

Monosaccharides: Simple Sugars (one).

Disaccharides: 'Double Sugars' (two monosaccharides)

Polysaccharide: large molecules formed from many monosaccharides.

3 Monosaccharides: Glucose / Fructose / Galactose

3 Disaccharides:

Maltose: Glucose + Glucose (Malt Sugar)

Sucrose: Glucose + Fructose (Table Sugar)

Lactose: Glucose + Galactose (Milk Sugar)

Glucose / Fructose = **Structural isomers:**
have the same molecular formula
(C₆H₁₂O₆) / different structural formula.

As polysaccharides are very large molecules, they are insoluble. This makes them good for storage.

Glucose is a hexose sugar (5 Carbons/ 1 Oxygen) / 6 Atom (C₆H₁₂O₆ / 6 Glucose).

Benedict's Test: B Solution = Copper sulfate. When a **reducing sugar** is heated with B Solution it forms an insoluble red precipitate of copper oxide. **B reagent turns from blue → red with reducing sugar.**

Non-Reducing sugars don't change colour of B Reagent. Need to **add hydrochloric acid → Heat** (hydrolysing the disaccharide into its monosaccharides) → **Add sodium hydrocarbonate (neutralise the acid)** → re-test the B Solution.

OH = Hydroxyl.

When **monosaccharides join**, a **molecule of water is removed** = **Condensation Reaction**. A **Glycosidic Bond** is formed.

When **water is added to a disaccharide** it **breaks the Glycosidic bond** = releasing monosaccharides. = **Hydrolysis Reaction**.

Glucose: C₆ H₁₂ O₆

Carbohydrates

Respiration:

Oxygen + Glucose → CO₂ + Water

6O₂ + C₆H₁₂O₆ → 6CO₂ + 6H₂O

Functions of Carbohydrates:

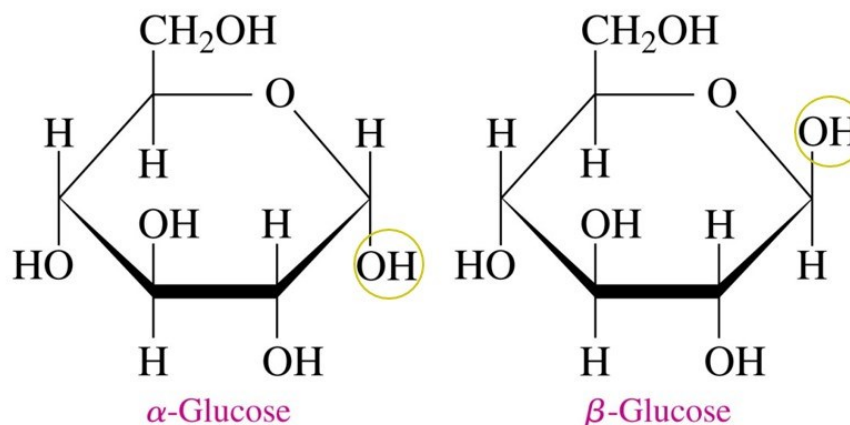
1. **Substrate for respiration** (glucose is essential for cardiac tissues).
2. **Energy stores** (e.g. starch, glycogen).
3. **Structural** (e.g. cellulose, chitin in arthropod exoskeletons and fungal walls).
4. **Transport** (e.g. sucrose is transported in the phloem of a plant).
5. **Recognition of molecules outside a cell** (e.g. attached to proteins or lipids on cell surface membrane).

Carbohydrates Contain:

Carbon (C)

Hydrogen (H)

Oxygen (O)



The **5-carbon monosaccharide ribose** is an important component of coenzymes (**ATP**) and the **backbone** of the genetic molecule known as **RNA**.