Polymers and Carbs Cheat Sheet

by ZS02 via cheatography.com/122591/cs/22834/

Monomers and Polymers

Monomers are the smaller units from which larger molecules are made

Polymers are molecules made from a large number of monomers joined together

Disaccharides

Maltose	Glucose and Glucose
Sucrose	Glucose and Fructose
Lactose	Glucose and Galactose

Amylose

Polymer of alpha glucose

Coiled, alpha-helix structure

Not branched

1-4 glycosidic bonds only

Insoluble so doesn't affect water potential

Compact so a lot can be stored in a small space

Function: energy storage in plants

Glycogen

Function: energy storage in animals

Polymers of alpha glucose

Branched structure, but more ends than amylopectin to reflect higher metabolic activity of animals

1-4 and 1-6 glycosidic bonds

Insoluble so doesn't affect water potential

Compact so a lot can be stored in a small space

Many ends can be acted on simultaneously by enzymes

Test for sugars

Benedict's test for reducing sugars involves boiling with Benedict's solution, and the positive result is a coloured (non-blue) precipitate

Test for non-reducing sugars involves boiling with HCl, neutralising with NaOH and then repeating the Benedict's test

Functions of Carbohydrates

Source of energy

Structural Components

Storage Compounds

Metabolite

Transport

Cell Recognition

Condensation reactions of carbohydrates

Condensation reactions between monosaccharides forms glycosidic bonds

Amylopectin

Function: energy storage in plants

Polymer of alpha glucose

Branched structure

1-4 and 1-6 glycosidic bonds

Large so insoluble so doesn't affect water potential

Many ends that can be acted on by enzymes to hydrolyse quickly

Cellulose

Function: Structural components of plant cell walls

Polymer of beta glucose

Chains of alternately inverted beta glucose units

Hydrogen bonds between the chains increases collective strength

Forms microfibrils and then fibril structures which increases tensile strength

Long chains form a mesh structure and so the cell wall is permeable

Test for starch

Add iodine solution to the sample

A positive result is a blue/black solution

Test for starch

Add iodine solution to the sample

A positive result is a blue/black solution

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