugar-added” that. And the low-carb craze has left food manufacturers scrambling to be the first on their block to take the sugar out of everything from chocolate to ketchup to Bloody Mary mix.

The result? We’re eating more low-calorie sweeteners than ever before. Yet not all sugar substitutes are Equal, so to speak.

- Sucralose is safe.
- Sugar alcohols, while safe, may give you the runs if you eat too much.
- Aspartame probably is safe.
- Acesulfame and stevia may or may not be safe; there’s not enough good research to tell.
- Saccharin and cyclamate aren’t safe (though the risk is small).

If you drink diet pop or chew gum (sugarless or regular), you’ll have a hard time avoiding aspartame and acesulfame. And if you’re a fan of lower-calorie yogourt, you’ll be getting either aspartame or sucralose.

That’s because manufacturers choose sugar substitutes depending on the food. Some are used in baked goods because they withstand heat better. Some are used in yogourt because they can survive in an acidic environment.

Just keep in mind that even an unsafe sweetener like saccharin poses only a tiny risk to any given person. The potential problems arise when tens

of millions of people consume the sweetener for years. That’s why the government should require better studies on some sweeteners and should ban others.

And remember: *real* sugar is hardly a toxic chemical. The problem is the large amounts that Canadians eat. The United Nations recently suggested a limit of 50 grams of added sugar per

day for people who eat a 2,000-calorie diet. That’s about 12 teaspoons, a little more than what you’d get from one 355 mL soft drink.

Here’s a scorecard showing which sugar substitutes are safe...and which are questionable. With that in hand, you can check our “Sweet vs. Sweet” chart (p. 11) to see which sweeteners are in which foods. 🍌

### Safe, but large amounts can cause diarrhea



## Sugar Alcohols

**Also known as:** Sorbitol, xylitol, mannitol, maltitol, lactitol, isomalt, erythritol, hydrogenated starch hydrolysates.

**What are they?** Sugar alcohols aren’t sugar and won’t make you tipsy. They’re made by adding hydrogen atoms to sugars. For example, adding hydrogen to glucose makes sorbitol.

**Why they’re low-calorie:** Some sugar alcohols are absorbed better than others. Erythritol, which is largely unabsorbed, has virtually no calories, while

maltitol and hydrogenated starch hydrolysates are absorbed enough to provide three-quarters the calories of sugar.

**Safety:** Too much sugar alcohol travelling unabsorbed through the intestinal tract can cause bloating, gas, and diarrhea. In the U.S., the Food and Drug Administration requires a “laxative effect” warning notice on labels if consumers could ingest 50 grams of sorbitol or 20 grams of mannitol from the food in a day. The Canadian Food Inspection Agency doesn’t require any similar notice. (*If sugar alcohols have made you sick, send a letter to CSPI—Sweeteners, Suite 4550, CTTC Bldg., 1125 Colonel By Drive, Ottawa, Ontario K1S 5R1. We’ll forward it to the CFIA.*)

**Comments:** Sugar alcohols don’t raise blood sugar as rapidly as sugar does, yet they’re as bulky as sugar. So they can be used tablespoon-for-tablespoon to replace the sugar that’s been removed from lower-carb foods. But while they may have a minimal impact on your blood sugar, they may have more than a minimal impact on your waistline and hips.



Safe

## Sucralose

**Also known as:** Splenda.

**What is it?** Sugar (sucrose) chemically combined with chlorine.

**Why it's low-calorie:** Our bodies can't burn sucralose for energy.

**Safety:** Sucralose passed all safety tests in animal studies.

**Comments:** There is no reason to suspect that sucralose causes any harm. (If a food contains sucralose, it will say so prominently on the package.)

Probably safe, but certain people should avoid

## Aspartame

**Also known as:** Sweet 'N Low (blue packet), Equal, NutraSweet.

**What is it?** A synthetic derivative of a combination of the amino acids aspartic acid and phenylalanine.

**Why it's low-calorie:** Only tiny amounts of aspartame are needed to sweeten foods.

**Safety:** People with the rare disorder phenylketonuria (PKU) can't metabolize phenylalanine, so they should avoid aspartame.

