AQA Biology A-level

3.3 - Digestion and absorption

Flashcards

Define digestion.

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The hydrolysis of large, insoluble molecules into smaller molecules that can be absorbed across cell membranes.

Which enzymes are involved in carbohydrate digestion? Where are they found?

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- Amylase in mouth
- Maltase, sucrase, lactase in membrane of small intestine

What are the substrates and products of the carbohydrate digestive enzymes?

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- Amylase → starch into smaller polysaccharides
- Maltase → maltose into 2 x glucose
- Sucrase → sucrose into glucose and fructose
- Lactase → lactose into glucose and galactose

Where are lipids digested?

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The small intestine.

What needs to happen before lipids can be digested?

What needs to happen before lipids can be digested?

They must be emulsified by bile salts produced by the liver. This breaks down large fat molecules into smaller, soluble molecules called micelles, increasing surface area.

How are lipids digested?

How are lipids digested?

Lipase hydrolyses the ester bond between the monoglycerides and fatty acids.

Which enzymes are involved in protein digestion? What are their roles?

Which enzymes are involved in protein digestion? What is their role?

- Endopeptidases= break between specific amino acids in the middle of a polypeptide.
- Exopeptidases= break between specific amino acids at the end of a polypeptide.
- Dipeptidases= break dipeptides into amino acids.

How are certain molecules absorbed into the ileum despite a negative concentration gradient?

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Through co-transport.

Which molecules require co-transport?

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Amino acids and monosaccharides.

Explain how sodium ions are involved in co-transport.

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Sodium ions (Na^+) are actively transported out of the cell into the lumen, creating a diffusion gradient. Nutrients are then taken up into the cells along with Na^+ ions.

Why do fatty acids and monoglycerides not require co-transport?

Why do fatty acids and monoglycerides not require co-transport?

The molecules are nonpolar, meaning they can easily diffuse across the membrane of the epithelial cells.