

# Color Changing Cabbage Juice



**Grade:** Kindergarten | **Measurement:** US Customary (cups, ounces, inches, etc.)

## Purpose

This experiment shows how red cabbage juice can change colors when it meets different liquids. It helps us understand that some natural things can tell us if something is an acid or a base.

## Hypothesis

If we add red cabbage juice to different liquids, then the juice will change color depending on whether the liquid is sour or not.

## Materials

- 1 small head of red cabbage
- 4 cups of water
- 4 clear cups or small bowls
- 1 tablespoon of vinegar (or lemon juice)
- 1 tablespoon of baking soda dissolved in 1/2 cup water
- 1/2 cup of plain water
- A spoon for stirring
- A strainer or sieve (optional)

## Procedure

1. Cut the red cabbage into small pieces with help from an adult.
2. Put the cabbage pieces into a pot and pour 4 cups of water over them.
3. Ask an adult to boil the cabbage and water for about 10 minutes to make purple cabbage juice.
4. Let the juice cool, then pour it through a strainer into a bowl to remove the pieces.
5. Pour about 1/4 cup of the purple cabbage juice into each of the 4 clear cups.
6. Add 1 tablespoon of vinegar or lemon juice to the first cup and stir gently.
7. Add 1 tablespoon of baking soda water to the second cup and stir gently.
8. Add 1/2 cup of plain water to the third cup (this is your control).
9. Leave the fourth cup with only cabbage juice to compare colors.
10. Look closely and talk about any color changes in each cup.

## Results

The cup with vinegar or lemon juice turns pink or red, showing it is acidic. The cup with baking soda water turns green or blue, showing it is basic (alkaline). The cups with plain water stay purple or change very little.

## Conclusion

Red cabbage juice changes color when mixed with acids or bases. This natural color change helps us understand different kinds of liquids around us.

## Learning Objectives

- Learn about acids and bases using safe, natural indicators.
- Observe color changes and make simple predictions.

- Practice measuring and mixing liquids carefully.

**Teacher Notes:**

**Key Concept:** This experiment introduces children to natural indicators and the basic idea of acids and bases in a safe and visual way. Red cabbage contains special pigments that change color when they meet liquids with different pH levels.

**Answer/Explanation:** Vinegar and lemon juice are acidic and turn the cabbage juice pink/red because of chemical changes in the pigments. Baking soda water is a base and turns it green or blue. Plain water is neutral and does not change the color much.

**Teaching Tips:**

- Prepare the cabbage juice ahead of time to save time during the lesson. 2. Encourage children to describe the colors they see using their own words. 3. Use this experiment to explain that colors can tell us about the world in surprising ways. 4. Always supervise children when cutting cabbage and boiling water.

**Relevant Standards:** NGSS K-ESS3-1: Use a model to represent the relationship between the needs of different plants or animals and the places they live., NGSS K-2-ETS1-1: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.



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

Date: \_\_\_\_\_

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