Whether aspartame causes headaches is unclear. An industry-funded study of people who complained of aspartame-induced headaches concluded that it doesn't. But an independent test in 1994 of 26 similar people found that the sweetener was linked to symptoms in the 11 who were "very sure" they were sensitive. That suggests that some people react to aspartame, though fewer than the number who believe they do.

The most serious charge—that aspartame increases the risk of cancer—has never been proved. Among the many animal studies on aspartame, only one hints at an increased risk.

There's no foundation to claims floating around the Internet that aspartame causes everything from Alzheimer's disease to multiple sclerosis.

**Comments:** Clouds hang over both aspartame and acesulfame, but researchers have done more—and better—studies on aspartame. Even so, because aspartame is used in so many foods, Health Canada should err on the side of caution and require non-industry-funded studies to resolve any questions about aspartame's safety.

People who believe they suffer from headaches or other symptoms after consuming foods that contain aspartame should avoid the sweetener. (If a food contains aspartame, it will say so prominently on the package.)



Inadequately tested

## Acesulfame

**Also known as:** Sunett, acesulfame potassium, acesulfame-K.

**What is it?**

A synthetic chemical.

**Why it's low-calorie:**

Our bodies can't metabolize acesulfame.



**Safety:** The safety of acesulfame (pronounced ace-SULL-fame) rests on three animal studies conducted in the mid-1970s. The first was inconclusive because it found a variety of tumours both in mice fed acesulfame and in control mice fed acesulfame-free diets. The second was so plagued with sick animals that the results were unreliable.

In the third study, female rats fed acesulfame were twice as likely to develop breast tumours as control rats. While most of the tumours were benign, there were some malignant tumours—one in the 60 control rats, two in the 60 rats given low doses of acesulfame, and three in the 60 rats given high doses of acesulfame.

The sweetener's manufacturer argued that acesulfame seemed to cause more tumours only because the control rats happened to remain unusually tumour-free. The Canadian and U.S. governments bought the company's interpretation and refused to require more safety testing.

**Comments:** Acesulfame should be better tested. Until then, try to avoid it. (If a food contains acesulfame, it will say so prominently on the package.)

For the chemical structures of the sweeteners described in this article, see [www.cspinet.org/sweetatoms](http://www.cspinet.org/sweetatoms).



## Inadequately tested

### Stevia

**Also known as:** Sweet leaf, honey leaf.

**What is it?** An extract from a shrub that grows in Brazil and Paraguay.

**Why it's low-calorie:** Our bodies can't metabolize stevia.

**Safety:** When male rats were fed high doses of stevioside (stevia's active ingredient) for 22 months, they produced fewer sperm and there was increased cell proliferation in their testicles, which could cause infertility. And when female hamsters were fed large amounts of a derivative of stevioside, they had fewer and smaller offspring. That—

combined with the absence of other animal studies that are normally required for food additives—led Health Canada, the European Union, the World Health Organization, and the U.S. Food and Drug Administration to conclude that stevia shouldn't be allowed in food.

**Comments:** Stevia can't be used as an ingredient in food. But it can be sold in health food and grocery stores and pharmacies (as a liquid or in individual packets), since safety rules for "natural health products" are looser than rules for foods. Stevia is promoted by the health-food industry as a natural alternative to synthetic sweeteners like saccharin, cyclamate, and aspartame. But "natural" doesn't automatically mean "safe."



### Two Sweet

Two sugar substitutes that have been approved in the U.S. but not yet in Canada:

■ **Neotame** is a synthetic combination of aspartic acid and phenylalanine, the same two amino acids that are used to make aspartame. But unlike aspartame, neotame isn't broken down in the body into phenylalanine, which is toxic to people with the rare disorder phenylketonuria (PKU). Animal and human studies have raised no safety concerns.

