

# Osmosis in Eggs



## **Introduction**

All plant and animal life is dependent upon materials in solutions. There must be some way for these solutions to pass through living tissue. The membranes of some tissues allow only certain small particles and liquids to pass through. These are called “semipermeable membranes”. Water and other liquids passing through a membrane tends to balance the concentration of the solutions on both sides of the membrane so that they are equal. This process is called osmosis, and the tendency is to dilute the more concentrated solution on either side of the membrane.

In this lab, you will demonstrate osmosis by using eggs, which have a semipermeable membrane. To expose the membrane, you must partially dissolve the egg shell with vinegar (acetic acid). Since the concentration inside the egg is greater than in the water outside the egg, water will enter through the membrane. This will cause the egg to increase in size. You will then reverse the process by placing the egg in a more concentrated solution of corn syrup.

## **Materials**

corn syrup  
raw egg

vinegar (5% acetic acid)

## **Equipment**

wide-mouth glass jar

## **Safety Considerations**

- Vinegar can be irritating to the eyes and skin.
- Wash your hands thoroughly after completing this lab.

## **Procedure**

1. Place an egg in a wide mouth jar. The egg should be much smaller than the mouth of the jar.
2. Add enough vinegar to more than cover the egg.
3. Set the jar aside for two days. However, you should make observations soon after covering the egg with vinegar. Record your observations in the Data Table.
4. After two days, examine the egg and describe the effect of osmosis on the egg.
5. Carefully pour off the vinegar. Wash the egg several times by adding water to the jar and pouring it off. Remember, only a thin membrane is holding the egg together – don’t break it!
6. Add enough clear syrup to more than cover the egg.
7. Set the jar aside again for two days.
8. After the second day, observe the effect of reverse osmosis. Describe the egg now in your Data Table.

## **Clean-up**

1. Dispose of the egg in the trash, NOT THE SINK.
2. Clean the glass jars thoroughly with soap, water and a test tube brush.
3. Return all equipment to its proper location.
4. Wipe down your lab area and wash your hands before leaving the lab.

**Data Table**

Time	Egg Observations
immediately after adding vinegar	
after two days in vinegar	
after two more days in corn syrup	

**Questions**

1. There is a noticeable effect on the egg shell caused by the vinegar after only 15 minutes. Why is this happening?

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2. Why does the egg look larger after its treatment with vinegar?

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3. Why does the egg look larger after its treatment with corn syrup?

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4. What passes through the egg membrane to cause the effects you observed? How do you know?

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5. List one way you could change this lab and describe how your results might be different.

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