

Red Cabbage pH Indicator

Overview:

In this activity we will be learning about acids and bases. You may have heard about acids and bases before, but do you know what makes something an acid or a base? Today we will be isolating a compound from red cabbage and using it to test if different household items are acidic or basic.

Background:

You may already know that lemon juice is acidic or that baking soda is basic, but do you know what defines an acid or a base? We measure how acidic or basic something is using the pH scale. The pH scale goes from 1 to 14 with an acid being anything that has a pH less than 7 while a base is anything with a pH above 7. The further a substance is from 7 the stronger acid or base it is. How strong an acid or base is will affect how it reacts with other substances in its environment.

Red cabbage gets its color from compounds called anthocyanins in its leaves. These anthocyanins are interesting because they are pH-sensitive. In this case anthocyanins change color when they are in the presence of an acid or a base. They become brighter and more pink-red when in an acidic environment, and more yellow when in a basic environment. We can use this property to test the pH of different household items.

What you need:

- Half of a head of red cabbage
- A food processor or knife
- Water
- Large pot
- Colander
- Mixing bowl
- Clear containers
- Notebook to record your results
- Solutions to test
 - Lemon Juice
 - Vinegar
 - Baking soda
 - Cleaning solution
 - Anything else that you have at hand – let your imagination run wild!

Procedure:

- Chop the cabbage into small pieces.
- Place the chopped cabbage in a large pot and add water to cover.
- Boil cabbage 10 minutes for the color to leach out of the cabbage.
- Remove from heat and let cool at least 30min.
- Strain out cabbage collecting the now purple water. This will act as your pH indicator.
- Pour 50-100ml (about 1/3 cup) of your cabbage pH indicator into separate clear containers.
- Add one of your various household solutions such as lemon juice, vinegar, baking soda, or cleaning solution to each of your indicators until it changes color.
- Record your results and compare them to the chart below.

Red cabbage pH indicator colors

pH	2	4	6	8	10	12
Color	Red	Purple	Violet	Blue	Blue-Green	Greenish Yellow

[\(Missed yesterday's activity? Check out our archive\)](#)