



California State University of Bakersfield, Department of Chemistry

## Red Cabbage pH Indicator



### Standards:

Content Standard 21: Students shall understand the general properties of acids, bases and salts.  
AB21 C.1 - Compare and contrast acid and base properties.

AB21 C.2 - Describe the role that dissociation plays in the determination of strong and weak acids or bases.

AB21 C.3 - Explain the role of the pH scale as applied to acids and ba

### Introduction:

*Certain fruits and vegetables contain a pigment molecule called flavin; this molecule acts as a natural pH indicator. Among this list of fruits and vegetables is red cabbage. Test red cabbage's pH indicating properties in this fun and colorful experiment.*

### Materials:

- Red Cabbage
- Blender or knife
- Hot Plate
- Large beaker or other large glass container
- Cotton Swabs
- Several household cleaners such as Windex, bleach, acetone
- Lemon Juice
- Milk
- Diluted Soap
- Vinegar
- Various types of paper (note cards, filters, copy paper, etc.)
- Paper Plates
- Air dryer
- Rubbing Alcohol

**Safety:**

- Always have an adult with you to help you during your experiment.
- Always wear eye protection and gloves when doing chemistry experiments
- Rubbing alcohol is flammable, so it must be kept away from any open flames or heat.
- Handle all household cleaners with care or have an adult handle them for you.
- Wear lab coats at all times.

**Procedure:**

1. Chop a head of red cabbage. (Make the pieces small enough to fit into a blender)
2. Blend 2 cups of chopped cabbage. Place the cabbage in a large beaker or other glass container and add boiling water to cover the cabbage. Let it boil until the water begins to absorb the cabbage's color.
3. Filter out the liquid and toss the plant part of the cabbage. The liquid should be at 7pH.
4. Place your pieces of paper on 5 separate paper plates.
5. Pour enough cabbage juice to submerge each paper in the fluid.
6. Allow to sit for a day or overnight.
7. Hang dry or use an air dryer to dry each sheet of paper completely.
8. Dip a cotton swab into each household liquid and rub it in a line on each sheet of paper. (Leave room for other fluids for comparison.)

**Data and Observations:**

What did you see? Anything you weren't expecting?

**Questions:**

1. What were some of the colors that you saw?
  
  
  
  
  
  
  
  
  
  
2. Why did you see the colors that you saw?
  
  
  
  
  
  
  
  
  
  
3. Which paper showed the colors the best?

**References:**

M. Helmenstine, Anne. Home and Garden pH Indicators. About.com Chemistry.  
<http://chemistry.about.com/cs/acidsandbases/a/aa060703a.htm> (Accessed July 31, 2013)