

# Sweet without the sugar?

## Artificial sweeteners

### What are Sweeteners?

Sweeteners are substances that provide a sweet or ‘sugary’ taste when added to food.

They may or may not provide energy, and are often used to enhance the flavor or texture of food. Apart from the more familiar natural sweetening agents or ‘sugars’ like granulated sugars, corn syrup, molasses and honey there are 3 general types of sweeteners that are often used as additives to foods. These are:

- Nutritive sweeteners include natural sugars, syrups, molasses, honey and sugar alcohols. Sugar alcohols are not really sugar but contain modified carbohydrates and are not calorie free. Many products labeled “sugar-free” often have sugar alcohols as sweeteners. Sugar alcohols are often produced commercially in large amounts. Examples of sugar alcohols include: Glycerol, Mannitol, Xylitol, Sorbitol, and Hydrogenated starch hydrolysates.
- High Intensity and Non-nutritive sweeteners have no nutritional value, lacking vitamins and minerals, and may be low in calorie or have no calories at all. They can also be natural or artificially made as follows:
  - Natural sweeteners, although they are extracted from plants, go through a refining process which changes their chemical composition. These sweeteners are 100-400 times sweeter than table sugar but contain no calories and are used in flavoured waters and soft drinks.
  - The most common are Steviol glycosides or “Stevia” obtained from the leaves of the Stevia rebaudiana plant; and Luo han guo (monk fruit) or Siraitia grosvenorii Swingle (SGFE) fruit extracts.
  - Artificial chemical sweeteners for example: Aspartame (NutraSweet® and Equal®), Saccharin (Sweet’ N Low®) and Sucralose (Splenda®).



### Common artificial sweeteners

There are 6 artificial, non-nutritive sweeteners currently approved by the United States Food and Drug Administration (USFDA) as food additives<sup>1</sup>.

Sweetener	Sweetness compared to table sugar	Uses
Aspartame	200 times sweeter	table top sweetener on cereals, chewing gum and beverages, instant coffee and tea, gelatins, puddings, dairy products and toppings
Acesulphame Potassium/ Acesulfame K/ Ace-K	200 times sweeter	low calorie frozen desserts, candies, beverages and baked goods
Saccharin	up to 700 times sweeter	beverages, fruit drinks; for cooking or table use and in processed foods
Sucralose	600 times sweeter	variety of foods, pastries, beverages, chewing gum, gelatins, frozen dairy desserts
Advantame	up to 13,000 times sweeter	general purpose sweetener and flavour enhancer in foods and baked goods
Neotame	20,000 times sweeter	general purpose sweetener and flavour enhancer in foods and baked goods.

### How to identify artificial sweeteners in food and beverages

Although some artificial sweeteners are approved for use there is growing concern about the effect on obesity and Type 2 Diabetes Mellitus and other harmful effects. Many foods and beverages contain artificial sweeteners and may be marketed/labelled as ‘diet’, ‘zero sugar’, ‘no sugar’ or ‘low calorie’. It is therefore important to identify their presence in a food/beverage. Because they lack calories, vitamins or minerals, these are identified in the ingredient lists on food labels by their scientific name, or brand name. When grocery shopping, practice to read the ingredients list to identify the presence of artificial sweeteners



## “The evidence is out” on Artificial Sweeteners

There is conflicting research evidence about the short and long-term health consequences and benefits of artificial sweeteners. There is no global consensus on this issue, and new science is continually emerging. However,



- The American Heart Association (AHA) and American Diabetes Association (ADA) have given a cautious nod to the use of artificial sweeteners in place of sugar to combat obesity, metabolic syndrome, and diabetes, all risk factors for heart disease<sup>2</sup>.
- Artificial sweeteners can influence taste preferences, causing a preference for sweet foods by making naturally sweetened foods less appealing and altering feelings of hunger and fullness<sup>3</sup>.
- Youths who reported high consumption of beverages with low calorie sweeteners had lower overall diet quality which was an indicator of an unhealthy lifestyle associated with higher than normal blood glucose, total cholesterol, and high cardiovascular risk<sup>4</sup>.
- Studies have shown an increase in short term food intake and appetite<sup>5,6</sup>; increased body weight which may lead to obesity<sup>7</sup>, increased risk of developing type 2 diabetes<sup>8,9</sup>, and association with some cancers.<sup>7,10</sup>
- Other studies with contradictory findings, report no effect on food intake or fullness, a decreased effect on food intake and appetite,<sup>11,12</sup> support for weight loss and management<sup>13,8</sup>; reduced risk of type 2 diabetes<sup>9</sup> and hypertension<sup>8</sup> and no association with cancer<sup>14</sup>.
- Studies by health bodies such as the US National Cancer Institute and Cancer Research UK<sup>15</sup> leading to FDA approval have ruled out cancer risk, for the most part<sup>2</sup>.
- Replacing sugar sweetened beverages (SSBs) with low calorie beverages containing artificial sweeteners has been shown to reduce the intake of calories for supporting weight management and lower the risk of developing chronic noncommunicable diseases. However, replacing SSBs with water or low-fat beverages such as milk is associated with even lower risk of type 2 diabetes.

The health effects and risks are still unknown and there is a need for further research on the effects of sweeteners on energy balance, cardiometabolic risk factors, and risk of cardiovascular disease (CVD) and other chronic diseases.

### Recommended Guidelines for using artificial sweeteners

Maintain a balanced diet to support weight loss by not increasing calorie intake from other sources. and although foods containing artificial sweeteners may be low in sugar, check the label for the presence of other nutrients e.g. vitamins and mineral.

- Drink water instead of hydrating with beverages containing artificial or natural sweeteners.

### Recommendations for children

- The Ministry of Health’s Interim Guidelines for Beverages in Schools states: “The use of artificial sweeteners is discouraged; their use should be guided by the Food and Drug Regulations, 1975 and its relevant amendments as well as the list of approved sweeteners published by the US Food and Drug Administration, which the Ministry of Health has adopted”<sup>16</sup>.
- The American Heart Association has advised against prolonged consumption of low-calorie sweetened beverages by children.
- Recommended low/no calorie beverage alternatives are drinking water, eating whole fruits and refreshing with other alternatives such as unsweetened milk.

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