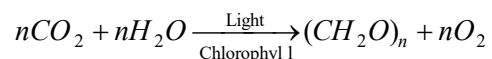


Carbohydrates.

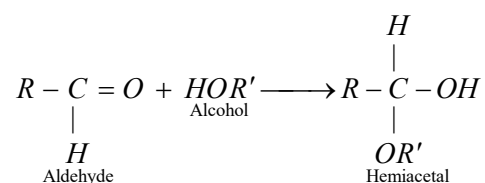
The carbohydrates are naturally occurring organic substances. They are present in both plants and animals. The dry mass of plants is composed of 50 to 80% of the polymeric carbohydrate cellulose. Carbohydrates are formed in the plants by photosynthesis from carbon dioxide and water.



Animals do not synthesise carbohydrates but depends on plants for their supply.

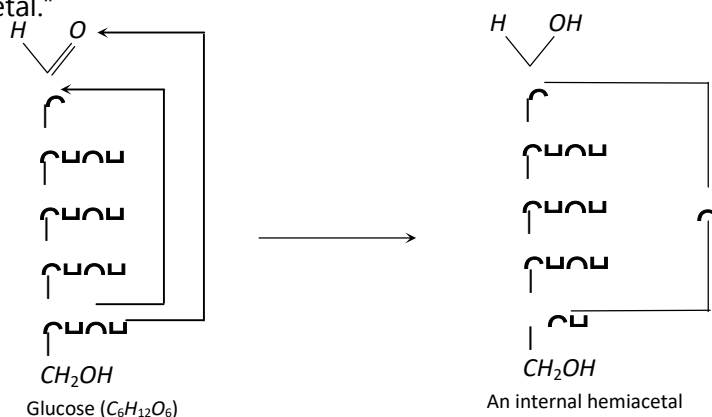
(1) **Defination:** "Carbohydrates are defined as a class of compounds that include polyhydric aldehydes or polyhydric ketones and large polymeric compounds that can be broken down (hydrolysed) into polyhydric aldehydes or ketones."

Carbohydrates contain $>C=O$ and $-OH$ groups. A carbonyl compound reacts with an alcohol to form hemiacetal.



In carbohydrates, the carbonyl group combine with an alcoholic group of the same molecules to form an internal hemiacetal thus the correct definition of carbohydrates is as follows

"A polyhydroxy compound that has an aldehydic or a ketonic functional group either free or as hemiacetal or acetal."



In general, carbohydrates are white solids, sparingly soluble in organic solvents and (except certain polysaccharides) are soluble in water. Many carbohydrates of low molecular masses have a sweet taste.

(2) **Nomenclature:** The name of simpler carbohydrates end is –ose. Carbohydrate with an aldehydic structure are known as aldoses and those with ketonic structure as ketoses. The number of carbon atom in the molecule is indicated by Greek prefix.

Number of carbon atoms in the molecule	Aldose	Ketose
3	Aldotriose	Ketotriose
4	Aldotetrose	Ketotetrose
5	Aldopentose	Ketopentose
6	Aldohexose	Ketohexose
7	Aldoheptose	Ketoheptose

(3) **Classification:** The complete classification of carbohydrates may be depicted in short in the following chart:

