

Carbohydrates : Notes/W.S.-20

Carbohydrates are compounds which are composed of carbon and water.

These nutrients provide most of the energy needed by the body.

The three main types of carbohydrates are: sugar, starch, and glycogen.

Sugars

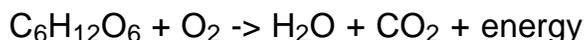
There are many different types of sugars. Examples are: glucose, fructose and sucrose. All sugars have “ose” at the end of their name.

Glucose and fructose both have the formula $C_6H_{12}O_6$. They are known as simple sugars.

Glucose is produced by all plants during photosynthesis. Fructose is found in fruit. This is why fruit tastes sweet. Sucrose (common table sugar) is also found in many plants. It is called cane sugar, as it comes from a plant called the sugar cane.

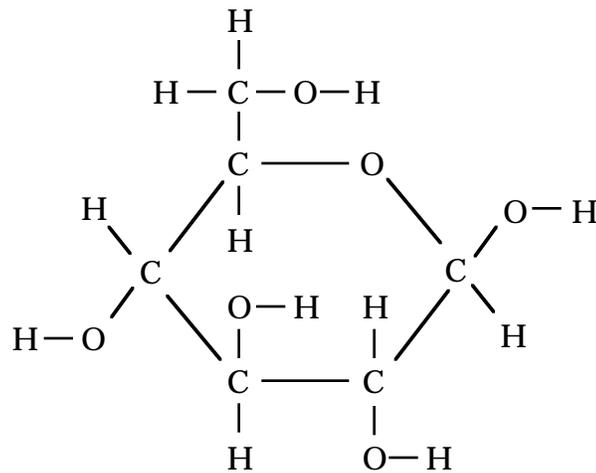
Examples of foods which contain a lot of sugar are: honey (mostly fructose and glucose), and maple syrup (mostly sucrose).

Glucose is “burned” by the cells of the body for energy. The chemical reaction is given below.



A molecule of glucose is shown below.

glucose molecule



We can represent this molecule in a simple form as shown below.

glucose molecule



Starch

Plants make glucose by the process of photosynthesis. Glucose molecules are linked together to form starch. Starch has the formula $(C_6H_{10}O_5)_n$, where n may have a value of several hundred.

starch molecule



Starch is the white part of potatoes, corn, rice and wheat. It is used by the plant for food. But animals also use it for food.

When we eat starch, it is converted by the body into glucose. The glucose is then burned by the cells of the body for energy.

Glycogen

Glycogen is a substance that is similar to starch which is formed in the body. It is stored in the liver. It can be used as a source of energy at a later time.

Glycogen is sometimes called animal starch.

It is important to note, that when we consume too many carbohydrates, they are converted by the body into fat.

Questions:

- 1) What are carbohydrates?
- 2) What are carbohydrates used for?
- 3) Name the three types of carbohydrates.
- 4) Where do we find fructose?
- 5) Give the formula for glucose.
- 6) What does the body do with glucose?
- 7) How do plants make starch?
- 8) Name four foods which contain a lot of starch.
- 9) What is glycogen?
- 10) Where is glycogen found in the body?
- 11) What happens when we consume too many carbohydrates?

Answers: 1) They are compounds composed of carbon and water., 2) They are used for energy., 3) sugar, starch, glycogen, 4) fruit, 5) $C_6H_{12}O_6$, 6) It is "burned" for energy., 7) Starch is made by the process of photosynthesis., 8) potatoes, corn, rice, wheat, 9) It is a substance that is similar to starch that is formed by the body., 10) liver, 11) Excess carbohydrates are converted to fat which is stored for use as energy in the future.