

EZYSCIENCE OSMOSIS PRACTICAL RESOURCES

A complete virtual teaching model for every required practical for GCSE and iGCSE Science.

THE EXPERIMENT [CLICK TO SEE VIDEO](#)

This video explains the process of osmosis. It then also outlines the equipment required for the **Osmosis Required Practical**. In the video, Katherine prepares her potato cylinders, records her initial measurements and places them in different concentrations of sugar solutions. The results are collected and recorded within a table.

Osmosis Experiment EZY BIOLOGY

Concentration (M)	mass (g)
0	0.88
0.25	0.89
0.50	0.91
0.75	0.92

05:17

Osmosis Experiment EZY BIOLOGY

04:25

ANALYSING THE RESULTS [CLICK TO SEE VIDEO](#)

This video uses the results table produced by the end of the first video and begins by calculating the changes and percentage of the lengths and masses of the different potato cylinders. We then showcase how to use these results to plot a graph. The video finishes by using this graph to estimate the sugar concentration of the potato.

Osmosis Experiment EZY BIOLOGY

sugar (M)	length (cm)				mass (g)			
	start	end	change	% change	start	end	change	% change
0	4.0	4.2	0.2	5.0	0.88	1.05	0.17	19.3
0.25	4.0	4.2	0.2	5.0	0.89	0.93	0.04	4.5
0.50	4.0	4.0	0	0	0.91	0.89		
0.75	4.0	3.9			0.92	0.79		
1.00	4.0	3.7			0.91	0.63		

3:24

Osmosis Experiment EZY BIOLOGY

sugar (M)	% change in mass
0	19.3
0.25	4.5
0.50	-2.2
0.75	-14.1
1.00	-30.8

8:15

RECAP THE KEY PARTS OF THE REQUIRED PRACTICAL WITH OUR **SHORT RECAP VIDEOS**

Cell Biology Investigating Osmosis EZY BIOLOGY

Osmosis is the diffusion of water from a dilute solution to a concentrated solution through a partially permeable membrane

Hypothesis

If the concentration of sugar inside the cells of a potato is higher than in the surrounding solution the potato will gain mass due to osmosis

Net movement of water

Procedure

- Remove five cylinders from a potato
- Cut cylinders to be the same length
- Measure mass of each cylinder
- Place each cylinder in sugar solution
- Pat cylinders dry and measure the masses after two hours

Variables

Independent	Dependent	Control
Concentration of sugar solution	% change in mass of potato	Temperature Volume of solution

Analysing Results

rate of water uptake = $\frac{1.05 - 0.92}{2} = 0.065 \text{ g/hour}$

% change in mass = $\frac{1.05 - 0.92}{0.92} \times 100 = 14.1\%$

sugar concentration in potato = 0.46 mol/dm³

[CLICK TO SEE RECAP VIDEO](#)

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DEFINITION

PROCEDURE

HYPOTHESES

RESULTS

OSMOSIS PRACTICAL ASSESSMENT PREVIEW SHEET

Click **Feedback Video** under each question for individual question feedback.

Q1 3 MARKS	Q2 1 MARK	Q3 1 MARK	Q4 2 MARKS
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Watch the video question and identify the main variables in this experiment.

Identify the control variable used in the image of the practical.

Read the balance readings and record the initial results in the table given.

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Osmosis Experiment EZY BIOLOGY

Katherine investigated how osmosis is affected by the concentration of a solution using cylinders of parsnip.


Variable	Independent	Dependent	Control
Sugar concentration			
Initial thickness of parsnip cylinder			
Change in mass of cylinder			
Volume of sugar solution			

0:08

Q1 FEEDBACK VIDEO

Osmosis Experiment EZY BIOLOGY

The photograph shows the parsnip cylinders after they have been in the different concentrations of sugar solution for four hours.



Which control variable has been difficult to keep constant?

0:04

Q2 FEEDBACK VIDEO

Osmosis Experiment EZY BIOLOGY

Use the photographs to complete the column in the table giving the initial mass of the parsnip cylinders.

