



Sweet substitutes

the good, the bad and the ugly

If you are trying to reduce the number of calories in your diet, you may be turning to artificial sweeteners or other sugar substitutes. Giselle Whiteaker asks just what are all these sweeteners and what is their role in your diet?

Even if you are not attempting to watch your weight, you may be consuming artificial sweeteners and other sugar substitutes. They are now found in a variety of food and beverages, particularly those

marketed as sugar free or diet. This can range from obvious products such as diet soft drinks to more subtle commodities like sugar free chewing gum, baked goods, fruit juice, ice cream and even yogurt.

Sugar substitutes are loosely considered to be any sweetener that is used in place of regular table sugar (sucrose). While they are considered to be synthetic, some are derived from naturally occurring substances,



including herbs or sugar itself. Other sweeteners billed as natural are still processed or refined. Most artificial sweeteners are also known as intense sweeteners as they are many times sweeter than regular sugar. With all of this confusion around terminology and marketing speak it comes as no surprise that few of us are really aware of what we are ingesting and what the implications are for our health.

Artificial sweeteners have been the subject of intense scrutiny for decades and rumours abound on the health implications of these synthetic creations. A study in the 1970s linked saccharin to bladder cancer in laboratory rats and consequently for many years saccharin-based sweeteners carried a warning label. According to the American National Cancer Institute, however, there is no

sound scientific evidence that any of the mainstream artificial sweeteners currently available cause cancer or any other serious health problems.

Numerous research studies have in fact backed up the view that artificial sweeteners are generally safe in limited quantities. Naturally, however, concerns continue. As Abigail Houghton, a practitioner of alternative



health options based in Boston says: "I can clearly state my preference for products that have not been 'discovered' or 'created' in a laboratory... just because a substance isn't absorbed into the blood stream, it doesn't mean there isn't a potential topical effect on the tissues of the small and large intestine, from which passage is required for excretion."

For now the verdict seems to be that there are no proven side effects on health, but this does not mean there are no effects. Use in moderation. If there are possible health effects, why do we use these products? There

are actually a few benefits. Perhaps the main stated reason for sugar substitution is weight control. Sweeteners have virtually no calories, compared with 4 calories in one gram of regular table sugar. One teaspoon of granulated white sugar is equal to about 4.2 grams, equalling a whopping 16.8 calories.

For perspective, consider that one 12-ounce can of a sweetened cola contains around eight teaspoons of added sugar, or about 130 calories. Coca Cola nutritional information confirms 140 calories in a can of caffeine-free coke. Diet coke and Coke Zero on the other hand, have

no calories. Don't be fooled though, into thinking that diet sodas are good for you. They still contain high levels of sodium, an excess of which is linked to a number of health risks.

On a positive note, while sugars can stick to your teeth and are associated with tooth decay, artificial sweeteners do not affect the teeth in the same way.

In fact, the artificial sweetener saccharin is added to many brands of toothpaste to give it a sweet taste. Artificial sweeteners may also be a good alternative for diabetics. Unlike sugar, they generally do not raise



blood sugar levels as they are not carbohydrates.

These sweeteners (see list right) are all a step up from the old Roman sugar substitute, lead acetate, made of course from lead. The use of lead acetate eventually resulted in lead poisoning of habitual users. Needless to say it was abandoned as a food additive after the toxicity was understood. At least now none of the sweeteners on the market are directly toxic.

The most popular sources of artificial sweetness are:

Aspartame

Aspartame was discovered in 1965. It is an odourless, white crystalline powder derived from two amino acids; aspartic acid and phenylalanine. It is around 200 times as sweet as sugar and is used as a tabletop sweetener. It is often found in frozen desserts, gelatine, beverages, and chewing gum. When heated it breaks down into its constituents so it can not be used in cooking.

Brands using aspartame include Equal, NutraSweet, and Canderel.

Cyclamate

Cyclamate is a no-calorie sweetener 30 times sweeter than sucrose. It is soluble in liquids and because it is stable in heat and cold, it has a long shelf life and can be used in cooking. It is generally considered to have a less unpleasant aftertaste than saccharin and other sweeteners so is sometimes used synergistically with other sweeteners, to mask the aftertaste. Discovered in 1937, cyclamate is approved for use in more than 100 countries worldwide, including the UK, Canada and Australia.

Cyclamate is sometimes found in diet soft drinks and in the sweetener brands Assugrin, Sucaryl and SugarTwin.

Saccharin

Saccharin was the first commercial artificial sweetener, originally synthesised in 1879. It is 300 to 500 times as sweet as sugar but has a bitter or metallic aftertaste, especially at high concentrations. It is used to

sweeten products such as drinks, sweets, biscuits, medicines, and toothpaste. Saccharin is unstable when heated but it does not react chemically with other food ingredients so it stores well.

Brands using saccharin include Sweet 'n' Low, Sweet Twin and Necta Sweet.

Stevia

Stevia is a genus of about 240 species of herbs and shrubs in the sunflower family. As a sweetener stevia's taste has a slower onset and longer duration than that of sugar, although some of its extracts may have a bitter aftertaste at high concentrations. Steviol glycoside extracts have up to 300 times the sweetness of sugar.

Stevia is marketed under the brand names PureVia, Stevia, SweetLeaf, and Truvia.

Sucralose

Sucralose is a chlorinated sugar discovered in 1976 that is about 600 times as sweet as sugar. It is often used in beverages, frozen desserts, chewing gum, and baked goods. It is stable when heated so can be used for cooking.

White Splenda

This is the best known sucralose brand. The brand has come under fire for its marketing use of the slogan, 'Splenda is made from sugar, so it tastes like sugar.' Processing replaces three oxygen-hydrogen groups in the sugar molecule with three chlorine atoms, so it has been argued that the slogan is misleading.