

BIOLOGY
Unit 3X Externally Marked Practical Assignment

BIO3X/TN

Teachers' Notes

CONFIDENTIAL

These notes should be read in conjunction with *Instructions for the Administration of the Externally Marked Practical Assignment* published on the AQA website.

Materials

Task 1

In addition to access to general laboratory equipment, each student needs

- 15 cm³ pectin solution
- 10 cm³ syringe (plunger removed)
- clamp stand with boss and clamp
- stop watch
- small beaker (to collect 10 cm³ of solution)
- small measuring cylinder (to measure 10 cm³ of solution)

Task 2

In addition to access to general laboratory equipment, each student needs

- 30 cm³ pectin solution (labelled pectin solution)
- 40 cm³ 1% pectinase solution (labelled 100 % pectinase solution)
- water
- 10 cm³ syringe (plunger removed)
- clamp stand with boss and clamp
- stop watch
- small beaker (to collect 10 cm³ of solution)
- 15 boiling tubes
- rack for boiling tubes
- 2 small measuring cylinders (to measure 10 cm³ of solution)
- access to a water bath set at 30 °C

Sources of Pectinase

Ritchie Products, Rolleston Road, Burton-on-Trent, Staffs.

Pectinase powder sold as 'Pectolase'. Catalogue no: 6322. Tel: 01283 564161.

<http://www.ritchieproducts.co.uk/php/wineancillaries.php?type=5>

Philip Harris

Pectinase solution Product Code: B8A01867

<http://www.philipharris.co.uk>

NCBE (National Centre for Biotechnology Education)

Pectinase solution *Pectinex*TM

<http://www.ncbe.reading.ac.uk/NCBE/MATERIALS/ENZYMES/pectinase.html>

Sources of Pectin

'Certo' commercially prepared pectin solution.

This is sold in 250 cm³ bottles in large supermarkets. For both tasks, this solution should be diluted with an equal volume of water.

Silver Spoon pectin powder

This is sold in packets of 3 sachets. For both tasks, one sachet should be dissolved in 500 cm³ of water. To dissolve the powder, the mixture should be heated and stirred continuously until nearly boiling. Stirring should then continue while the mixture cools to room temperature and any lumps removed by passing the solution through a sieve.

Pectin laboratory reagent

This is sold in 100g bottles of pectin powder and is available from Fisher Scientific

https://extranet.fisher.co.uk/insight2_uk/mainSearch.do?keywords=Pectin

or Griffin education

https://extranet.fisher.co.uk/insight2_griffin/mainSearch.do

For both tasks, a solution of 2 g powder per 100 cm³ water will give a solution of suitable concentration. To dissolve the powder, the mixture should be heated and stirred continuously until nearly boiling. Stirring should then continue while the mixture cools to room temperature. This powder gives a smooth solution but any lumps should be removed by passing the solution through a sieve.

These preparations will need to be trialled before use.

Managing the investigations

Task 1

One week before Task 1, teachers may give candidates the following information.

- You will be investigating a method of measuring the thickness of a solution.

Task 2

One week before Task 2, teachers may give candidates the following information.

- You will be investigating the effect of enzyme concentration on the rate of reaction. In order to do this you will be using a method that involves measuring the thickness of a solution.

Candidates must not be given the following information.

- Which concentrations of pectinase to use.