



California State University of Bakersfield, Department of Chemistry

## Potato Osmosis



### Standards:

MS-LS1-2 Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.

### Introduction:

*Osmosis is the movement of fluids (usually water) from a lower concentration of solutes to a higher concentration of solutes through a semi-permeable membrane to equalize the concentration on both sides. Osmosis in an animal cell is somewhat different to osmosis in a plant cell; this is due to the cell wall that plant cells have. When an animal cell is in a hypotonic solution, it usually swells up and since there is no cell wall to keep it from swelling too much it can burst. On the other hand, plant cells become turgid in a hypotonic solution. In a hypertonic solution, animal cells shrink dramatically while plant cells become plasmolysed which happens because the cell wall does not change shape but the cell membrane shrinks inside the cell. In this experiment you will see the effects of putting a potato in a hypertonic solution and hypotonic solution.*

### Materials:

- Salt
- Water
- Potato
- Knife (adult needed)
- 2 Plates or bowls
- Scale

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**Safety:**

- Always have an adult with you to help you during your experiment.
- Always wear eye protection and gloves when doing chemistry experiments

**Procedure:**

1. Prepare salt water solution by adding 30 ml of salt to 70 ml of water.
2. Pour salt water in bowl and regular water in another.
3. Cut potato in half lengthwise.
4. Weigh each potato slice.
5. Place one slice flat side down in salt water solution and the other slice in the regular water.
6. Leave overnight.
7. Observe changes in potato slices and weigh again.

**Data and Observations:**

Record your observations in this space

Potato	Mass (g)
A (salt solution)	
B (water)	

1. What happened to the potato that was in the salt solution? Why did that happen?
  
2. What happened to the potato that was in the water? Why did that happen?
  
3. Try putting the potato back together as one. Do they fit perfectly as they did before the experiment? Why or why not?

**References:**

1. Osmosis in Potatoes. Plants for Kids.  
<http://herbarium.desu.edu/pfk/page17/page18/page19/page19.html> (Accessed: July 16, 2014).