The Chemistry of Egg Dying

(Middle School Science Lab)

Materials

3 boiled eggs for each color tested (3 for red, 3 for blue…)
Food Coloring
Vinegar
Baking soda
Warm tap water
1 10-12 oz plastic cup and one plastic spoon for each egg
Tape and marker for labeling cups
pH paper

Advance preparation:

Boiled eggs are preferred for handling purposes. Raw eggs will also work. Heat water if warm water is not available by tap. (Egg colors are more obvious with warm water.)

Procedure:

1. For each color, prepare 3 cups with labels.
   - Cup #1: Acid
   - Cup #2: Neutral
   - Cup #3: Base
2. Add equal amounts of warm water to each of the three cups—enough water to cover an egg. (½ to ¾ full)
3. Add the following to each cup, and test the pH of each substance with pH paper to verify it is acid, neutral or base.
   - Cup #1: 1 teaspoon of vinegar
   - Cup #2: tap water (should be pH 7 range)
   - Cup #3: ½ teaspoon of baking soda stirred into the water
4. For each cup, add 12 drops of the assigned color.
5. After 15-20 minutes, observe the colors of the eggs.
6. Which substance gives the most intense color when coloring an egg?
7. Acid makes an egg shell positive. Justify how you could get the results you observe.

The Chemistry of Egg Dying

(High School Chemistry Lab)

Materials

3 boiled eggs for the assigned color to be tested by the team
Assigned food color (red, blue, green or yellow)
0.1 M HCl
0.1 M NaOH
Warm distilled water
1 400-500 mL beaker and one plastic spoon for each egg
Tape and marker for labeling beakers
pH paper

Advance preparation:

Boiled eggs are preferred for handling purposes. Raw eggs will also work. Heat water or have student teams individually heat water for the activity. (Egg colors are more obvious with warm water.)

Procedure:

1. For the assigned color, prepare 3 beakers with labels.
   - Cup #1: Acid
   - Cup #2: Neutral
   - Cup #3: Base
2. Add 200 mL of warm water to each of the three beakers—enough water to cover an egg.
3. Adjust the pH of each beaker as shown and test the pH of each substance with pH paper to verify it is acid, neutral or base.
   - Cup #1: pH 4 with 0.1 M HCl
   - Cup #2: pH 7
   - Cup #3: pH 9 with 0.1 M NaOH
4. For each beaker, add 12 drops of the assigned color.
5. After 15-20 minutes, observe the colors of the eggs.
6. Which pH gives the most intense color when coloring an egg?
7. Acid makes an egg shell positive. Justify how you could get the results you observe.