

Osmosis theory conspect with tab



Introduction: Osmosis is the result of diffusion across a semi-permeable membrane. If two solutions of different concentration are separated by a semi-permeable membrane, then the solvent will tend to diffuse across the membrane from the less concentrated to the more concentrated solution. This process is called osmosis. This leads me to my question, how do different concentrations of sucrose affect the rate of osmosis? My hypothesis is if sucrose concentration increases in the selectively-permeable baggies then, the rate of osmosis will also increase.

Materials and Method: To conduct this experiment the materials needed are 3 different concentrated sucrose solutions, 0. 25 M, 0. 5 M, 0. 75 M. It will also require 4 beakers containing water from the sink. 4 pieces of dialysis tubing along with 8 pieces of string. An electronic balance to weigh the solutions. Makers and labeling types to label different solutions. Paper towels needed to dry off any excess water. This experiment should be conducted in a group of 3.

- Step 1. Fill four separate beakers three-fourths full with deionized water.
- Step 2. Label the beakers to identify each different sucrose concentration later on.
- Step 3. Fill up the four baggies each with a different sucrose concentration, and the final bag fills up with deionized water.
- Step 4. Tie the bags with the string and rinse off each bag with di-H₂O to wash away any spilled sugar.

- Step 5. Weigh the solutions to determine the bag weight and then wait 35 minutes and repeat the weigh-in to get the final weight of the solutions.

Results: The initial weight gain was figured by weighing the baggie with the Sucrose solution before putting it into the beaker with the deionized water, and after the baggies were in the beaker of deionized water for 35 minutes, then the baggies were weighed again. After the initial weight and the final weight was done, the final weight was divided by the initial weight and multiplied by 100 to get a percentage of initial weight gain.

Sucrose Concentration (M)	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7
0	100	100	100	100	100	100	100
0.25	104	106	108	102	106	108	105.6
0.5	110	107	112	113	110	112	110.5
0.75	115	99	122	120	121	119	116.5

This is the table of the class raw data in % of initial weight gain.

Discussion: The hypothesis that I made earlier if sucrose concentration increases in the selectively permeable baggies, then osmosis would increase with it, was validated by this experiment. Different concentrations of sucrose changed the rate of osmosis. The final weight proves to be a significant gain.

The line graph shows the greater the concentration of sucrose in the solution, the greater the weight gain. The weight gain also increases directly with the increase of sucrose in the solution which demonstrates osmosis. Even though my hypothesis was proven correct, there could have been a few lab errors that might have thrown the initial and final weight gain off by an insignificant number. The baggies may not have been filled up exactly halfway and things of that nature. In any case, the experiment proved a success as we got to see osmosis taking place and results that occur from diffusion.