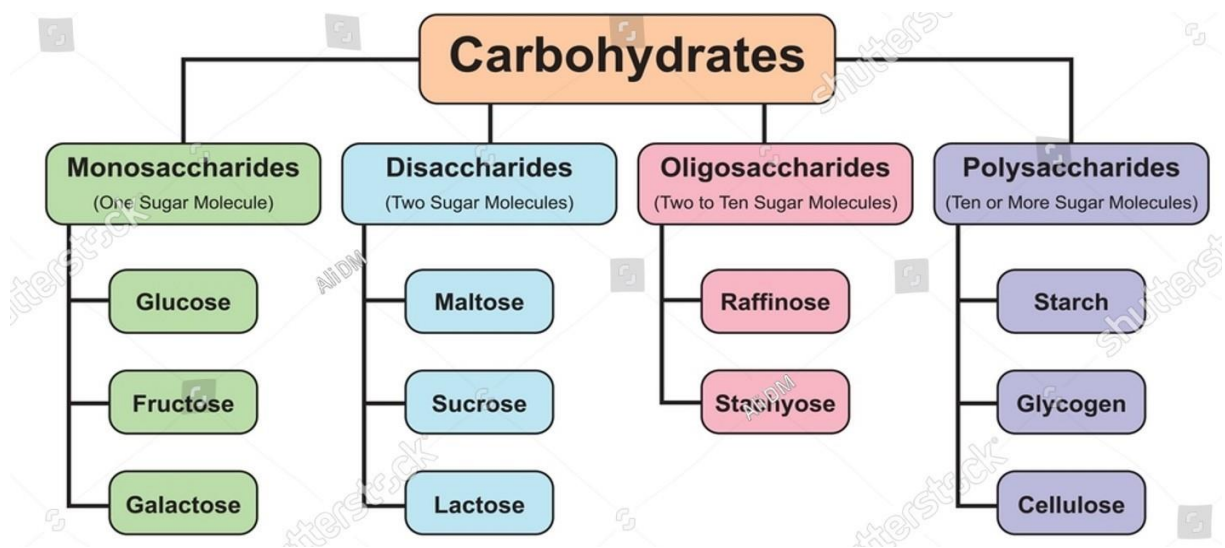


Classification of Carbohydrates

- Carbohydrates are **poly hydroxy aldehyde or ketone** derivatives.
- It comprises by C, O and H, with ratio of 1: 2:1.
- The general formula is $C_nH_{2n}O_n$.
- Carbohydrates are classified in to three types
 1. Monosaccharides
 2. Disaccharides
 3. Oligosaccharides
 4. Poly saccharides



Monosaccharides

- Consists of single sugar unit and possess low molecular weight.
- This cannot be decomposed by hydrolysis.
- Types of monosaccharides are
 - Aldoses** - Aldotrioses, aldotetroses, aldopentoses, aldohexoses and aldoheptoses.
 - Ketoses** - Ketotrioses, ketotetroses, ketopentoses, ketohexoses, and ketoheptoses.

Oligosaccharides

- Oligosaccharides are composed by **Two to Ten numbers of monosaccharide units** by hydrolysis.

- **Disaccharides** : Yields 2 monosaccharides on hydrolysis. Ex. Maltose (G-G), Sucrose (G-F) and Lactose (G-Gal)
- **Trisaccharides** : Yields 3 monosaccharides on hydrolysis. Example: Raffinose
- **Tetrasaccharides**: Yields 4 monosaccharides on hydrolysis. Example: Stachyose

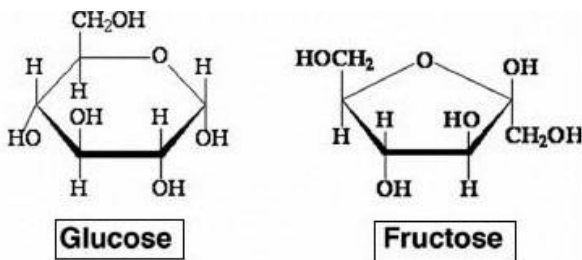
Polysaccharides

Polysaccharides are composed by above Ten numbers of monosaccharide units by hydrolysis and possess high molecular weight.

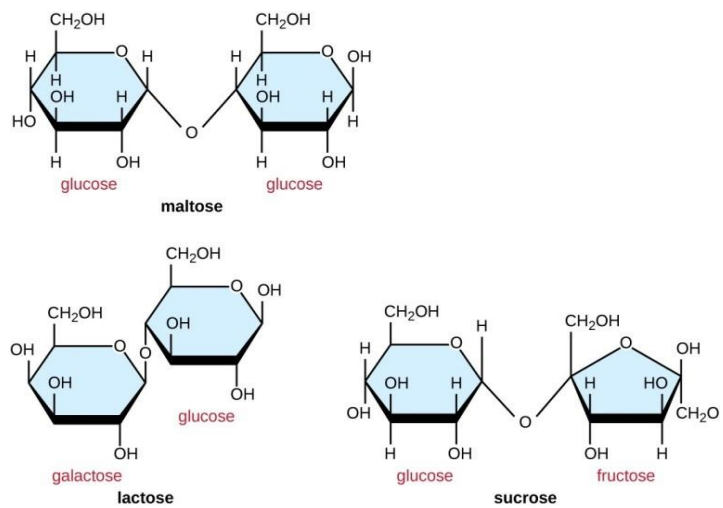
Types of Polysaccharides based on their function and composition.

- **Homo polysaccharides**: Having **identical monosaccharide** units Example: Starch, Glycogen, cellulose.
- **Hetro polysaccharide**: Having **different monosaccharide** units Example: keratin sulphate chitin, heparin and Hyaluronic acid .

Monosaccharides



Disaccharides



Polysaccharides

Properties of carbohydrates

- Glucose has 2 isomer unit based on their optical activity as D-Glucose and L-Glucose.
- Polysaccharides like cellulose are the structural element in the wall of bacteria and plants.
- Carbohydrates linked with lipids play important role in cell interactions.
- It forms the structural frame of genetic material like DNA and RNA.