

OCR A Biology A-level

PAG 08 - Transport In and Out of Cells

Flashcards

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State 2 factors that affect the permeability of cell membranes.



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Temperature

Concentration of solvents (ethanol)



How is beetroot used to measure the permeability of cell membranes?



How is beetroot used to measure the permeability of cell membranes?

The higher the permeability, the more red pigment that leaks out into the surrounding solution within a given time. A colorimeter can be used to determine the absorbance, hence concentration of pigment.



Outline the procedure to investigate the effect of temperature on permeability of cell membrane.



Outline the procedure to investigate the effect of temperature on permeability of cell membrane.

1. Cut beetroot into 6 identical cubes with a scalpel.
2. Place each cube in a different test tube with equal volumes of distilled water.
3. Place each test tube into water baths ranging from 30-80° C. Leave for 20 minutes.
4. Filter each solution out into a cuvette and measure the absorbance.



What are the safety hazards involved in testing the effect of ethanol concentration on membrane permeability?



What are the safety hazards involved in testing the effect of ethanol concentration on membrane permeability?

Ethanol is an irritant and is flammable, keep away from naked flames, wear eye protection.

Keep sharp scalpel away from fingers.

Handle hot liquid with care.



What is the effect of temperature on membrane permeability?



What is the effect of temperature on membrane permeability?

Increasing temperature results in increase membrane permeability.



What is the effect of ethanol concentration on membrane permeability?



What is the effect of ethanol concentration on membrane permeability?

Increasing ethanol concentration leads to increased membrane permeability, as ethanol causes gaps to form in the membrane.



Outline the materials used to measure the rate of diffusion.



Outline the materials used to measure the rate of diffusion.

Make agar jelly mixed with phenolphthalein.

Place in HCl and measure the time taken for the agar jelly to turn colourless.

Change the factor and repeat eg. concentration of HCL, surface area of agar jelly.



What is the effect of concentration on the rate of diffusion?



What is the effect of concentration on the rate of diffusion?

Increasing concentration increases the steepness of the concentration gradient, hence increasing the rate of diffusion (decreasing the time taken for the agar jelly to decolourise).



What is the effect of surface area on the rate of diffusion?



What is the effect of surface area on the rate of diffusion?

Increased surface area to volume ratio increases the rate of diffusion.

