



Sugar Biochemistry 101

Sugar goes under the microscope.

Common sugar

What we commonly think of as 'sugar' is the crystallised (refined) juice from sugarcane or sugar beets. There are many types of refined sugar. They all come from the same natural raw materials, but are processed for different purposes.

Table sugar (white or raw) is good for sweetening drinks because it dissolves in fluid. Castor sugar is more refined for use in sweet foods that have less fluid.

Icing sugar is highly refined for a smooth texture. Brown sugar is the same as white sugar but with molasses added to give it a caramel taste.

These forms of common sugar are known as 'added' or 'free' sugar - meaning they do not occur naturally in wholefoods.

Factory sugar

A sweet liquid can be extracted from cornstarch to create high fructose corn syrup (HFCS) and artificial sweeteners are created in the laboratory.

These added/free sugars are commonly used in manufactured food and drink products to make them ultra delicious.

A smorgasbord of sugars

There are many different sugars in food and drinks that your body can use for energy, including lactose, maltose, galactose, sucrose, glucose and fructose. Some are 'simple' (monosaccharide) and some are 'complex' (disaccharide).

The chemical name for common sugar is *Sucrose*. Sucrose is a complex disaccharide molecule.

Di means two. Sucrose contains two *compounds* called *Glucose* and *Fructose*.

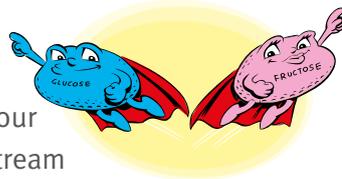




When Sucrose goes into your mouth and stomach, it hydrolyses (i.e. water (H₂O) is added), and the Glucose and Fructose compounds transform into simple sugars (monosaccharides).



Glucose and Fructose molecules travel independently through your gut and into your bloodstream where they are transported to the *Liver*.



Fructose stays in the *Liver*, while Glucose continues on to deliver energy to your brain and muscle cells.

Glucose

Glucose plays an essential role in the human metabolism. It is the primary source of energy for your brain and body cells.

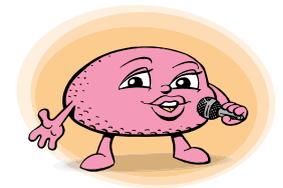
Your body uses the Glucose from your blood first. It is also stored for a short while as *glycogen* in your *Liver* and muscle cells. Both processes provide you with a steady flow of accessible energy. If you consume more Glucose than your body needs, the excess is put into long-term storage as body fat.



Fructose

Fructose is the ‘glamour’ molecule. It makes food taste sweeter, but its nutritional value in the modern diet is negligible.

Our body struggles to process excess Fructose. Overconsumption can cause serious health issues such as fatty *Liver* and insulin resistance, which can lead to *Liver* disease and type 2 diabetes.



Fibre is your friend



Nature designed Sucrose to always be **consumed with dietary fibre** – the insoluble plant matter from fruits, vegetables, legumes, grains and nuts.

Soft drinks and artificially sweetened foods (factory or homemade) put a strain on your *Liver* and metabolic processes. Are those few moments of sweet sizzle really worth it?

