

Sugar, Sugar

Do you know agave from aspartame? Fructose from sucrose?

The plethora of sweeteners on the market today can make your head spin. What do you know about the different types of sugar and its ever-increasing crowd of lookalikes?

1. The sweetener called stevia is derived from:

- A. Stevie Nicks, the musician
- B. a shrub
- C. fruit nectar

The answer is B.

Stevia is a sugar substitute that comes from the leaves of the stevia plant, a shrub found in South America. The extract, called rebaudioside A, can be added to foods and beverages. Several formulations of stevia have been given GRAS (generally regarded as safe) status by the U.S. Food and Drug Administration, so you can now find it sold as a sweetener in grocery stores. It's considered the first natural, sugar-free substitute. On the label, stevia is also called Reb A, and rebiana.

SOURCES:

Severson, Kim. "Showdown at the Coffee Shop." The New York Times 15 Apr. 2009, dining & wine ed.: D1. 30 June 2009 <<http://www.nyt.com>>.

U.S. Food and Drug Administration FDA Consumer Magazine. Sugar Substitutes: Americans Opt for Sweetness and Lite. November-December 1999, revised December 2004 and February 2006. <http://vm.cfsan.fda.gov/~dms/fdsugar.html> (Accessed 7/1/09).

2. Which is not a brand name for a stevia sweetener?

- A. Truvia
- B. Via Sweet
- C. PureVia

The answer is B.

Truvia™ and PureVia™ are the major players in the stevia rush. Truvia is being used in products such as Sprite Green™ and Vitaminwater, and PureVia is partnering with PepsiCo in the SoBe Lifewater products. Truvia contains Reb A (rebaudioside A), erythritol (sugar alcohol) and unspecified natural flavors. PureVia contains Reb A, erythritol, isomaltulose and cellulose powder, a natural fiber that improves texture of the product. There's also SweetLeaf® (in a dark green packet) by Wisdom Natural Brands which claims it's different than the other two brands because it uses the finest stevia leaves.

3. By knowing the four colors that sugar substitute packets come in, you can ...

- A. Order a "black and pink."

- B. Pick which one's best for you.
- C. Make an informed choice of artificial sweeteners.

The answer is C.

Sugar substitutes are color-coded according to their main ingredient:

Pink packets contain saccharin (Sweet'N Low®) which dates back to the 1800s. (And, by the way, a "black and pink" is a black coffee with a packet of saccharin.)

Yellow packets contain sucralose (Splenda®), which is 600 times sweeter than sugar but isn't digested so has no caloric value and no effect on blood sugar. Splenda has been on the market since 1998.

Blue packets contain aspartame (Equal® and NutraSweet®). Aspartame is a low-calorie sweetener made up of two amino acids, which are the basis of proteins. It has no effect on blood sugar.

Green packets contain stevia, a natural, zero-calorie substitute. Stevia, also, has no effect on blood sugar.

SOURCES:

Severson, Kim. "Showdown at the Coffee Shop." The New York Times 15 Apr. 2009, dining & wine ed.: D1. 30 June 2009 <http://www.nyt.com>.

http://www.equal.com/health/facts.htmlom/health/qa_archive/questions2.html

<http://www.equal.com/health/facts.html>

www.splenda.com

<http://www.purevia.com/Faq.aspx#answer12>

<http://www.truvia.com>

<http://www.sweetleaf.com>

4. Sugar substitutes are dangerous to your health.

- A. True
- B. False

The answer is: False

In the past, the artificial sweeteners aspartame and saccharin have raised cancer concerns from the general public. In 2007, the U.S. Food and Drug Administration reviewed scientific evidence and reaffirmed that aspartame is safe for the general population. And the National Cancer Institute found that there is no evidence that saccharin used at normal levels poses health risks. Those with the hereditary disease phenylketonuria (PKU), however, are advised not to use aspartame.

SOURCES:

http://www.cancer.org/docroot/PED/content/PED_1_3X_Aspartame.asp?sitearea=PED

<http://www.americanheart.org/presenter.jhtml?identifier=4447>

http://www.acsh.org/healthissues/newsID.265/healthissue_detail.asp

Mayo Clinic. "Artificial Sweeteners: Safe Alternative to Sugar?" <http://www.mayoclinic.com/health/artificial-sweeteners/MY00073> (accessed July 1, 2009).

