

Lab Report

Title: Diffusion and osmosis through nonliving membranes

Introduction: Diffusion is a process resulting from random motion of molecules by which there is a net flow of matter from a region of high concentration to a region of low concentration. Molecules diffuse passively through the plasma membrane if they can dissolve in the lipid portion of the membrane. Osmosis is the diffusion of water across the cell membrane by osmotic pressure. The concentration of water is inversely related to the concentration of solutes. If the solutes can diffuse across the membrane, both solutes and water will move down their concentration gradients through the membrane.

Purpose: In this lab we will be doing an experiment on the movement of water and solutes through selectively permeable membranes which are called dialysis sacs. The purpose of this experiment is to investigate the process of diffusion and osmosis in non-living membranes.

Materials:

- 4 dialysis sac
- 4 beakers (250ml)
- 8 Test tube
- Test tube holder
- Hot plate
- Benedict's tests
- 10% sodium chloride solution
- 40% sucrose solution
- 40% glucose solution

Experiment : label the sack # 1A-4A and label the beakers 1B-4B. Half fill beaker 1B,3B and 4B with distilled water and 2B with 40% glucose solution. For sack 1 it has 20% glucose solution, sack 2- 40% glucose, sack 3-10% Nacl solution, and sack 4- 40% sucrose solution. Weigh each sack and write down the weight before putting it inside the beakers. Put sack 1A inside beaker 1B, 2A in 2B, 3A in 3B, and 4A in 4B for 45 minutes in the hotplate. After 45 minutes remove the sacks and weigh them again and write down the weight. Measure out the difference in weight from before and after the sacks were

placed in the beakers for 45 minutes. Do the Benedict's test for sugar for all sacks and all the beakers and sack 3A and beaker 3B for test of sodium chloride.

Data:

Beaker	Sack Contents	Initial weight	Final weight	Change in weight	Test (beakers)	Test (sacks)
Beaker 1B Half filled with distilled water	Sack 1A 20 ml of 40% glucose solution	7.1gm	8.0g	0.9gm	(1B) Positive	(1A) Positive
Beaker 2 B Half full of 40% glucose solution	Sack 2A 20ml of 40% glucose solution	6.9gm	6.9gm	0gm	(2B) Positive	(2A) Positive
Beaker 3 B Half full of distilled water	Sack 3A 20 ml of 10% NaCl solution	7.2gm	7.8gm	0.6gm	(3B) silver chloride Positive	(3A) Positive
Beaker 4B Half full of distilled water	Sack 4A 20 ml of 40% sucrose solution	7.1gm	8.0gm	0.9gm	(4B) Negative	(4A) Positive

Conclusion:

In conclusion the results show that water molecules move from high to low concentration while solute acts similarly if the permeable membrane is present. Also after doing the experiment it was very clearly seen that diffusion and osmosis occurred in all beakers and sacs but only not in sac 2 and beaker 2.

