

# AQA Biology A-level

## RP03 - Investigating Water Potential

### Flashcards



What is the purpose of calibration curves?



What is the purpose of calibration curves?

They are used to determine the concentration of an unknown sample by comparing it to a set of standard values with known concentrations.



How is a calibration curve used to find the concentration of plant tissue?



How is a calibration curve used to find the concentration of plant tissue?

Plot a calibration curve of percentage change in mass against concentration. Find the x-intercept where the plant tissue is isotonic to the sucrose solution.



What occurs when plant tissue is placed  
in a hypotonic solution?



What occurs when plant tissue is placed in a hypotonic solution?

Water moves into the plant tissue by osmosis, plant tissue increases in mass.



What occurs when plant tissue is placed  
in a hypertonic solution?





What occurs when plant tissue is placed in a hypertonic solution?

Water moves out of the plant tissue by osmosis, plant tissue decreases in mass.



Why are the potato discs left in solution  
for 20 minutes?



Why are the potato discs left in solution for 20 minutes?

To allow time for osmosis until the plant tissue reaches equilibrium with its surrounding solution.



# What is water potential determined by?



# What is water potential determined by?

The concentration of solutes.

The higher the solute concentration then the lower the water potential.



Outline the procedure of investigating osmosis using potato tissue.



## Outline the procedure of investigating osmosis using potato tissue.

1. Make a simple dilution of 1M sucrose to produce 5 concentrations. Add 5 cm<sup>3</sup> to 5 different test tubes.
2. Cut a potato into equal sized chips and weigh.
3. Place a chip in each test tube and leave for 20 minutes.
4. Take out, dab the excess water and weigh them again.
5. Calculate the percentage change in mass.



Why is the percentage change used rather than the actual change in mass?





Why is the percentage change used rather than the actual change in mass?

Potato chips may not all have same starting mass.

Percentage change allows comparison.



What is indicated by the x-intercept of the calibration curve?



What is indicated by the x-intercept of the calibration curve?

The concentration that is isotonic to the solution tested.



Explain the change in mass in the potato chips.



## Explain the change in mass in the potato chips.

The potato chips with concentration lower than the sucrose solution (higher water potential) lose mass as there is a net movement of water out of the cells.

The potato chips with concentration higher than the sucrose solution (lower water potential) gain mass as there is a net movement of water into the cells.



Why are the potato chips dabbed dry after removing from the sucrose solution?



Why are the potato chips dabbed dry after removing from the sucrose solution?

To remove any excess water clinging to its surface.



What are the controlled variables of this practical?





What are the controlled variables of this practical?

Volume of sucrose solution

Size of potato chips

Length of time left in solution

Dab each potato disc with paper towels

