

Exercise walk-through

Chemical digestion ■ 7.4

eXercise

You must be able to

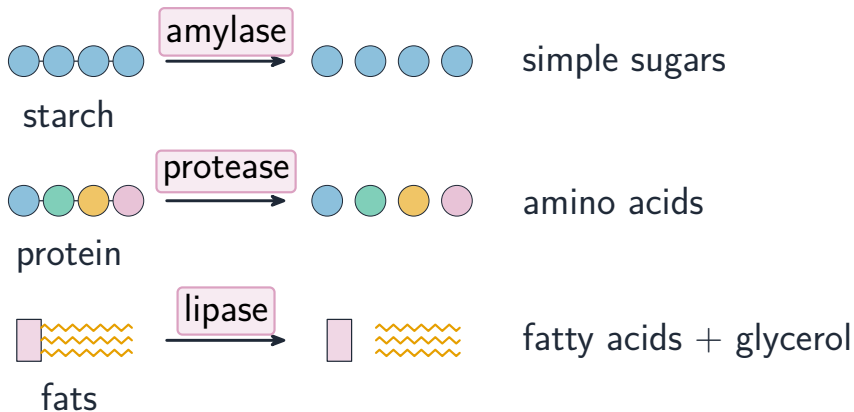
- give the substrate and products of amylase, protease and lipase
- explain the role of hydrochloric acid in the stomach
- describe the two-step digestion of starch and the two proteases

Method — Digestive enzymes

Enzyme	Breaks down → into
amylase	starch → reducing sugars
protease	protein → amino acids
lipase	fats → fatty acids + glycerol

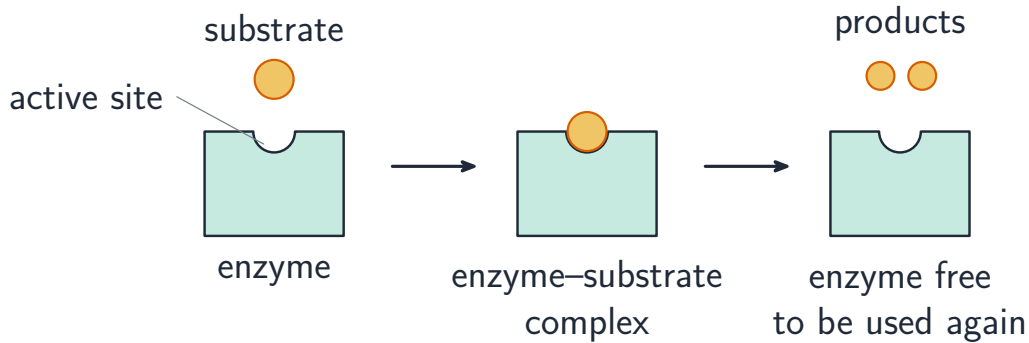
- stomach acid kills microorganisms and gives the best pH for stomach protease (pepsin).

Method — Digestive enzymes



Enzymes breaking large molecules into small ones

Method — Digestive enzymes



Digestive enzymes work by a lock-and-key fit

Practice 2.1 ■ 2 marks

State the products formed when lipase digests fat.

Solution 2.1

Worked steps

fatty acids **B1**; glycerol **B1**.

Practice 2.2 ■ 1 mark

Name the enzyme that digests protein.

Solution 2.2

Method: Digestive enzymes

Worked steps

protease **B1**.

Exam-style 3.1 ■ 1 mark

Amylase digests starch into:

A amino acids

B reducing sugars

C fatty acids

D glycerol

Solution 3.1

Method: Digestive enzymes

A amino acids

B reducing sugars



C fatty acids

D glycerol

Worked steps

B. Amylase digests starch into reducing sugars.

Exam-style 3.2 ■ 2 marks

The stomach produces hydrochloric acid.

- (a) State two functions of this acid.
- (b) Name the protease that works in the acidic stomach.

Solution 3.2

Method: Digestive enzymes

Worked steps

- (a) it kills harmful microorganisms in the food **M1**; it gives an acidic pH suited to the stomach's protease **A1**.
- (b) pepsin **B1**.

Exam-style 3.3 ■ 2 marks

Explain why food molecules must be made small and soluble before they can be used.

Solution 3.3

Method: Digestive enzymes

Worked steps

large molecules are insoluble and cannot be absorbed **M1**; small soluble molecules can pass into the blood **A1**.