

Practical Guide Biology Osmosis

This document contains:

- Links to YouTube clips showing the practical procedure
- Information from examination boards AQA, OCR, Edexcel
- Potential examination questions and answers

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- AQA

Required practical activity	Apparatus and techniques
Investigate the effect of a range of concentrations of salt or sugar solutions on the mass of plant tissue.	AT 1, AT 3, AT 5

- Edexcel

1.16	<i>Investigate osmosis in potatoes</i>	A known mass of potato must be added to sucrose solution, left for some time, and the final mass recorded to obtain the percentage change in mass. This investigation looks at the exchange of water between the potato and solution and allows the concentration of sucrose in the potato to be determined. The practical provides an opportunity for the appreciation of the need to control variables.
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- OCR

8

Transport in and out of cells

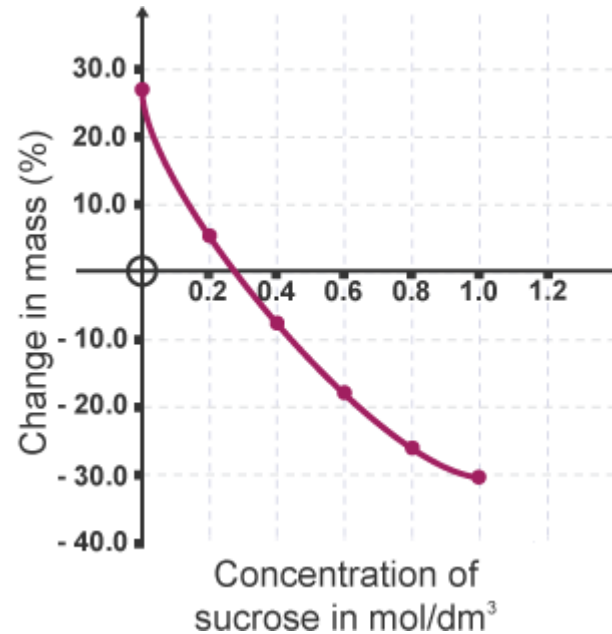
Investigate the effect of different water potentials on the length and mass of potato chips



Video 1

Video 2

Look at this graph:

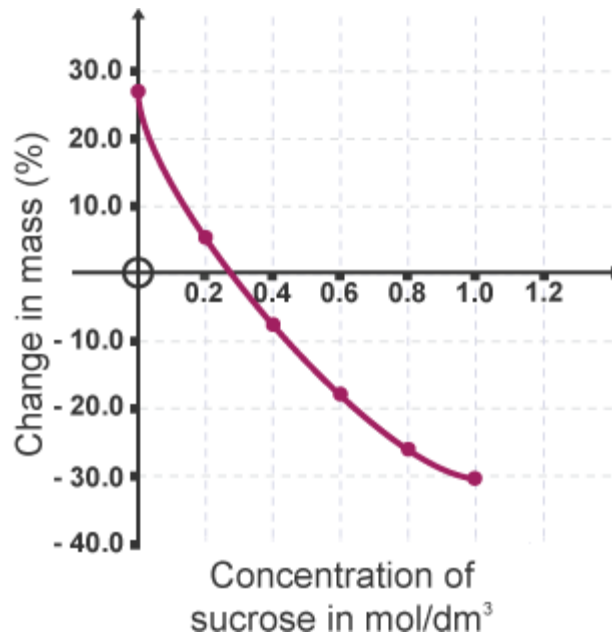


1. Use the graph to identify the concentration inside the potato. Explain how you identified this concentration.
2. Explain how to calculate the percentage change in mass.
3. Describe how to carry out an experiment to repeat this experiment.

1. Use the graph to identify the concentration inside the potato. Explain how you identified this concentration.

ANS:

0.3 mol/dm³



The point at which the line of best fit crosses the x-axis; there is no change in the mass of the potato

2. Explain how to calculate the percentage change in mass.

ANS:

$$\frac{\textit{End mass} - \textit{start mass}}{\textit{Start mass}} \times 100$$

3. Describe how to carry out an experiment to repeat this experiment.

ANS:

- Sucrose solutions: 0.0; 0.2; 0.4; 0.6; 0.8; 1.0 mol/ dm³
- Cut strips/ bores of potato – same size
- Measure mass of potato strips before and afterwards
- Pat dry before measure mass
- Repeats
- Calculation/ plot

Key questions:



- What variables can arise with the potato strips?
- Why do the potato strips have to be blotted dry?
- Why are the potato strips the same width and length?
- What precautions must be taken to ensure the mass of the potato is accurately recorded?
- How have the sucrose solutions been prepared?
- Which sucrose solution has the highest number of water/solute molecules?
- Why should the potato strips be left in the solutions for at least 15 minutes?
- What are the main errors in this procedure?
- How can you improve the procedure?
- What safety precautions are used in the practical?
- What is the benefit of combining the class data before the analysis is completed?

A summary document is also available on Huddle which contains all the relevant information about this practical from the different examination boards. This document includes practical methods and other potential examination questions