■ **Tagatose**, also known as Naturlose, is a "mirror-image" form of sugar that's manufactured from milk sugar (lactose). Most passes through the body unabsorbed, so consuming large amounts can cause colic, flatulence, bloating, and nausea. Animal and human studies have raised no safety concerns.

## Unsafe

### Saccharin

**Also known as:** Hermesetas.

**What is it?** A synthetic chemical.

**Why it's low-calorie:** Our bodies can't metabolize saccharin.

**Safety:** In 1977, when Canadian studies showed that saccharin causes bladder cancer in animals, the government banned its use in food. But the Feds permitted its sale in pharmacies as a tabletop sweetener, as long as labels cautioned consumers that "continued use of saccharin may be injurious to health," and that the sweetener "should not be used by pregnant women except on the advice of a physician."

In 2000 the low-calorie food industry convinced the U.S. FDA and the U.S. National Institutes of Health (NIH) that the main concern about saccharin was bladder cancer in male rats, but that people didn't develop bladder cancer through the same mechanism as the rats.

Yet last year the U.S. National Cancer Institute noted that one of its own studies—the best human study of saccharin use ever done—had found "some evidence of an increased risk of bladder cancer" in heavy saccharin users, "particularly for those who heavily ingested the sweetener as a tabletop sweetener or through diet sodas [pop]." "Heavy" meant "six or more servings of sugar substitute or two or more eight-ounce servings of diet drink daily."

**Comments:** Avoid saccharin. Just because you can buy it doesn't erase the evidence that it may cause cancer in humans.



### Cyclamate

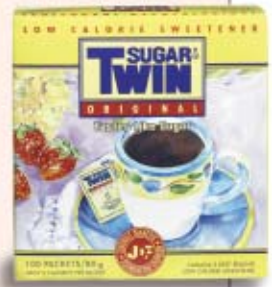
**Also known as:** Sucaryl, Sugar Twin, Sweet 'N Low (pink packet).

**What is it?** A synthetic chemical that was discovered in 1937 by a University of Illinois student while trying to synthesize an anti-fever medication.

**Why it's low-calorie:** Most people can't metabolize cyclamate.

**Safety:** Animal studies in the 1960s suggested that cyclamate caused bladder cancer, which led the government to ban its use in food. (It's still widely available as a tabletop sweetener.) Since then, better studies indicate that cyclamate doesn't cause cancer, but that it (or a by-product) appears to increase the potency of several carcinogens. Research in animals also suggests that cyclamate may damage the male reproductive organs.

**Comments:** Cyclamate "should only be used on the advice of a physician," says its government-mandated label warning. *Our advice:* Avoid it, physician or not.



# Sweet vs. Sweet

Don't expect the same sugar substitutes in all lower-calorie yogourts, no-sugar-added ice creams, diet pops, or chewing gums. Ingredients vary from brand to brand, and sometimes from flavour to flavour. While you should always read food labels before buying, here's a little crib sheet that you can take to the store with you. (If a food contains aspartame, acesulfame, or sucralose, it will say so prominently on the package.)

## Frozen Desserts

	Sucralose	Sugar Alcohols	Aspartame	Acesulfame	Cyclamate	Saccharin
Baskin Robbins No Sugar Added Frozen Dairy Dessert, except Jamoca Swiss Almond <sup>1</sup>						
Baskin Robbins No Sugar Added Jamoca Swiss Almond Frozen Dairy Dessert						
Ben & Jerry's Carb Karma Frozen Dairy Dessert <sup>1</sup>						
Breyers Smart Scoop Carb Zone Frozen Dessert <sup>1</sup>						
Breyers Smart Scoop Carb Zone Vanilla Bars or Sandwiches						
Breyers Smart Scoop No Sugar Added Frozen Dessert <sup>1</sup>						
Creamsicle or Fudgsicle Fat Free No Sugar Added Frozen Dessert Pops						
DQ Fat Free No Sugar Added Fudge or Vanilla Orange Bars						
Nestlé Legend Carb Trim Frozen Vanilla Frozen Dairy Dessert						
Nestlé Legend No Sugar Added Vanilla Frozen Dairy Dessert						
Our Compliments No Sugar Added Ice Cream Product <sup>1</sup>						
TCBY No Sugar Added Nonfat Frozen Yogurt <sup>1</sup>						
Tropicana No Sugar Added Fruit Juice Bars <sup>1</sup>						
Yogen Früz No Fat No Sugar Added Frozen Yogurt <sup>1</sup>						