National Cancer Institute factsheet: Artificial Sweeteners and Cancer: Questions and Answers. (Accessed 6/31/09).

5. Which of the below is not a term for sugar substitutes?

- A. Low-intensity sweeteners
- B. Nonnutritive sweeteners
- C. Low-calorie sweeteners
- D. Artificial sweeteners
- E. No-calorie sweeteners

The answer is A.

There are as many names for sugar substitutes as there are types to choose from. You'll see them referred to as: high-intensity sweeteners, nonnutritive sweeteners, low- or reduced-calorie sweeteners, no-calorie sweeteners, and artificial sweeteners.

SOURCE:

Warshaw, Hope S. 1999. Low-Calorie Sweeteners: What's News, What's New. *Diabetes Spectrum*.12 (4): 250. <http://journal.diabetes.org/diabetesspectrum/99v12n4/pg250.asp> (accessed July 16, 2009).

6. Fructose comes from...

- A. Corn syrup
- B. Fruit, vegetables, and honey
- C. Fruity Pebbles

The answer is B.

Fructose is a type of sugar found primarily in honey and fruit. It is unique because it does not cause blood sugar spikes. Fructose is often confused with high fructose corn syrup. High fructose corn syrup — as well as corn syrup and crystalline corn syrup — are all made from the same ingredient: corn. High fructose corn syrup (HFCS) contains both glucose and fructose. Corn syrup mainly contains glucose, and crystalline corn syrup is primarily fructose. Got that?

Because daily consumption of HFCS has soared to about 50 grams per person, HFCS has come under scrutiny recently after a report in *Environmental Health* revealed that nine out of 20 HFCS samples studied contained low levels of mercury.

SOURCES:

<http://www.corn.org/CornSweetenerNatural.pdf>

<http://www.ehjournal.net/content/8/1/2>

Metzger, Boyd E. *American Medical Association: Guide to Living With Diabetes*. 2006. 258.

Zeratsky, Katherine. High-fructose corn syrup: What are the concerns? *Mayo Clinic*.

<http://www.mayoclinic.com/health/high-fructose-corn-syrup/an01588> (accessed 7/1/09).

Mercury from chlor-alkali plants: measured concentrations in food product sugar. *Environ Health*. 2009 Jan 26; 8:2 <http://www.ncbi.nlm.nih.gov/sites/entrez> (accessed 7/1/09).

Fructose Backgrounder. <http://www.caloriecontrol.org/fructosebg.html> (accessed 7/1/09).

7. Artificial sweeteners do not raise blood sugar levels.

- A. True
- B. False

The answer is B.

Some artificial sweeteners can raise blood sugar. These are the non-caloric sweeteners that do not raise blood sugar levels: aspartame (NutraSweet, Equal), saccharin (Sweet'N Low, Sweet Twin, and Necta Sweet), acesulfame potassium (Sunett and Sweet One), neotame (not yet marketed under a brand name), and sucralose (Splenda).

Another group called reduced-calorie sweeteners, often used in processed foods, are known as sugar alcohols (even though they don't have any alcohol in them). These are commonly used in sugar-free chocolate products. Because sugar alcohols contain carbohydrates and calories, they do raise blood sugar. They include: sorbitol, mannitol, lactitol, maltitol, xylitol, isomalt, erythritol, and hydrogenated starch hydrolysates. The American Diabetes Association recommends subtracting half of the sugar alcohol grams when calculating a food's total carbohydrate count.

Because manufacturers are starting to blend nonnutritive sweeteners with sugar and other sugar substitutes to improve taste or make them more suitable for baking, look carefully at packaging so that you can properly calculate carbohydrates.

9. Artificial sweeteners can prevent cavities and ear infections.

- True
- False

The answer is: A.

Artificial sweeteners don't promote cavities because they don't contain sugar. And one artificial sweetener, which has been showing up in chewing gum lately, may actually prevent cavities — and ear infections.

