

The role of sugars in our food & diet



Sugars are carbohydrates. Like all carbohydrates, they provide a source of energy in our diet. Sugar is a term that includes all sweet carbohydrates, although the term is most often used to describe sucrose or table sugar. The body breaks down carbohydrates into simple sugars such as glucose, that can be readily used in the body.

Sugars occur naturally in some foods, such as fruit and dairy products, and are also added to a wide variety of foods. Sugar can take many different forms, including white, raw or brown sugar, honey or corn syrup. Sugars are popular in the processed food industry because they add taste, colour, bulk and thickness to food products. They also prevent mould forming and act as a preservative.

TYPES OF CARBOHYDRATES AND SUGARS

Sugars are a type of carbohydrate. They are a natural product made by plants. Sugars can be broadly grouped into:

MONOSACCHARIDES

Fructose, Glucose, Galactose

Single sugar units – building blocks for all other sugars and carbohydrates.

Fructose – the main sugar found in fruits, berries, honey, root vegetables and some grains.

Glucose – is the form of sugar that is used by the body for energy. All other carbohydrates (including other sugars) are converted into glucose during digestion. Naturally found in some fruits and vegetables and the nectar and sap of plants.

Galactose – found in milk and yoghurt.

DISACCHARIDES

Lactose, Sucrose, Maltose

Two single sugar units joined together.

Lactose – main sugar in milk – contains galactose and glucose

Sucrose – table sugar, extracted from sugar cane – contains glucose and fructose.

POLYSACCHARIDES

Starch, Cellulose, Glycogen

Long chains of monosaccharides bonded together. Starch and glycogen are short-term energy stores in plants and animals.

POLYOLS

Alcohols of sugars. Found naturally in some fruits and vegetables but are usually made commercially. For example, xylitol, which is added to sugar free chewing gums.



The unique role of glucose in our body

The cells in our body breakdown glucose to provide them with the energy they need to function in the body. Although glucose is found in some fruit and vegetables, our main source of glucose is from digestion of carbohydrates (sugars and starches).

In a healthy balanced diet, carbohydrates provide between 45 – 65% of the body's energy requirements so it is important to include them in your diet.

"Natural" and "Added" sugars – what's the difference?

Sugars can either be found naturally in foods (like fruit or dairy products) or added during processing or at the table.

The human body cannot tell the difference between sugars that occur naturally in foods and those which are added to foods and drinks. The body digests both in the same way.

Sucrose, is usually the main sugar that is added to manufactured foods and drinks. Other sugars that are added to food as an alternative to sucrose include fructose, honey and glucose.



Why is sugar added?

SUGAR IS MORE THAN JUST A SWEETENER

Sugar is a **multitasking ingredient** and plays many different important roles in food:

- Sweetness
- Mouthfeel and texture
- Bulk
- Colour & Flavour formation
- Preservation
- Fermentation
- Softness

IT CAN ALSO ENCOURAGE CONSUMPTION OF NUTRITIOUS FOODS

The addition of sugar to nutritious foods and drinks may actually lead to a higher nutrient intake by making these foods more enjoyable to eat. For example, sugar makes flavoured yoghurt, which contains essential nutrients like protein and calcium, more enjoyable by balancing the sour or acidic flavour that results from its fermentation from milk. Without the addition of sugar some foods might not be eaten at all, and so it helps increase variety in the diet.



Replacing sugar in manufactured foods and drinks is not as easy as it seems

Sugar is often singled out as a high-energy (kilojoule) ingredient that is contributing to the rising obesity trend. This assumption has made sugar a target for reformulating products so they contain 'reduced' or 'no added sugar'. While it is important to watch total kilojoule intake, focussing on sugar might not always work. Removing sugar is not as easy to do as it first appears.

Research shows that:

- It would require multiple additives to replace the role of sugar in many foods and drinks. For example, you may be able to sweeten a cake with fruit juice, but fruit juice won't give your cake the light texture that sugar does by trapping air bubbles. Neither will fruit juice make your cake golden brown on top, which is a consequence of either sugar caramelisation or another specific interaction between sugar molecules called the 'Maillard reaction'.
- Reducing the added sugar content doesn't always lead to a reduction in kilojoules, which can be potentially misleading. For example, replacing sugar with a refined starch like dextrin or using fruit purees, does not lead to a reduction in the total energy (kilojoule) content of these products as they have the same energy content as sugar.
- Replacing sugar may have unexpected consequences on food safety. This is because not all sugar replacements have the natural preservative quality that sugar has in certain food situations.

THE SHORT AND SWEET OF IT

Sugars added to manufactured foods and drinks are similar to the ones found in the fruit and vegetables you eat

1. Sugars, including table sugar, are naturally made by plants – table sugar for instance, comes from sugar cane.
2. Table sugar and other sugars that are used in food manufacture are extracted from plants more or less as they are. This means that the body can't tell the difference between sugar in food and sugar added to food.

Sugars are more than just food sweeteners and would be hard to replace in manufactured food and drink

1. As well as sweetening things, sugars make our food more tasty and enjoyable by providing flavour (e.g. sauces), texture (e.g. ice-cream and bread) and acting as a natural preservative.
2. Because sugars can have more than one function in a food product, it's not easy to replace them and get the same taste, texture or colour. You may have to use more ingredients to replace it.
3. Reducing sugar in manufacturing foods may not reduce total kilojoules as often the substitutes have the same energy content.

Information based on an overview of the scientific evidence.
For individual health advice see a qualified health professional.

Further Reading

1. Cummings JH & Stephen AM. Carbohydrate terminology and classification. Eur J Clin Nutr. 2007; 16, Suppl 1, S5-S18.
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4. European Food Safety Authority. Scientific Opinion on Dietary Reference Values for carbohydrates and dietary fibre. EFSA Journal. 2010; 8(3): 1462 (77pp)
5. Nantel G. Carbohydrates in human nutrition FAO Food and nutrition Paper 66. Rome: FAO/WHO; 1998.
6. Institute of Food Science and Technology. Sugars [Internet]. [cited Nov 2016]. Available from: <http://www.ifst.org/knowledge-centre/information-statements/sugars>

More info available at
www.allaboutsugars.com

This resource has been developed by the Australian Sugar Industry Alliance and aims to provide science based information on sugars and health.

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