QuickLAB

Wear safety goggles, gloves and an apron.

Household Acids and Bases

Question

Which of the household substances are acids, and which are bases?

Materials

- dishwashing liquid, dishwasher detergent, laundry detergent, laundry stain remover, fabric softener, and bleach
- mayonnaise, baking powder, baking soda, white vinegar, cider vinegar, lemon juice, soft drinks, mineral water, and milk
- fresh red cabbage
- hot plate
- beaker, 500 mL or larger
- beakers, 50 mL
- spatula
- tap water
- tongs

Procedure

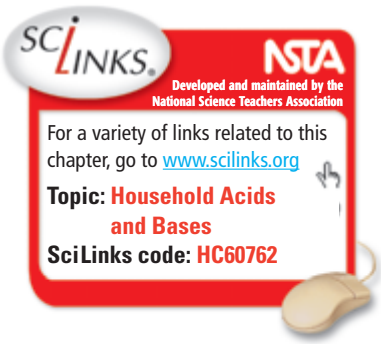
Record all your results in a data table.

1. To make an acid-base indicator, extract juice from red cabbage. First, cut up some red cabbage and place it in a large beaker. Add enough water so that the beaker is half full. Then, bring the mixture to a boil. Let it cool, and then pour off and save the cabbage juice. This solution is an acid-base indicator.
2. Assemble foods, beverages, and cleaning products to be tested.
3. If the substance being tested is a liquid, pour about 5 mL into a small beaker. If it is a solid, place a small amount into a beaker, and moisten it with about 5 mL of water.
4. Add a drop or two of the red cabbage juice to the solution being tested, and note the color. The solution will turn red if it is acidic and green if it is basic.

Discussion

1. Are the cleaning products acids, bases, or neither?
2. What are acid/base characteristics of foods and beverages?
3. Did you find consumer warning labels on basic or acidic products?

Red cabbage, which contains an anthocyanin pigment, can be made into an acid-base indicator.



3. *Dilute aqueous solutions of bases feel slippery.* You encounter this property of aqueous bases whenever you wash with soap.
4. *Bases react with acids to produce salts and water.* The properties of a base disappear with the addition of an equivalent amount of an acid. It could also be said that "neutralization" of the base occurs when these two substances react to produce a salt and water.
5. *Bases conduct electric current.* Like acids, bases form ions in aqueous solutions and are thus electrolytes.