



OBSERVING THE PHENOMENON OF OSMOTIC PRESSURE WITH DIALYSIS TUBING

Osmosis is the movement of water across a selectively permeable membrane from an area of lower solute concentration (higher water concentration) to an area of higher solute concentration (lower water concentration). This movement of water creates osmotic pressure.

OBJECTIVE

To observe the movement of water across a selectively permeable membrane (dialysis tubing) and explain how osmotic pressure causes a change in mass or volume.

MATERIALS

- Dialysis tubing (pre-soaked as directed)
- String or rubber bands
- Graduated cylinder or measuring cup
- Beakers or clear cups (2)
- Corn syrup
- Water
- Table salt
- Spoon or stir stick
- Paper towels
- Scale (to measure mass)
- Ruler or tape measure (optional)

SAFETY

- Do not eat or drink any of the materials.
- Rinse spills immediately.
- Wash hands after the experiment.

BACKGROUND

Dialysis tubing is a selectively permeable membrane. It allows water molecules to pass through, but larger solute molecules (such as sugar from corn syrup or salt) cannot. When the concentration of solutes is higher inside the tubing than outside, water moves into the tubing. This creates osmotic pressure, causing the tubing to expand and its mass to increase.

PROCEDURE

1. **Prepare the dialysis tubing:** Follow package instructions to rinse and soak the tubing.
2. **Fill the tubing:** Pour about 2–3 tablespoons of corn syrup into the tubing. Remove any air bubbles and tie a knot or secure both ends tightly with string or rubber bands.
3. **Record initial mass and size:** Blot the tubing dry with a paper towel. Weigh it on a scale and record the initial mass. (Optional: Measure the length or diameter and record.)
4. **Prepare the beaker solution:** Dissolve 2–3 tablespoons of table salt in 500 mL (2 cups) of water. Stir until the salt is fully dissolved.
5. **Place the tubing in the beaker:** Put the filled tubing into the saltwater solution. Make sure it is fully submerged.
6. **Wait and observe:** Let it sit for 30–60 minutes.
7. **Record final mass and size:** Remove the tubing, blot it dry, and weigh it again. (Optional: Measure again.)
8. **Observe and record:** Note any changes in the tubing.

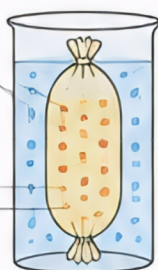
DATA TABLE

Measurement	Before (Initial)	After (Final)
Mass of tubing (g)		
Length (or diameter) (cm) (optional)		
Observations		

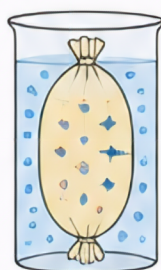
WHAT'S HAPPENING?

Dialysis tubing filled with corn syrup (higher solute concentration)

Salt water (lower solute concentration)



Before



After

Water moves into the tubing from the surrounding saltwater because the solute concentration inside is higher. This increases osmotic pressure and causes the tubing to swell and gain mass.

CONCLUSION

1. What happened to the mass of the tubing? _____
2. What caused this change? _____
3. How does this experiment demonstrate osmotic pressure? _____