

Curiosity Labs™ by Merck:
The BASICS and ACID of pH

in this experiment, you will learn...

- What **pH** stands for
- How the **pH scale** is used
- What the difference is between an **acidic and basic solution**

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The Basics and Acid of pH

SUPPLIES

- Red cabbage
- Blender
- Hot water
- Coffee filter or strainer
- One large clear container
- Small clear containers (one for your neutral pH and one for each substance you choose below)

At least 3 of the following substances:

- Baking soda solution: 3 tbs (45 mL) baking soda mixed with 1 cup (250 mL) water until dissolved
- Lemon juice
- White vinegar
- Bleach
- White soda (such as Sprite)
- Seltzer water
- Apple Juice

Instructions

STEP 1

Chop the cabbage into small pieces until you have about 2 cups (500 mL) of chopped cabbage. Place the cabbage in a blender with 4 cups (950 mL) hot water and blend it until it turns into juice.

STEP 2

Use a coffee filter or strainer to filter the juice into the large clear container, removing the plant material. You should have a red/purple/blue colored liquid in your large clear container. The exact color of your juice will depend on the **pH** of the water you used in the blender.

STEP 3

Fill each small clear container about ½ full of cabbage juice.

STEP 4

Set one container of cabbage juice to the side to represent a neutral **pH**.

STEP 5

Add the various household substances you chose from the list provided to the cabbage juice. Be sure to use separate containers of juice for each added substance. Only adding one substance to each container of juice will help you to determine the cause of the reaction.

STEP 6

Compare the color of each mixture to the color of the cabbage juice you set aside.

FUN FACTS

pH stands for potential hydrogens. Scientists use the pH scale to determine how acidic or basic a solution is. The pH scale goes from 0 to 14, with 7 being neutral. Anything below a 7 on the pH scale is considered acidic. Anything above a 7 on the pH scale is considered basic.



WHAT HAPPENED?

Very acidic solutions turn the juice a red color. Neutral solutions result in a purple color. Basic solutions turn the juice a green/yellow color. Therefore, it is possible to determine the pH of a household substance based on the color of the cabbage and household substance solution.

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