**Title**

Your Name

Your Class Name and Period

Mayfield High School

Your Teacher’s Name (Mr. or Mrs.)

Date

## 

**Introduction**

Papers must be typed in 12 point, Times Roman font, 1" margins, double-spaced, and **written in 3rd person**. (do NOT use I, my, our, etc). DELETE ALL RED TEXT BEFORE TURNING IN!

## **Background Information**

When scientists develop an idea, they first perform research to determine what is already known about their idea. The background research section tells the reader what ideas and assumptions the scientist used to develop their experiment. This should include vocabulary and basic concepts from the unit. Be sure to define the critical vocabulary and explain the concepts from the unit. You should not discuss the actual experimental design or results.

This section should include information from class about:

Water - Structure and Properties

Lipids – Four Types (structure and function)

Cell Membrane - Parts (structure and function), Selective Permeability

Passive Transport

Diffusion (simple and facilitated)

Osmosis

Tonicity (hypertonic, isotonic, hypotonic)

***Objectives***

* To measure osmosis in potato cubes in varying concentrations of sucrose.
* To determine which solutions are isotonic, hypertonic, and hypotonic to the

potato cube.

***Hypothesis***

Write your hypothesis here. A good hypothesis is brief and should contain the following:

1. Identification of your experimental groups (independent, dependent, and controlled variables)
2. Explanation of what is being measured
3. An answer to your question or prediction of the outcome

***Variables***

|  |  |
| --- | --- |
| Independent Variable |  |
| Dependent Variable |  |
| Controlled Variables |  |

## **Materials and Procedures**

***Materials***

## 4 plastic cups

## potato cubes

## electronic balance

## sucrose solutions (0.1M, 0.3M, 0.6M, 0.9M)

## **Procedures**

## Obtain 4 cups & label (using the marker) one of the sucrose concentrations on each cup: 0.1M, 0.3M, 0.6M, 0.9M.

## Use a scale (electronic balance) to find the mass (g) of each potato cube. Be sure to "zero out" the cup each time before adding the cubes.

## Record the mass on the Data Table as Initial Mass. Round to the nearest tenth (0.1 g).

## Swirl the 0.1M sucrose solution. Pour the 0.1M sucrose solution into the 0.1M cup. Pour enough solution to just cover the potato cube.

## Repeat Step 4 with the remaining solutions in the other cups.

## Let the potato soak for 20 minutes.

## Remove the potato cube from the 0.1M cup and place on paper towel.

## Gently blot dry and quickly find their mass. Use the SAME scale used for the initial mass. Record this as Final Mass on the Data Table. Round to the nearest tenth (0.1 g).

## Repeat this procedure for the remaining cubes. Be sure to record all data.

## Throw away the potato cubes and all the cups.

## Calculate the % change in mass for the potatoes in each cup using the formula below. Record all work in the Calculations data table.

## % Change in Mass = (Final Mass – Initial Mass) x 100

## Initial Mass

1. Record individual % change in mass in the MASS Data Table.

* Note that NEGATIVE %’s mean the potatoes LOST mass.
* Record your individual % change in mass on the computer spreadsheet at the teacher’s desk as well.

1. Determine & record the class average % change in mass for the cubes in each cup.

**Results**

***Calculations***

% Change in Mass = (Final Mass – Initial Mass) x 100

Initial Mass

|  |  |
| --- | --- |
| **Sample Calculation** | **% Change in Mass** |
| % Change in Mass = (Final Mass – Initial Mass) x 100  Initial Mass  % Change in Mass = (Final Mass – Initial Mass) x 100  Initial Mass |  |

***Data Table***

**Record of Initial and Final Mass**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Concentration of Sucrose Solution** | **Initial Mass (g)** | **Final Mass (g)** | **Individual % Change in Mass** | **Class Data Mean % Change in Mass (g)** |
| **0.0M** |  |  |  | **24.4%** |
| **0.1M** |  |  |  | **16.7%** |
| **0.3M** |  |  |  | **5.8%** |
| **0.6M** |  |  |  | **-13.7%** |

***Graph***

***Explanation of Data***

In a short paragraph, describe the data presented in the table and graph. This section is meant to be a written description of the data. DO NOT interpret the data. DO NOT provide any explanation of the data. Just describe the data.

Example Sentence: “The initial mass of the potato cube at 0.1M was 2.0g and the final mass was 3.5g. This is a 75% increase in mass.”

***Discussion and Conclusion***

**This section should be 2-3 paragraphs.**

Use the questions below to guide your discussion. The answers to these questions need to be included in the discussion section of your lab report, but **your discussion should not just be the answers to these questions.** In paragraph format, you should indicate whether or not you accept or reject you hypothesis, and then you will provide a logical and organized “flow” of ideas in which you transition from one question to another to help support your statement.

🡪 What was your original hypothesis?

🡪 Did you accept or reject your hypothesis?

(use the following questions as evidence to support your claim)

1. What are the % changes in mass that you observed? Why did these changes occur? Discuss the movement of water.
2. What is the graph illustrating? (use specific data from the graph)
3. What solutions are isotonic, hypotonic, and hypertonic?

🡪 What are all the sources of error that could have occurred? Did you have any? If so, explain. How could these errors be fixed? How could the experiment be improved?

🡪 What can you conclude about this experiment? Based on your observations and data collected in this lab, what can you conclude about the process of osmosis and how water moves in a cell?

***Please make sure to delete what is in red and type in your response*.**