

Edexcel Biology IGCSE

2.17 - Diffusion and Osmosis

Flashcards

This work by [PMT Education](https://www.pmt.education) is licensed under [CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/)



What is osmosis?



What is osmosis?

The movement of water molecules from a higher water potential to a lower water potential through a partially permeable membrane.



Describe how you would carry out an investigation into osmosis using potato tissue



Describe how you would carry out an investigation into osmosis using potato tissue

- Cut identical potato cylinders using a cork borer.
- Measure and record the length and mass of cylinders using ruler and balance.
- Add each cylinder to one of three solutions: 1M sugar solution, 0.5M sugar solution and distilled water.
- Leave cylinders in tubes overnight.
- Remove cylinders from tubes and blot them using paper towels.
- Record length and mass of each cylinder .
- Draw graph of change in mass in grams (y axis) against concentration of solution in mol dm⁻³ (x axis).



Why is it necessary to use a cork borer to cut the cylinders?



Why is it necessary to use a cork borer to cut the cylinders?

Results in equal sized samples so changes in length and mass can be compared easily



Why is it necessary to blot the cylinders with paper after removing them?



Why is it necessary to blot the cylinders with paper after removing them?

Each cylinder may have a different amount of water on its surface, so masses may vary.

Blotting cylinders allows masses to be comparable



What safety precautions should be taken with this experiment?



What safety precautions should be taken with this experiment?

Handle cork borer and scalpel with care



How can the water potential of the plant cells be found?



How can the water potential of the plant cells be found?

Plot a graph of change in mass against concentration.

Find the x-intercept, which is the concentration of solution that is isotonic to the plant cells.



State a source of error in this practical.



State a source of error in this practical.

Plant tissue taken from different parts of the plant may have different water potentials.



What equipment can be used to investigate osmosis in non-living systems?



What equipment can be used to investigate osmosis in non-living systems?

Using a capillary tube inserted into a visking tubing, placed in a beaker of solution.



What indicates osmosis in the non-living system?



What indicates osmosis in the non-living system?

The change in water level in the capillary tube.



What is the change in water level when the visking tube filled with water is placed in sucrose solution?



What is the change in water level when the visking tube filled with water is placed in sucrose solution?

Water level drops and water moves out of the visking tube by osmosis.



What is the change in water level when the visking tube filled with sucrose solution is placed in water?



What is the change in water level when the visking tube filled with water is placed in sucrose solution?

Water level rises and water moves into the visking tube by osmosis.



State the observation of placing a potassium permanganate crystal into a beaker of distilled water.



State the observation of placing a potassium permanganate crystal into a beaker of distilled water.

Purple colour spreads throughout solution, and the solution eventually becomes uniformly purple.