Derived from a sugar found in birch trees, fruit, and vegetables, the artificial sweetener xylitol has been shown to have an anti-cavity affect. In one German study, 61 adults avoided brushing or flossing for several days but consumed sorbitol or xylitol lozenges for four weeks. Researchers found xylitol helped prevent dental plaque and reduced acid-forming bacteria, therefore helping to protect dental health.

Separate research from the British Medical Journal has shown that xylitol is useful in preventing ear infections.

SOURCES:

J Am Dent Assoc. 2008 May;139(5):553-63.

Quintessence Int. 2009 Apr;40(4):279-85.

J Med Microbiol. 2009 Jul 9. [Epub ahead of print]

Natural Products Insider. How Natural Are Alternative Sweeteners?

<http://www.naturalproductsinsider.com/articles/2005/02/how-natural-are-alternative-sweeteners.aspx> (accessed July 16, 2009).

Br Dent J. 1998 Jan 10;184(1):29-32.

BMJ. 1996 Nov 9;313(7066):1180-4.

Food and Drug Administration. FDA Consumer Magazine. November-December 1999, revised December 2004 and February 2006. Sugar Substitutes: Americans Opt for Sweetness and Lite. (Accessed 7/1/09).

10. Which sweetener is not okay for cooking?

- A. Aspartame
- B. Sucralose
- C. Acesulfame K
- D. Saccharin

The answer is A.

Aspartame can lose its sweetness when included in recipes requiring longer baking times. Baking with artificial sweeteners is a science, and some recipes just won't work without at least some sugar. Splenda and Equal both are sold blended with sugar, specifically for baking.

SOURCE:

Mayo Clinic. Artificial Sweeteners: Safe Alternative to Sugar? <http://www.mayoclinic.com/health/artificial-sweeteners/MY00073> (accessed July 1, 2009).

13. Agave nectar has zero calories.

- A. True
- B. False

The answer is B.

Are you asking, "Agave who?" Agave nectar is a natural sugar alternative that comes from a Mexican fruit. Because agave gets its sweetness from fructose, it doesn't cause blood sugar spikes. While many enjoy its mild taste, it does contain slightly more calories than sugar. One teaspoon of sugar has 50 calories, and agave has 56. However, because it's naturally sweeter than sugar, you can also use less. For example, substituting two-thirds cup of agave nectar for one cup of sugar cuts 180 calories.

SOURCES:

Bauer, Joy. How Sweet It Is: The Scoop on Sugar Substitutes. NBC Today.

http://today.msnbc.msn.com/id/30432188/ns/today_health-diet_and_nutrition/ (accessed 7/14/09).

http://www.xagave.com/information.php?info_id=14

11. How much refined sugar do Americans consume each day, on average?

- A. 12 teaspoons
- B. 5 tablespoons
- C. 1/4 cup
- D. 18 teaspoons

The answer is D.

According to the USDA, Americans consume an estimated 66.3 pounds per capita of added sugars (all but the sugars found naturally in things like fruit and milk) every day. That works out to about 3 ounces or 6 tablespoons or 18 teaspoons. If that were just table sugar, it would work out to about 288 calories and 76 grams of carbohydrate.

SOURCE:

U.S. Department of Agriculture. Professional Tools: United States per capita consumption of caloric sweeteners by calendar year. USDA. Economic Research Service.
http://fnic.nal.usda.gov/nal_display/index.php?info_center=15&tax_level=3&tax_subject=275&topic_id=1336&level3_id=5235 (accessed July 8, 2009).

12. What's sweeter than granulated sugar?

- A. Nothing
- B. Artificial sweeteners
- C. Natural sweeteners
- D. Both B and C
- E. Confectioner's sugar

The answer is: D. Natural sweeteners like honey and fructose are many times sweeter than sugar (sucrose). Artificial sweeteners also top table sugar in the sweetness department. Saccharin is 300 times sweeter than sugar, and another substitute called neotame is 13,000 times sweeter than sugar.

SOURCES:

U.S. Food and Drug Administration FDA Consumer Magazine. November-December 1999, revised December 2004 and February 2006. Sugar Substitutes: Americans Opt for Sweetness and Lite. (Accessed 7/1/09).
<http://www.americanheart.org/presenter.jhtml?identifier=4447> (accessed 6/31/09).

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