Gummy Bear Osmosis Lab

Purpose: to investigate the movement of water into and out of a Gummy Bear

Problem: Where is the concentration of water molecules highest, tap water or salt water?

Vocabulary: define the following terms

* Concentration: the amount of a component in a given area or volume
* Diffusion: A process by which molecules move from an area of high concentration to an area of low concentration
* Osmosis: the diffusion of water
* Selectively Permeable: some substances that can cross the cell and others cannot not.
* Passive Transport: dissolved material moves across the cell membrane without using energy from the cell.
* Active Transport: dissolved material moves across the cell membrane using energy from the cell.

Answer the following predictions:

QUESTION 1: How will soaking gummy bears in tap water affect the size of the candy? Prediction: explain your prediction based on your knowledge and the background information. I think that the gummy bear when it soaks it will do a little shrinking maybe and it would just get soaked perhaps and maybe could dissolve.

QUESTION 2: How will soaking gummy bears in salt water affect the size of the candy? Prediction: explain your prediction based on your knowledge and the background information. I think it will affect the gummy bear because the salt water will make it shrink and will be dissolved for sure.

Procedure: Class 1

1. Label each of the cups with the group member’s name and one with "tap water" and one with "salt solution".
2. Choose one of the colored gummy bear to enter tap water and one to enter salt. Record which color will enter each solution in the data table on page 3
3. Use the ruler to find the height & width of each bear. Record your results in the data table. Round your measurements to the nearest tenth. Use cm.
4. Use the scale to weigh each gummy bear. Record your results in the data table. Round your answers to the nearest tenth. Use grams.
5. Record observations about the gummy bear in the data table.
6. Have Mrs. Kenney check your data table and cups are labeled correctly and then you can get water and salt water.
7. Fill the cup with tap water and one cup with salt solution. The gummy bear needs to be fully covered (the cup will be approximately one third full). Add one spoonful of salt and stir with a popsicle stick before you add the gummy bear.
8. Place one gummy bear into the tap water and the other gummy bear into salt water.

Procedure: Class 2

1. Use the scale to weigh the piece of wax paper. Record the mass here Don’t have scale.

2. GENTLY take your gummy bear that was in tap water out of the cup using a spoon and place it on wax paper.

3. Use the ruler to find the height & width of the tap water bear. Record your results in the data table below. Round your measurements to the nearest tenth

4. Place the tap water bear on the wax paper and weigh it. SUBTRACT the weight of the gummy bear + wax paper from the wax paper alone. (bear and wax paper – wax paper alone = mass of bear alone) Record your results in the data table below. Round your answers to the nearest tenth.

5. Record any observations for the tap water bear on the data table below

6. Place this bear aside on a paper towel

7. Follow steps 2-6 for the gummy bear in salt water. Record the results in the data table below

Data Table:

|  | Tap water  Gummy Bear 1: Color Light Green | | Salt Water  Gummy Bear 2: Color Dark Green | |
| --- | --- | --- | --- | --- |
| Measurements | Initial: Class 1  (before soaking in tap water) | Final Class 2 (after soaking in tap water) | Initial: Class 1  (before soaking in salt water) | Final Class 2 (after soaking in salt water) |
| Width (cm) | 1 cm | 2cm | 1 cm | 2cm |
| Height (cm) | 2cm | 3cm | 2 cm | 3cm |
| Mass (g) |  |  |  |  |
| Observations at least three | The mass and height are the same but have different colors and will stay the same with the color I think. | The mass and height change, it stays the same with the color, and becomes more chubbier. | The mass and height are the same and it has a different color and it will become much lighter. | The color becomes lighter, starts to fall apart, and shrinks. |

Analysis:

1. In your own words, describe what happened to the bear in tap water after a day had passed. The bear became very puffy and looked chubby and looked like it weighed more.
2. In your own words, describe what happened to the bear in salt solution after a day had passed. The bear was falling apart, smaller, and the same width and height as the other one.
3. In your own words, describe the difference between the two bears, and how they were originally. The bears were not soaked and had their original colors and did not shrink and did not get smaller. One of the bears was dark green and had its placement in salt water. On the other hand one of them is light green and it is placed in tap water.

Conclusion:

1. Write your conclusion here in 5-6 sentences. Did your hypothesis match your findings? Be sure to include the following words or phrases in your explanation: selectively permeable membrane, diffusion, high concentration, low concentration, and osmosis. Explain what happened to both bears in the experiment, & why.

The hypothesis was only right for question two because the osmosis diffused the water which made it shrink like I predicted. The other one question one did not work because I thought it would dissolve and shrink a little bit, but apparently it did the opposite; the diffusion did not do that. It did not diffusion and was selectively permeable. Selectively permeability lets the light gummy bear’s cell membrane block the water and make it bigger. And the dark green bear cell membrane let the water in so it could shrink.