

Unit 1 Handout 24

Lesson 5: Osmosis in Carrots

Purpose: To observe how osmosis affects plants.

Research/Background:

Osmosis is the diffusion of water particles from a higher concentration to a lower concentration. An easy way to observe this is by using plants. Plant shape and firmness can be changed based on how much water is in the plant. You have seen this before when a plant wilts. It wilts because it does not have enough water to keep itself upright. In this lab, we will place carrots in a solution that contains a concentration of water higher or less than the concentration of water in the carrot.

Procedure

1. Label the end of two ribbons with your period number. Label one SALT and one FRESH.
2. Use the ribbon and the ribbon to determine the circumference of the carrot.
3. Tie the ribbon as tightly as you can around the carrot without damaging the carrot.
4. Make observations about the ribbon and the carrot in the table below. We will collect the class mass together.
5. Give the carrots to Mr. Ower for the class measurement.
6. Re-collect this data after 24 hours.

Observations of Fresh Water Carrot at 0 Hours	Observations of Saltwater Carrot at 0 Hours
Circumference: _____ Class Mass: _____ My Mass: _____ Qualitative Descriptions:	Circumference: _____ Class Mass: _____ My Mass: _____ Qualitative Descriptions:

Observations of Fresh Water Carrot after 24 Hours	Observations of Saltwater Carrot after 24 Hours
Circumference: _____ Class Mass: _____ My Mass: _____ Qualitative Descriptions:	Circumference: _____ Class Mass: _____ My Mass: _____ Qualitative Descriptions:

Analysis**FRESH WATER CARROT DATA ONLY!**

1. Did the mass of the carrots change after 24 hours? How? _____
2. Did the carrot (overall) shrink or grow? _____
3. Was the carrot placed in a hypertonic or hypotonic solution? _____
4. Which had a higher concentration of water: the solution or the carrot? _____
5. Where did the water move from and to? _____
6. How did the carrot change after sitting in the fresh water solutions for 24 hours?

7. In one or two complete and detailed sentences, describe what happened that caused the fresh water carrot to change. Your answer should include the following words: osmosis, water, mass, concentration, and solution.

SALTWATER CARROT DATA ONLY!

8. Did the mass of the carrots change after 24 hours? How? _____
9. Did the carrot (overall) shrink or grow? _____
10. Was the carrot placed in a hypertonic or hypotonic solution? _____
11. Which had a higher concentration of water: the solution or the carrot? _____
12. Where did the water move from and to? _____
13. How did the carrot change after sitting in the salt water solutions for 24 hours?

14. In one or two complete and detailed sentences, describe what happened that caused the salt water carrot to change. Your answer should include the following words: osmosis, water, mass, concentration, and solution.

