

Carrot lab

Please write in your lab notebook. Be sure to write your hypothesis before the lab exercise.

Purpose: To observe how carrot reacts when placed into various osmotic environments: 5% salt water and distilled water.

Hypothesis: _____

Materials: Salt water, distilled water, carrots, electronic balance, 250mL beakers, paper towels, forceps, calculator

Procedure:

Day1

1. Label two beakers: 5% salt water and distilled water.
2. Put 100mL of the appropriate kind of solution in beaker
3. Make observations about the physical appearance of the carrot and record it in the data table. The teacher will show to how to core and cut into 3cm pieces.
4. Measure the mass of three pieces of carrot for each type of solution. Record this in the data table.
5. Place three pieces of carrot into the salt water solution and three pieces of carrot in distilled water.

Day 2

6. Remove the carrot from the salt solution. Do not stab or poke the carrot with forceps when removing it. Using a paper towel, pat the carrot dry.
7. Measure the mass, and record in the data table. Record any other observations about the carrot (color, texture, etc.).
8. Repeat with carrots in distilled water.
9. Clean up your lab table. Put carrots and paper towels in the trash and pour all liquids down the sink. Work the calculations, and answer the questions about the lab.

Data Table: Draw a data table to record your result

Calculations: Using the following equation, calculate the percent change in mass of the carrots for each type of solution.

$$\text{Difference (final - initial)} \times 100 = \text{ \%change}$$

Questions:

Questions for thought:

1. In carrots, what cell part stores water?
2. What do you think caused the changes in mass for your carrots?
3. Which carrot had the largest percent decrease in mass? Why do you think this happened?
4. Which potato/carrot had the largest percent increase in mass? Why do you think this happened?
5. A plant cell has a cell wall around its cell membrane. The cell wall is not “stretchy,” so the plant cell won’t break open. How does this help the plant to remain upright, and not fall over? (Hint: think about what’s in the vacuole, and how it can help in this situation.)