

# Rainbow Science! The Amazing Purple Cabbage Experiment!

October 22, 2024 / DIY / Stem Activities / Chemistry / Age 6 - 8 / Purple Cabbage Experiment



Did you know? Delicious purple cabbage isn't just for eating; it can also be your creative tool! In this experiment, we'll use purple cabbage to make naturally dyed paper and test the acidity of common household items.

- Age: 6-8
- Time: Less than 2 hours
- Messiness level: Messy
- Adult supervision required

## Materials Needed:

Warm water  
A4 paper (or other paper suitable for drawing)  
Plate  
Paintbrush or small brush  
Knife  
one purple cabbage  
One lemon



## Step-by-Step Instructions:

1. Ask a parent to help cut the purple cabbage into small pieces and place them in a plate. Pour in warm water and stir to help the cabbage release its color. Wait for about 15 minutes. If the colour extraction is not satisfactory, you can extend the soaking time or ask an adult for help to heat the cabbage and water in a pot for a short while until the water turns purple.



2. Filter out the cabbage pieces from the plate. Soak the A4 paper in the purple cabbage solution, ensuring it's fully saturated, then hang it to dry. After drying, you can repeat this step 2-3 times for better results in the subsequent experiment.



3. Cut the lemon and squeeze out a small amount of lemon juice. Use a paintbrush to dip in the lemon juice and write on the dyed paper you just made. See if a miracle happens!

Think about what would happen if we changed the order of the experimental steps. For example, if we first wrote on white paper with lemon juice and let it dry, can you think of a way to reveal these words?



## The Science Behind It:

Purple cabbage solution contains a natural pH indicator called anthocyanin. Anthocyanin displays different colours in different pH environments. For example, in an acidic environment, it turns red or pink, while in an alkaline environment, it may turn green or blue.

Lemon juice contains citric acid, which is an acidic substance. So when lemon juice comes into contact with the purple cabbage-dyed paper, it changes the pH of the paper, turning it pink.

Think about what other household items you could test for acidity or alkalinity using the purple cabbage-dyed paper?