	Initial mass (g)
A	
B	
C	
D	

0:04

Q3 FEEDBACK VIDEO

Osmosis Experiment EZY BIOLOGY

Use the photographs to complete the column in the table giving the final mass of the parsnip cylinders.

	Sugar solution (M)	Final mass (g)
A	0	0.94
B	0.25	
C	0.50	
D	0.75	
E	1.00	

0:04

Q4 FEEDBACK VIDEO

Q5 2 MARKS	Q6 1 MARK	Q7 2 MARKS	Q8 2 MARKS
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Calculate the change and percentage change in mass of an object to the nearest percent.

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Calculate the change and percentage change in mass of an object to the nearest percent.

Identify the graph that has been plotted correctly from the table of results.

Osmosis Experiment EZY BIOLOGY

Complete the table by filling in the values of the change in mass and percentage change in mass for cylinder B. Give the change in mass to the nearest 0.01 g and the percentage change in mass to the nearest one percent.

	Sugar solution (M)	Initial mass (g)	Final mass (g)	Change in mass (g)	% change in mass
A	0	0.79	0.91	0.15	19
B	0.25	0.77	0.88		
C	0.50	0.77	0.86		
D	0.75	0.79	0.83		

0:19

Q5 FEEDBACK VIDEO

Osmosis Experiment EZY BIOLOGY

Complete the table by filling in the values of the change in mass and percentage change in mass for cylinder C. Give the change in mass to the nearest 0.01 g and the percentage change in mass to the nearest one percent.

	Sugar solution (M)	Initial mass (g)	Final mass (g)	Change in mass (g)	% change in mass
A	0	0.79	0.91	0.15	19
B	0.25	0.77	0.88	0.11	14
C	0.50	0.77	0.86		
D	0.75	0.79	0.83		

0:04

Q6 FEEDBACK VIDEO

Osmosis Experiment EZY BIOLOGY

Complete the table by filling in the values of the change in mass and percentage change in mass for cylinders D and E. Give the change in mass to the nearest 0.01 g and the percentage change in mass to the nearest one percent.

	Sugar solution (M)	Initial mass (g)	Final mass (g)	Change in mass (g)	% change in mass
A	0	0.79	0.91	0.15	19
B	0.25	0.77	0.88	0.11	14
C	0.50	0.77	0.86	0.09	12
D	0.75	0.79	0.83		
E	1.00	0.76	0.75	-0.01	-1

0:04

Q7 FEEDBACK VIDEO

Osmosis Experiment EZY BIOLOGY

	Sugar solution (M)	Initial mass (g)	Final mass (g)	Change in mass (g)	% change in mass
A	0	0.79	0.94	0.15	19
B	0.25	0.77	0.88	0.11	14
C	0.50	0.77	0.86	0.09	12
D	0.75	0.79	0.83	0.04	5
E	1.00	0.76	0.75	-0.01	-1

Which graph has been drawn with no mistakes?

0:08

Q8 FEEDBACK VIDEO

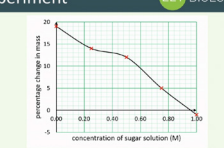
Q9 **2 MARKS**

Identify the sugar concentration by reading the value off the graph.

Q10 **1 MARK**

Analyse the results of two separate experiments and analyse the difference in results.

Osmosis Experiment EZY BIOLOGY



0:06

Q9 FEEDBACK VIDEO

Osmosis Experiment EZY BIOLOGY

Two groups of students investigated the effect of sugar concentration on osmosis using potato.

1	Sugar solution (M)	% change in mass	2	Sugar solution (M)	% change in mass
	0	21		0	14
	0.25	12		0.25	9
	0.50	1		0.50	6
	0.75	-10		0.75	2
	1.00	-18		1.00	-3

0:07

Q10 FEEDBACK VIDEO

EXPLAIN

A complete virtual teaching model for every required practical.

ASSESS

Assess strength of understanding via application challenges.

CEMENT

Application explanations to cement understanding.

