

Stay at Home Science



Cabbage Chemistry

What You Need

Adult helper	Bowl
Red cabbage	5 clear cups
Marker	Boiling water
Knife	Lemon juice
Baking soda	Antacids
Vinegar	

What You Do

1. With adult help, finely chop two cups of cabbage.
2. Place the cabbage into a bowl, and add enough boiling water to cover it. Let the cabbage soak for 15 minutes until the water turns red, purple or blue.
3. Strain the cabbage out of the solution.
4. Dilute cabbage juice with equal parts water.
5. Number the cups between one and five. Evenly distribute the cabbage juice between the cups.
6. Add baking soda to cup one until you see the color change. Add lemon juice to cup two, vinegar to cup three, and antacids to cup four. Leave cup five with just the cabbage juice.

Questions to ask

- What safety rules should we follow for this experiment?
- Compare the liquids in each cup. How are they different? How are they the same?
- Was baking soda an acid or a base? What about the other things we added to the cabbage juice indicator?

What's The Science?

Red cabbage juice contains the pigment flavin, which leaks into the boiling water. Flavin will change color in response to the changes in the hydrogen ion concentration, commonly called the pH of a solution. Acids have a lower pH (0-7) and bases have a higher pH (7-14). Acids will change the color of the cabbage juice to a deep red. Bases will change it to a greenish-yellow. Something that has a pH of seven is said to be pH neutral because it is not an acid or a base. The cabbage juice is called an indicator because it can tell you the pH of a solution based on the color that it changes. The vinegar will turn the cabbage juice red because it is an acid (acetic acid). The baking soda will turn the cabbage juice greenish-yellow because it is a base (sodium bicarbonate).

Try This

Use science vocabulary: Use related science words such as acids, bases, solution, chemistry and indicator as you talk and play together. Children learn new vocabulary words when they hear grown-ups use them in context.

Extend your activity:

- Test other liquids to see if they are acids or bases.
- Soak a coffee filter in the cabbage juice indicator, and then let it dry. Using a cotton swab and lemon juice or a baking soda solution, write a message on your indicator paper.

Keep In Mind

- Children are natural scientists; let them lead the way in their experimentation! Encourage them to ask questions and make suggestions only when they are stuck/discouraged.
- The order suggested is not the only right or perfect way. Make adjustments based on the age, ability, and interests of the children.

Additional Resources

Chemistry for Kids: Homemade Science Experiments and Activities Inspired by Awesome Chemists, Past and Present by Liz Lee Heinecke

