Rewarding Learning

General Certificate of Secondary Education
2021

Double Award Science
Biology

Unit 7: Practical Skills

Booklet A

Foundation Tier

[GDW71]

APPARATUS AND MATERIALS LIST AND CONFIDENTIAL INSTRUCTIONS

To be accessed by Head of Department only

It is the responsibility of the centre to ensure that appropriate risk assessments are carried out for all practical skills assessments.

Investigate the effect of temperature on the action of an enzyme.

Apparatus and Materials for each class (based on 10 groups)

- Food processor
- A medium-sized peeled potato (approximately 120–140 g Maris Pipers were used in trials)
- Muslin/cheesecloth/sieve
- 350 cm^3 of **10 vol** hydrogen peroxide
- 350 cm^3 of water (for preparing potato extract containing catalase enzyme solution)

Each group will need the following on their bench

- Water baths (one labelled 20° C and one labelled 50° C)
- 1 × small beaker with 30 cm^3 of hydrogen peroxide labelled **hydrogen peroxide**
- 1 × small beaker with 20 cm^3 of catalase enzyme solution labelled **catalase enzyme solution**
- 1 × waterproof marker
- 1 × ruler
- 1 × timer
- 1 × 5 cm^3 syringe for measuring catalase enzyme solution
- 1 × 10 cm^3 syringe for measuring hydrogen peroxide
- 1 × boiling tube rack containing four boiling tubes, labelled **1**, **2**, **3** and **4** (boiling tubes should be the same size)

Safety Advice

- Pupils must wear eye protection throughout.
- Care must be taken with hot water.
- Beakers containing hydrogen peroxide should be appropriately labelled as per CLEAPSS Hazcard.

Investigate the effect of temperature on the action of an enzyme

Teacher Instructions prior to the examination

Preparing catalase enzyme solution

- Cut up one peeled medium sized potato and use the food processor to blend it with 350 cm^3 of water for approximately 3 minutes.
- Strain the processed potato through cheesecloth/muslin/sieve.
- Collect the fluid in a beaker (this produces approximately 300 cm^3 of catalase enzyme solution). The catalase enzyme solution should be prepared **just before use**.

Preparing hydrogen peroxide

- As per CLEAPSS Hazcard, dilute solutions of hydrogen peroxide should be prepared **just before use**.
- Ensure the hydrogen peroxide is within recommended **'use by' date**.

Water Baths

In trials, beakers (250 cm^3 or 500 cm^3) were used as water baths to hold and heat the boiling tubes.

A water bath at 20° C and a water bath at 50° C should be placed on each group's bench **just before** the beginning of the investigation, to minimise cooling.

Trials

Teachers should trial the practical assessment and keep a set of results (and repeats).