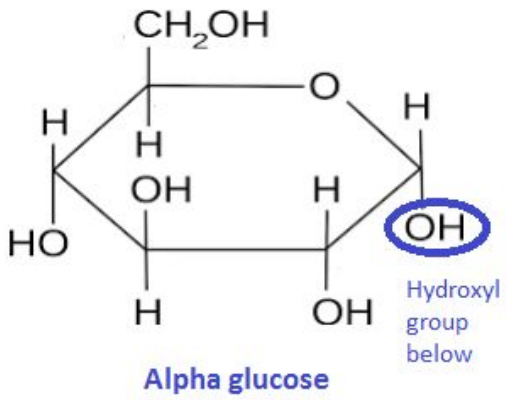
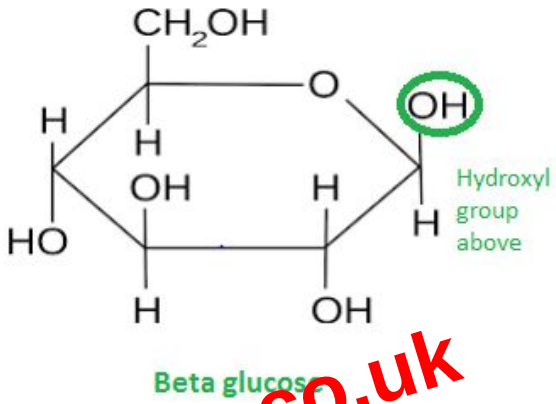
Chapter 1 - Biological Molecules

Carbohydrates

Long-chain carbohydrates (**polysaccharides**) are made up from many smaller, repeating units (**monosaccharides**). Monosaccharides are sweet, soluble substances that join together by condensation reactions to from polysaccharides and water. **Glucose** is an example of a monosaccharide and has **two different isomers** (alpha and beta).





Monosaccharides		Disaccharide
Glucose	Glucose	Maltose
Glucose	Fructose	Sucrose
Glucose	Galactose	Lactose

Test for reducing sugars - A reducing sugar is a sugar that can donate an electron to another chemical, therefore reducing it.

- Add 2cm3 of the food sample to a test tube. If the sample is not liquid, grind it and add distilled water.
- Add an equal volume of Benedict's reagent.
- Heat the mixture in a boiling water bath.
- A positive result forms a yellow/orange/brick-red solution.

Test for non-reducing sugars - All polysaccharides and some disaccharides are non-reducing sugars.

- Complete the Benedict's test and obtain a negative result.
- Add hydrochloric acid to the sample.
- Boil the sample.
- A brick-red solution should be present.