

Gummy Bear Osmosis

Hypotheses: *Circle your choices to create your hypotheses.*

1. If the H₂O concentration in the tap water is (**higher , lower**) than the H₂O concentration in a Gummi Bear, then Gummy Bears placed in tap water will (**increase , decrease , remain the same**) size.
2. If the H₂O concentration in salt water is (**higher , lower**) than the H₂O concentration in a Gummi Bear, then Gummy Bears placed in distilled water will (**increase, decrease, remain the same**) size.



Materials:

- 2 50-mL beakers (or plastic cups)
- Masking Tape
- Permanent marker
- 2 – plastic forks or small sieves
- 2 – Gummy Bears (different colors)
- Tap Water
- Saturated salt solution
- Metric measuring tape

Procedure Day 1:

1. Obtain two beakers, two different colored Gummy Bears and a ruler.
2. Label your beaker with a piece of masking tape. Write your names and class period using a permanent marker on the masking tape.
3. Label one Beaker “Tap Water” and the other “Salt Water”.
4. Measure your bear (in cm) from top to bottom (length) and from side to side (width) and from front to back (height).
5. Record the dimensions in centimeters in the data table. Use decimals.
6. Find the mass of each bear. Record the mass in the data table in grams. Again, use decimals.
7. Place the bears in the beakers.
8. Cover one with tap water. The bear should be completely covered. Beaker should be about half full.
9. Cover the other bear with salt water. The bear should be completely covered. Beaker should be about half full.
10. Let them sit overnight.

Procedure Day 2:

1. Gently pour the water out of the beakers into the sink. **Be careful not to lose the bears down the sink!**
2. Place each bear on a paper towel and blot dry. **Be CAREFUL not to break the bears!! They are very fragile!!**
3. Measure the length, width, and height. Record.
4. Carefully find the mass of the bears. Record.
5. Calculate the volumes (L x W x H). Round your answers to the nearest hundredth.

Data Table for Volume:

Dimensions	Gummi Bear 1 -- tap water		Gummi Bear 2 -- salt water	
	Initial	Final	Initial	Final
	Before soaking (day 1)	After tap water (day 2)	Before soaking (day 1)	After soaking (day 2)
Length (cm)				
Width (cm)				
Height (cm)				
Volume (cm ³) L x W x H = ___ cm ³				

Data table for Mass:

Mass (grams)	Gummi Bear 1 -- tap water		Gummi Bear 2 -- salt water	
	Initial	Final	Initial	Final
	Before soaking (day 1)	After tap water (day 2)	Before soaking (day 1)	After soaking (day 2)
Gummi Bear mass (g)				

Calculations: Calculate the percent changes in volume after each step of the experiment.

% change in mass =

(Final mass – Initial mass)/ Initial mass x 100 = _____ %

1. Tap Water Gummy Bear calculations:

2. Salt Water Gummy Bear calculations:

Analysis Questions: ***Write answers on a *separate sheet* of paper!

1. What happened to the bears when placed in tap water?
2. What happened to the bears when placed in salt water?
3. What do you think would have happened to the bears if, after the last day, they were again placed in tap water?
4. Write a paragraph explaining the results of this experiment using the concept of osmosis. Explain if the gummi bear or the solution was **hypotonic** and **hypertonic** in each trial.