



Curiosity Guide #510

Diffusion and Osmosis

Accompanies Curious Crew, Season 5, Episode 10 (#510)

Sweet Potatoes

Investigation #8

Description

This investigation is no small potatoes!

Materials

- Apple corer
- Raw white potatoes
- 6 clear containers
- Spoons
- Digital scale
- Distilled water
- Sugar
- Measuring cup
- Measuring spoons
- Paper
- Pencil

Procedure

- 1) Core the potatoes with the apple corer.
- 2) Fill 6 containers with equal amounts of 250 milliliters distilled water.
- 3) Leave one container as is, but add 10 grams of sugar to the second, 20 grams to the third, 30 grams to the fourth, 40 grams to the fifth, and 50 grams of sugar to the last.
- 4) Stir each until dissolved
- 5) Label each container by the amount of sugar inside.

- 6) Select 2 potato cores for each container.
- 7) Weigh and record the mass of the potato cores on day 1.
- 8) Submerge the potato cores in the containers
- 9) Take the potato cores out and weigh them again on day 2.
- 10) What do you observe?

My Results

Explanation

In distilled water, the potato cores gain mass from day 1 to day 2 due to osmosis, the transfer of water through the semi-permeable membranes of the potato cells. Water is moving into the potato from the higher concentration of water to the lower concentration of water in the potato. As the amount of sugar solution increases in the other containers, the mass of the potato cores goes down. If the water is highly concentrated with sugar, the water actually leaves the potato because there is a higher concentration of pure water in the potato than there is in the sugar water.

Investigate further. The process of osmosis is really important for plants and animals. Think about the roots of plants in the ground. The roots spread out and try to cover a large surface area so that when they come in contact with water in the ground, the water can pass through the root membranes into the plant. The cells in our bodies absorb water too, right from our blood. We need to drink plenty of water every day so that our cells stay healthy. We should also be sure not to take in too much salt because that can pull the water out of our cells and get us dehydrated. Osmosis is amazing!

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