

## Chemistry with cabbages

In this experiment we will use red cabbage to make a pH indicator.

You will need:

Red cabbage (diced into 2cm pieces), access to water and a hotplate/cooker, a range of household substances to test

Directions:

1. Dice the cabbage and cover with boiling water.
2. Simmer gently for 15 minutes, then discard the cabbage and retain the liquid (tip: you can also blend the mixture with a stick blender and then sieve).
3. Use the cabbage indicator to test a range of different household chemicals, such as lemon juice, vinegar, soap, and washing powder.
4. Compare colours to the scale below



The colour of red cabbages comes from anthocyanins. These colourful chemicals change colour depending on the pH, and red cabbage has a particularly rich colour range.

Anthocyanins are present in lots of bright red/purple fruits and flowers, including blackberries, geraniums, peonies, and beetroot.

## Electrochemistry and cabbages

If you hook a 9V battery up to a battery snap and place the wires into the red cabbage solution you will see something interesting happening.

At the negative electrode, the solution will become more alkaline and fizzy; at the positive electrode the solution will become more red/pink. This is because electrochemical reactions happening at the electrode cause the solution nearby to become more acidic or more alkaline

