

Introduction: This lab was born out of the need to clarify the concepts of diffusion and osmosis. Diffusion is the tendency for molecules to spread out evenly into the available space. Osmosis is the diffusion of water across a selectively permeable membrane. These concepts will be shown using the elementary example of water and potato leaves. These familiar materials consistently show the concepts naturally in the biological world and develop an improved understanding of diffusion and osmosis.

Objective: To show the diffusion of water across the membrane through an increase of mass and size.

Hypothesis: The potato leaf will become turgid and enlarged approximately twice its original size.

Materials:
 1 Potato leaf
 1 Straw cup
 1 Piece of glad wrap
 1 Water
 1 Scale
 20 ml. of water

Methods:

1. Take your potato leaf and make radius measurements (including length, height and width). Find your potato leaf's mass in grams.
2. Place the potato leaf in the straw cup and then fill it with approximately 20 ml. of water (about 1/3 full). Cover the straw cup with glad wrap so that no water can evaporate.
3. Leave the potato leaf in a dark area (so that water does not become gaseous) at room temperature and let it sit for approximately 24 hours.
4. After 24 hours, remove the water and potato leaf from the straw cup. Repeat step 1 with the potato leaf.
5. Observe the change from the initial size of the potato leaf to its current size.

Results:

	Original Potato Leaf	Potato Leaf after 24 hours in water	% Change
Length	2.4 cm	3.0 cm	25.0%
Width	1.1 cm	1.7 cm	54.5%
Height	0.8 cm	1.3 cm	62.5%
Mass	1.8 gms	4.2 gms	133.3%