

**4.9A Natural Acid/Base Indicators: Cabbage extract<sup>1</sup>**

**Subject:** Chemical reactions - Acids/Bases

**Description:** The relative pH of some foods and household chemicals is illustrated using red cabbage juice indicator

**Materials:**

Dehydrated red cabbage juice

Scoop and plastic beaker

600 mL beaker

Water

8-10 100 mL beakers

0.1M aqueous HCl

0.1M aqueous NaOH

Any of the following: vinegar, ammonia, baking soda, lemon juice, milk of magnesia, clear soda, aspirin, vitamin C tablet, etc.

Optional: For fresh cabbage juice

4-5 leaves of fresh red cabbage

water

500 mL denatured alcohol

blender

funnel

cheesecloth or paper towel

600 mL beaker

**Pre-Class Preparation:**

1. Follow directions on the dehydrated cabbage juice instruction sheet for making the desired amount of indicator solution.

For fresh indicator:

1. Tear up the cabbage and load it into the blender.
2. Add the alcohol and water, and puree.
3. Strain the mixture to remove the solids using the cheesecloth and the funnel, collecting the extract in the large beaker. Dilute the extract with water.

**Procedure:**

1. Pour about 1 mL of the reconstituted indicator solution into the beakers with about 25 mL water.
2. Show first the color changes of the extract when a known acid (hydrochloric) and a known base (sodium hydroxide) are added.
3. Show the pH of any of the other materials



getting! Throw the cabbage pulp in a wastebasket. Excess red cabbage juice can be flushed down the drain.

**References:**

1. Taken from: <http://www.mit.edu/~chemistry/outreach/experiments.pdf>
2. [http://www.demochem.de/p26\\_anth-e.htm](http://www.demochem.de/p26_anth-e.htm)