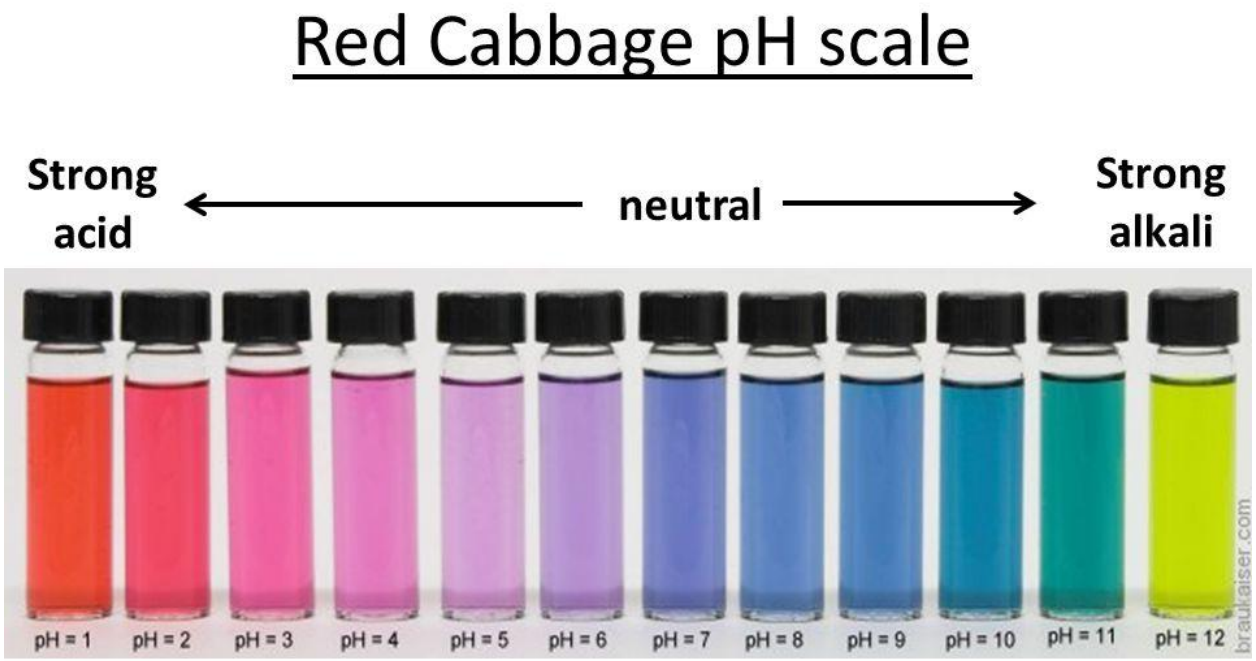
Microbes Around Us

Goal: Determine pH of different substances

Red cabbage juice contains a natural pH indicator that changes colors depending on the acidity of the solution. The pigment in red cabbage that causes the red color is called flavin. Flavin is a water-soluble pigment also found in apple skins, plums and grapes. Very acidic solutions turn the indicator red, neutral solutions turn the indicator purple, and basic solutions turn the indicator a greenish-yellow color. For environmental and chemical engineers, the pH values of different liquids and solutions are important to consider, especially as they relate to bacteria and formation of the microbiome.



We will use the following ingredients and determine their pH using the cabbage juice:

1. Water
2. Lemon juice
3. Baking Soda

Materials:

- Transfer pipette
- 1 container of red cabbage juice
- 1 tube of baking soda, water, and lemon juce
- Pencils

Pre-Experiment Questions

What pH do you think these solutions are?

1. Water

2. Lemon juice

3. Baking Soda

What color do you expect the cabbage juice to turn when you add it to these solutions?

1. Water

2. Lemon juice

3. Baking Soda

Procedure:

Step 1: Use the plastic transfer pipette to add the cabbage juice to each of the different solutions.

Step 2: Swirl to allow the solution to mix.

Step 3: Document the different colors you see.

Questions:

1. Based off of the colors that the solutions changed, what do you think their pH is?

2. Are the solutions acidic, basic, or neutral?

3. How do you think the pH changes the microbiome?