Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period:\_\_\_\_\_\_\_\_\_\_\_

**Osmosis Lab**

***Read the directions carefully found on the lab sheet.***

**Part I**

You will have three different liquids to soak your potato piece in.

* Liquid A is plain tap water.
* Liquid B is sugar water.
* Liquid C is highly concentrated salt water.

1. Write your hypothesis on what you will think will happen to each piece of potato. (If,then,because)

**Liquid A:**

**Liquid B:**

**Liquid C:**

1. Write down any observations or ideas you have about the potato and lab. Talk with your table and see if they made any observations that were different from your own.

**Part II: Potato Experiment**

***Fill out the Data Table below:***

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Mass Before** | **Mass After** | **Difference In Mass** |
| **Normal Water Potato** |  |  |  |
| **Sugar Water Potato** |  |  |  |
| **Salty Water Potato** |  |  |  |

Draw a graph showing your results \* Label title, X-axis, Y-axis

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Part III

1. Describe how the potato piece changed or if it did in **liquid A.** What happened?
2. What do you think caused the change? (Talk about water and osmosis!)
3. Describe how the potato piece changed in **liquid B.** What happened?
4. What do you think caused the change? (Talk about water and osmosis!)
5. Describe how the potato piece changed in **liquid C.** What happened?
6. What do you think caused the change? (Talk about water and osmosis!)
7. Take the potato piece from cup **A** and compare it with the potato piece from cup **B & C –** describe them below. HOW ARE THEY DIFFERENT?

Piece A Piece B Piece C

1. Discuss with your lab partners to come up with a conclusion statement for the lab. (Use the words **concentration, osmosis, diffusion, or active transport** if you can)

**Osmosis Lab Instructions:**

**Part I**

1. With your lab partners, grab three potato cubes of about equal size.
2. Mark 3 cups as A, B, and C with a sharpie (Put table number and Class period on there as well).
3. Measure the weight of each potato cube and make sure you make note of which potato you will put in each cup. Weight is in GRAMS. Mark the weight in the data table.
4. Place a cut piece of potato in each of the three cups marked A, B and C.
5. Fill the water according to the key on the first page (just enough to cover the potato)
6. Answer the questions for Part I.
7. When finished sit back at your table.

**Part II**

1. In class activity, fill out chart and answer questions with the class.

**Part III**

1. Using the tweezers, carefully take out the cut pieces out of the cups.
2. Pat the pieces of potato carefully with a paper towel trying to be careful not to over dry it.
3. Place the potato on the scale and measure it. (Note in the data table the new weight)

**What’s Going On**

The cube soaked in plain water will have remained the same size or gotten slightly larger. The cubes soaked in the salt and sugar solutions will have shrunk by as much as half their original size. All of the cubes started out smooth, crisp, and firm. The one soaked in water stays that way. Both of the cubes in the other solutions will become soft and flexible, and may even begin to wrinkle from the change in size. The potato in the plain water may have absorbed a small amount of water. The other cubes both lost water to the surrounding solutions.

Osmosis is the movement of water across a membrane from an area of higher concentration of solvent (in this case water) to one of lower concentration. When you have pure water and a solution of something, for example saltwater, the pure water is an area of higher concentration. In the case of the potato cubes in saturated solutions of saltwater and sugar water, the potato itself contains a higher concentration of plain water, so water molecules pass through the cell walls of the potato into the surrounding solution. Osmosis will continue until the concentration of water is equal inside and out. In the case of the potato cube in pure water, there is very little or no movement of water. If there is movement, it is in the opposite direction. This means that there is a small amount of some substance dissolved in the water contained in the potato, which gives it a lower concentration of water than is present in the glass. Osmosis can move water into or out of a cell. The concentration of water on either side of the membrane determines the direction in which the water flows.

Connections

The cells of living organisms are separated from each other by membranes. These cell membranes are semipermeable. This means that they allow certain substances, water for example, to pass through while keeping others out. Water enters and leaves the cell by osmosis. In this process, water molecules pass through a semipermeable membrane. Water will always move from the side of the membrane where the concentration of water is higher to the side where there is a lower concentration of water. In this experiment, you observed the effect of osmosis on a potato, using solutions of salt and sugar.