



OBSERVING OSMOSIS

WITH POTATO SLICES IN SALTWATER

Overview: Osmosis is the movement of water across a semi-permeable membrane from an area of lower solute concentration to an area of higher solute concentration. In this experiment, you will observe how potato slices change when placed in solutions with different salt concentrations.

QUESTION

How does the concentration of saltwater affect the mass and texture of potato slices due to osmosis?

HYPOTHESIS

If potato slices are placed in saltwater solutions of different concentrations, then _____
because _____.

MATERIALS

- 1 large potato
- Knife (adult use)
- Cutting board
- 3 clear cups or jars
- Table salt
- Measuring cup
- Water
- Paper towels
- Kitchen scale (in grams)
- Label or tape
- Optional: timer



PROCEDURE

1. Peel the potato and cut it into 3 slices of equal thickness (about 1/4 inch thick).
2. Pat the slices dry with a paper towel.
3. Weigh each slice and record the mass in the data table. This is your "initial mass."
4. Prepare the solutions:
 - Cup 1: Fill with plain water (0% salt).
 - Cup 2: Mix 1 teaspoon of salt in 1 cup of water (about 3% salt).
 - Cup 3: Mix 2 tablespoons of salt in 1 cup of water (about 10% salt).Stir until the salt is dissolved.
5. Label the cups: 0% (plain water), 3% (low salt), 10% (high salt).
6. Place one potato slice in each cup.
7. Let the slices sit for 60 minutes at room temperature.
8. Remove the slices, gently blot with a paper towel, and weigh each slice again.
9. Record the final mass and your observations.



DATA TABLE

Solution	Salt Concentration	Initial Mass (g)	Final Mass (g)	Change in Mass (g)	Observation (appearance & texture)
Cup 1	0% (Plain Water)				
Cup 2	3% (Low Salt)				
Cup 3	10% (High Salt)				

$\text{Change in Mass} = \text{Final Mass} - \text{Initial Mass}$

ANALYSIS QUESTIONS

1. Which potato slice gained mass? Which lost mass? _____
2. Which solution caused the greatest change in mass? _____
3. Explain why the potato slice changed mass in each solution. _____

4. What does this experiment show about osmosis? _____

5. Predict what would happen if a potato slice were placed in a stronger salt solution (more than 10%). _____

OBSERVATIONS

Describe what you saw in each cup. How did the potato slices look and feel?

CONCLUSION

Write a conclusion that answers the question using evidence from your experiment.



REMEMBER: Osmosis is the movement of water across a semi-permeable membrane from an area of lower solute concentration to an area of higher solute concentration.

