

Your Name

Teacher's Name

Class

Due Date

Title

Research Question

Write a focused research question in the form of a question. **Your research question should be based on the effectiveness as well as economy of your proposed combinations of sodium carbonate (Na_2CO_3), sodium bicarbonate (NaHCO_3) and/or sodium chloride (NaCl) in preserving plant material from decomposition. You will be comparing two combinations (one change in the combination) to a control sample that is not placed in your proposed combinations.**

Background Information

Refer to several sources in order to understand the background/relevance of the experiment. **Research the use and effectiveness of sodium carbonate, sodium bicarbonate, and sodium chloride in preserving organic matter. Please ONLY include information relevant to preservation, not information on other uses. You will need to document your sources.**

Hypothesis

If/then statement. Give explanation. Example: "If the glucose concentration is increased, then the amount of carbon dioxide will increase. This is because glucose is used in cellular respiration and carbon dioxide is a product of cellular respiration. As the yeast use more glucose, more carbon dioxide will be produced as an end product of cellular respiration." **You will need to choose one combination to be more effective than the other. Explain why using your research as justification.**

Variables

Independent Variable: This is the variable that is manipulated. (What you vary). **This is most likely the amount of a particular chemical. Chemicals are measured by mass. (g)**

Dependent Variable: This is the variable that changes in response to the independent variable. (What you measure). **List the signs of decay.**

Control Variable: The factors you keep consistent throughout the experiment. **Likely – plant material (potato), plastic bag, environment.**

Materials

The materials list must be specific. Please give the size of glassware, the concentration of solutions, the amount of chemicals, the range of thermometers, and the amount of solutions. Don't forget to list units of measure and precision/range on measuring tools. **Chemicals are listed by mass. (g)**

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Procedures

Write the steps of your procedures in a numbered list. Use impersonal language: no "I" or "we." Indicate amounts. Example: "Add .50 grams of sodium chloride to .25 mL of acetic acid."

1.

Data Table

Use clear headings for your data table. **You will need two data tables for this lab.**

1. **You will create a data table for your observations of the preservative effectiveness of your chemical combinations.**
2. **You will create a data table of the cost of your materials.**

Photographs

Photographs will be used as evidence. Include photos of the specimens at the beginning of the experiment and at the end. Make sure to label the photographs with appropriate information including variables and date.

Data Analysis

Indicate averages and ranges. **You will be completing two data analysis for this lab.**

1. **Compare the effectiveness of the chemical preservatives to each other and the control.**
2. **Compare the relative cost of the chemical preservations to each other and the control.**

Conclusion

Hypotheses are supported or refuted, NOT proven. Justify your conclusion with specific data from your experiment. Compare your results to the literature.

Evaluation

Discuss limitations and weaknesses in the experiment.

References

Please use MLA format.

