

Chemical digestion

Revision notes • Chemical digestion into small soluble molecules, and what amylase, protease and lipase break down, their products and where they act.

For Cambridge IGCSE Combined Science 0653. **Supplement** is Extended content, only examined on Papers 2 and 4.

Chemical digestion Spec B7.3

Chemical digestion and digestive enzymes Spec B7.3.2, B7.3.4, B7.3.5, B7.3.6

Chemical digestion is the breakdown of large insoluble molecules into small soluble molecules. It is carried out by enzymes.

Supplement

The small soluble molecules made by chemical digestion can be **absorbed** into the blood. Large insoluble molecules cannot pass through the wall of the gut.

Supplement

Digestive enzymes

Enzyme	Breaks down	Into	Secreted by (made in)	Acts in
Amylase	Starch	Simple reducing sugars	Salivary glands and pancreas	Mouth and small intestine
Protease	Protein	Amino acids	Stomach and pancreas	Stomach and small intestine
Lipase	Fats and oils	Fatty acids and glycerol	Pancreas	Small intestine

Supplement

starch → simple reducing sugars (amylase)

Supplement

protein → amino acids (proteases)

Supplement

fats and oils → fatty acids + glycerol (lipase)

Supplement

Enzymes made in the pancreas flow into the duodenum, so the pancreas is where they are **secreted** but the small intestine is where they **act**. Quote both places if a question asks where an enzyme is secreted and where it acts.

Supplement

Exam tip: Learn each enzyme as a set of three: substrate, product, and where it is secreted and acts. Mark schemes ask for the product by name.

Quick check

1. What is chemical digestion?
2. **Supplement** What does lipase break down fats and oils into?
3. **Supplement** Where is amylase secreted?

Quick check answers

Chemical digestion

1. The breakdown of large insoluble molecules into small soluble molecules.
2. Fatty acids and glycerol.
3. Salivary glands and pancreas.