



California State University of Bakersfield, Department of Chemistry

Egg 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:

In the egg osmosis lab we are going to use the egg as our cell. We will be submerging the eggs in vinegar to dissolve the shells off of the eggs. Once the shells dissolve we will be left with translucent cells. But wait! If the shell of the egg is gone then what will hold the egg together? While the shell does provide support and protection for the egg, it is not the only factor contributing to the protection and structure of the egg. The cell's semipermeable membrane controls what enters and exits the cell. The process in which the membrane allows certain nutrients and toxins to enter or leave the cell is called osmosis. The membrane is in charge of getting rid of any wastes and toxins; it also provides structure and protection for the cell. Once the shell is gone we will test the cell membrane by placing the shell-less eggs in different solutions (corn syrup, salt water, and water). We will watch the cell membrane in action and observe how it allows certain liquids to diffuse through its semi permeable layer.

Materials:

- 1,050 ml. of Vinegar
- Three eggs
- Three 600 ml. beakers
- 350 ml. of deionized water
- 350 ml. of salt water
- 350 ml of corn syrup
- Scale
- Ruler
- Yarn/ String

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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. Label beakers A,B,C.
2. Pour 350 mL. of vinegar into each beaker.
3. Measure and record the circumference of each egg.
4. Submerge eggs into beakers.
5. Leave the eggs overnight to allow the eggs shells to dissolve.
6. Measure the circumference of each egg.
7. Use a scale to measure the mass of each egg.
8. Pour 350 mL. of water into beaker A and 80 mL. of salt.
9. Stir the salt until it dissolves then place egg A in the solution.
10. Pour 350 mL. of tap water into beaker B. Then place egg B in the solution.
11. Pour 350 mL. of corn syrup into beaker C. Then place egg C into the solution.
12. Wait overnight for results.
13. Weigh mass of each egg and then measure the circumference of each egg.

Data and Observations:

The vinegar should dissolve all if not most of the egg shell. If your eggs shells are not completely dissolved, you can gently rub the existing egg shell in a circular motion. This will slowly remove the remaining egg shell. However be very careful not to pop the egg. You could also try leaving the egg in the vinegar for a longer period of time.

Eggs	Initial Mass (g)	Initial Circumference (mm)	Mass after Vinegar (g)	Circumference after Vinegar (mm)	Mass after Solution (g)	Circumference after solution (mm)
A						
B						
C						

References:

1. Lab: Egg Osmosis Lab.
<http://edtech2.boisestate.edu/pattymcginnis/592/Files/506%20Lesson%202%20Egg%20Osmosis%20Lab.pdf> (Accessed: July 16, 2014).