

Cabbage Science

Test Whether a Substance is an Acid or a Base

Objective:

Make your own pH indicator and use it to test the pH of various household solutions.

How do you tell if something is an acid or a base? You use a chemical called an **indicator**, which changes in color depending on whether a solution is acidic or basic. (Specifically, an indicator works by responding to the levels of *hydrogen ions* in a solution.) Red cabbage contains an indicator **pigment** molecule. Very acidic solutions will turn a red color. Neutral solutions result in a purplish color. Basic solutions make a greenish-yellow or yellow color.

Materials:

Purple cabbage
Medium pot
Water
Vinegar
Liquid soap
Baking soda
Clorox (for younger kids, use lemon juice instead)
4 jars or test tubes

Procedure: Place leaves of a purple cabbage in a pot and boil it in water. When the liquid turns purple, let it cool. Pour the purple liquid in four jars or test tubes. Predict whether the color of the liquid will change after adding the substance and what color it will be.

Substance	Predicted Color Change	Actual Color Change
Vinegar		
Liquid Soap		
Baking Soda		
Clorox		

Discuss results: