

Instructions: Red Cabbage pH Indicator Experiment

Supplies:

- 1 red cabbage
- Hot water
- Blender
- Filter or strainer
- 5 empty containers/jars
- Bleach (base)
- Baking soda dissolved in warm water (base)
- Lemon juice (acid)
- Tomato juice, coffee, or pineapple juice (acid)

Step 1. Chop 2 cups of red cabbage and put it in the blender. Fill the blender with hot water until it just covers the top of the cabbage. Blend together until the large chunks of cabbage are gone.

Step 2. Pour the contents out into a strainer or filter over a bowl. Strain out all the chunks of cabbage.

Step 3. Separate the purple cabbage juice into 5 small containers. Save any extra for further testing.

Step 4. Carefully pour the lemon juice into one container of cabbage juice. Notice the change in color.

Step 5. Carefully pour the bleach into another container of cabbage juice. Notice the change in color.

Step 6. Repeat step 4 with the baking soda and tomato juice.

Step 7. (Optional) Try the same process with other household items. Make sure to use a new container of cabbage juice every time you test a new item because sometimes acids and bases are dangerous to mix. Only use items that are safe and you are familiar with.

Conclusion

Why does the cabbage juice change color when different liquids are added? Red cabbage contains a pigment called anthocyanin and has a neutral pH of 7. When an acid is added to the cabbage juice, the pH decreases and turns a reddish color. When a base is added, the pH increases and turns a greenish-yellow color. The cabbage juice is used as an indicator for pH because depending on the pH of the solution, the color change will be more or less obvious. How do you think the pH would change when you add other solutions to the cabbage juice?