



Biology

BIO3T/P11/task

Unit 3T AS Investigative Skills Assignment Task Sheet

Investigating the effect of different enzymes in apple juice production

Introduction

Enzymes are used when fruit juice is produced commercially. Two of the enzymes used are pectinase and cellulase.

- Pectinase breaks down pectin. Pectin is a substance which joins plant cells together.
- Cellulase breaks down cellulose in cell walls.

You will investigate which of these enzymes is more effective in releasing juice from apple pulp.

Materials

You are provided with

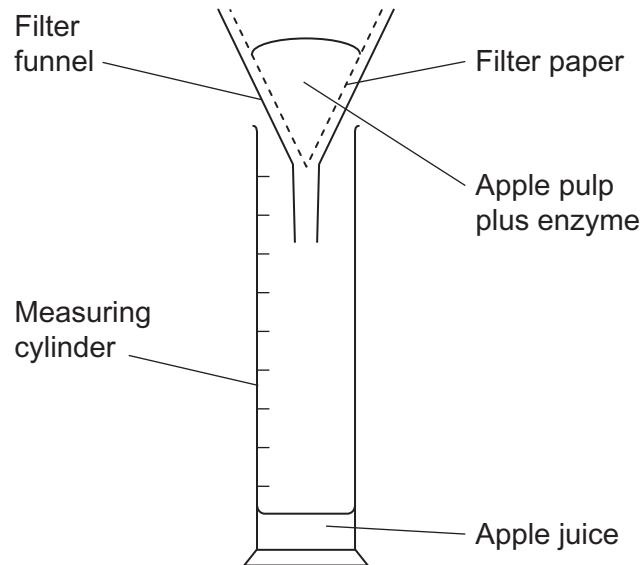
- apple pulp
- solution of pectinase
- solution of cellulase
- pipettes or syringes to measure 2 cm³
- 100 cm³ beakers
- timer or stop clock
- thermometer
- filter funnel
- filter papers
- measuring cylinder
- glass rod
- access to a balance
- spoon or spatula to transfer apple pulp

You may ask your teacher for any other apparatus you require.

Outline Method

Read these instructions carefully before you start your investigation.

1. Weigh out 50 g of apple pulp in a 100 cm³ beaker.
2. Add 2 cm³ of pectinase to the apple pulp and mix for 10 seconds using a glass rod.
3. Leave for 5 minutes and then pour the mixture into a filter funnel as shown in the diagram. Start a timer or stopclock.



4. Measure the total volume of apple juice in the measuring cylinder every 5 minutes for the next 30 minutes.
5. Repeat steps 1 to 4 using cellulase instead of pectinase.
6. Record your results in a suitable table on your Candidate Results Sheet.

You will need to decide for yourself

- how to find out if there are temperature changes during the investigation that could have influenced the data collected.

ISA BIO3T/P11 Candidate Results Sheet: Stage 1

The effect of different enzymes in apple juice production

Centre Number

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Candidate number

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Candidate Name

Record your data in an appropriate table in the space below.

Hand in this sheet at the end of each practical session.

(3 marks)

Turn over ►

ISA BIO3T/P11 Candidate Results Sheet: Stage 2

The effect of different enzymes in apple juice production

Centre Number

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Candidate number

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Candidate Name

Use the graph paper to plot an appropriate graph of your data.
You should plot both sets of results on the same axes.

(5 marks)

Hand in this sheet at the end of each practical session.

