Think Like a Scientist

"Science at Home" Experiment

LEMON VOLCANO

The Science Behind the Experiment

If you have ever eaten a lemon, you know the juice inside is sour! This is because lemon juice contains a lot of acid. Baking soda (also called 'sodium bicarbonate'), which is also used in this experiment, is a base. When acids and bases come together they react and release bubbles, which creates lots of bubbling and fizzing as they escape.

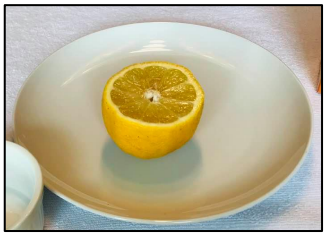
In this experiment, we will investigate the chemical reaction that happens when the acid in the lemon juice meets the base of baking soda.

When we add baking soda to the top of the lemon (which has been juiced), we notice that it stays in place and no bubbles are made. But when we pour the freshly squeezed lemon juice onto the baking soda on top of the lemon, the acid in the juice and the base in the baking soda react and produce bubbles that cause the bubbles to fizz their way up and out of the lemon, just like a volcano!

Materials Needed

- Lemon (and adult to help cut the lemon)
- Plate
- Small bowl
- Spoons (2)
- Baking soda
- Food coloring

The Steps of the Experiment



1 Ask an adult to help you cut the lemon in half and put it in the center of the plate

2 Carefully use one the spoons to squish the inside of the lemon (make it juicy)

3

Squeeze the lemon juice into a small bowl and put the lemon back into the center of the plate

4

Carefully pour one spoonful of baking soda on top of the lemon

5

Pour the lemon juice onto the lemon covered in baking soda

6

Watch the lemon volcano!

What Do You See?

You should observe lots of bubbles fizzing out of the lemon volcano

Why?

Because when you added the lemon juice (which contains acid) to the baking soda on top of the lemon it caused a chemical reaction that resulted in the release of air – you made bubbles!

7

Clean up your experiment

All of the ingredients are safe and can be composted

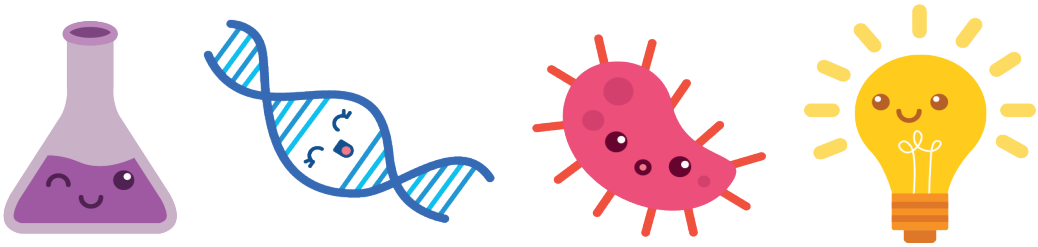
Repeat the Experiment

To do a true repeat of the experiment you need to do it the exact same way again and compare the results of your first experiment with your second experiment.

Repeat the Experiment – But with a Twist!

To answer even more questions, how could you do the experiment differently?

- Use a different kind of citrus fruit like a lime or an orange
- Try adding a few drops of food coloring to make colorful bubbles
- Try adding a few drops of dish soap – do you think this would make even more bubbles?
- What do you think would happen if you used water instead of lemon juice?



Great Work!