## Yogourt

Astro Fat Free Yogurt <sup>1</sup>						
Danone Silhouette Yogourt <sup>1</sup>						
Lucerne Diet Yogourt <sup>1</sup>						
Yoplait Source <sup>1</sup>						

## Pop

Diet A&W Root Beer, Diet Canada Dry Ginger Ale, Diet Dr Pepper, Diet Mountain Dew						
Diet Barq's Root Beer, Diet Coke, Diet 7UP, Fresca, Diet Pepsi, Diet Sprite						
Diet Crush <sup>1</sup>						
Master Choice or Our Compliments Diet Pop <sup>1</sup>						
President's Choice Light Spritz Up						
President's Choice Sparkling Diet Soda or Diet Pop, except Light Spritz Up <sup>1</sup>						
Safeway Select Diet Cola <sup>1</sup>						
Safeway Select Diet Pop, except Cola <sup>1</sup>						

## Other Drinks

	Sucralose	Sugar Alcohols	Aspartame	Acesulfame	Cyclamate	Saccharin
Diet Lipton Iced Tea, Diet Nestea <sup>1</sup>						
Carnation, Equality, Safeway, or Western Family Light Hot Chocolate Mix						
Maxwell House Café French Vanilla Light Instant Coffee Beverage Mix						
Ocean Spray Light Cocktail, except White Cranberry <sup>1</sup>						
Ocean Spray Light White Cranberry Cocktail						
President's Choice Calorie-Reduced Instant Hot Chocolate						
President's Choice Light Calorie-Reduced Cocktail <sup>1</sup>						

## Cookies & Candy

Laura Secord No Added Sugar Chocolates <sup>1</sup>						
Russell Stover No Sugar Added Chocolates, except Pecan Delights <sup>1</sup>						
Russell Stover No Sugar Added Pecan Delights						
SnackWell's No Sugar Added Chocolatey Chip Cookies						
SnackWell's No Sugar Added Shortcake Cookies						
Voortman No Sugar Added Cookies, except Oatmeal <sup>1</sup>						
Voortman No Sugar Added Oatmeal Cookies						
Voortman No Sugar Added Wafers <sup>1</sup>						

## Miscellaneous

Breath Savers, Power Certs, Velamints Peppermints Mints <sup>1</sup>						
E.D. Smith No Sugar Added Spread or Syrup <sup>1</sup>						
General Mills Fibre 1 Cereal						
Jell-O Fat Free Instant Pudding, Jell-O Light <sup>1</sup>						
Smuckers No Sugar Added Spread <sup>1</sup>						

## Gum

Clorets Sugarless, Dentyne Ice, Excel, Juicy Fruit Sugarfree, Menthol Max Air, Trident <sup>1</sup>						
Dentyne Classic <sup>1</sup>						
Dentyne Fire Cinnamon						
Extra, except Cherry or Peach <sup>1</sup>						
Extra Cherry or Peach						
Freedent Sugarfree <sup>1</sup>						
Juicy Fruit (original)						

## Tabletop Sweeteners

Equal, Sweet 'N Low (blue packet), President's Choice Low-Calorie Sweetener						
Hermesetas						
Splenda						
Sucaryl, Sweet 'N Low (pink packet), Sugar Twin, Equality Low-Calorie Sweetener						

<sup>1</sup>entire line.

Source: manufacturers.

The information for this chart was compiled by Deborah Cohen in Toronto, with help from Namita Davis in Toronto, Lauren Clark in Vancouver, and Heather Jones in Washington.