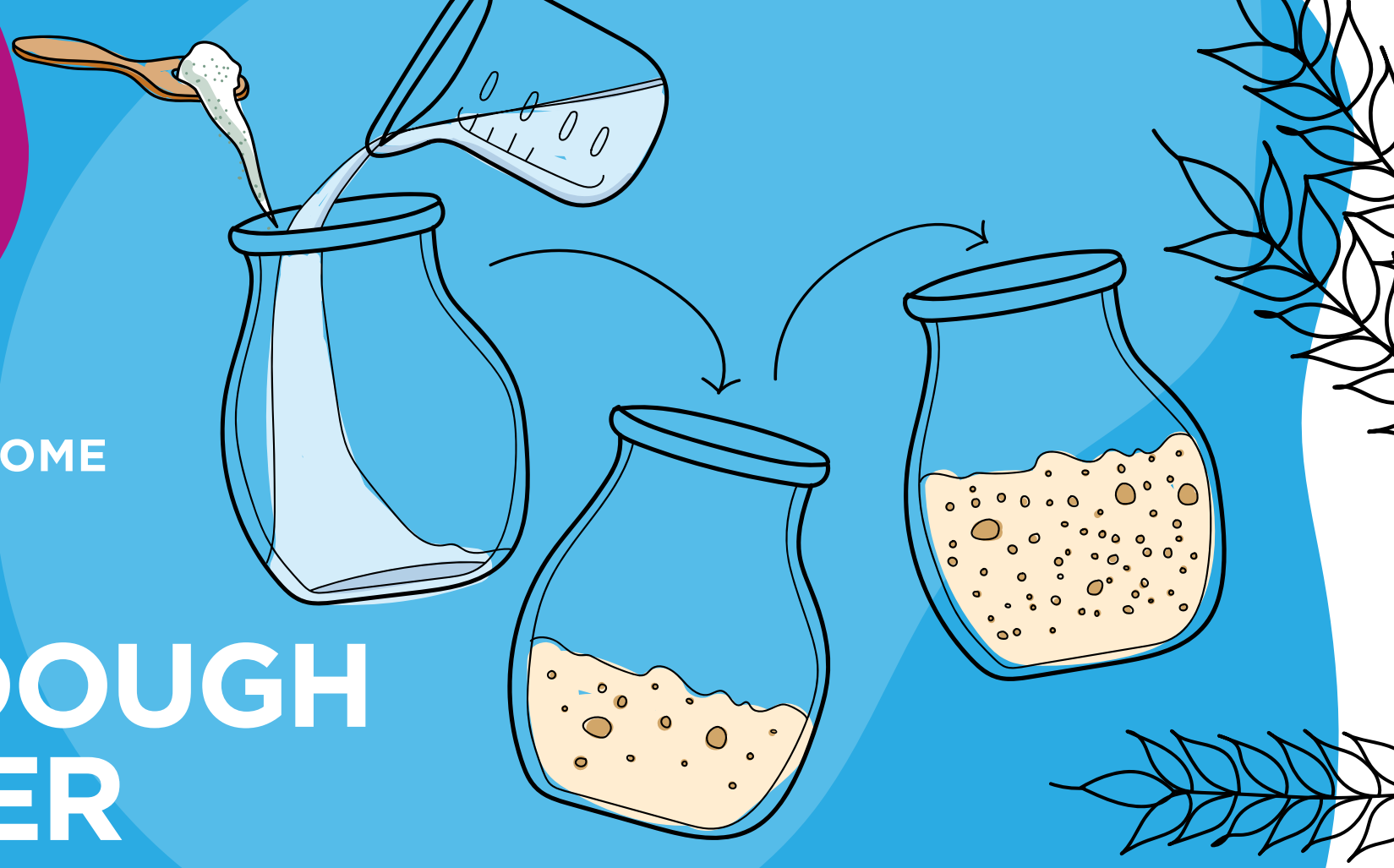
ACTIVITY 7



CHEMISTRY AT HOME

SUPER SOURDOUGH STARTER

MEDIUM | 7-12 | 4-5 HRS *spread over a period of 10 days*

1. Learn about the impact of food waste
2. Find out why sourdough bread has a distinctive taste
3. Discover why leavening agents are used in bread making

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SUPER SOURDOUGH STARTER

Safety

An adult should supervise this activity.

If the dough starts to smell bad or you can see signs of mould, throw it away and try again.

Bread doughs contain three main ingredients: water, flour and salt. Leavened bread uses fast acting dry yeast to help it rise. Sourdough bread uses something different, a sourdough starter. A sourdough starter is a special fermented dough filled with natural, wild yeast and a bacteria called lactobacilli.

A sourdough starter is a habitat which allows yeast and bacteria to thrive. Yeast and bacteria are present in the air, the flour and on your hands. Yeast and bacteria create energy by a process called respiration which uses oxygen and glucose to create energy, water and carbon dioxide. It is the bubbles of carbon dioxide which make bread light and airy. Acid produced by the bacteria in the mixture give sourdough its distinctive taste.

When making a sourdough starter, half of the starter is discarded each day. This keeps the amount of starter manageable and refreshes the acidity levels (acid is produced by the bacteria in the mix). To avoid waste you can use the discard in different recipes such as sourdough pancakes or waffles.

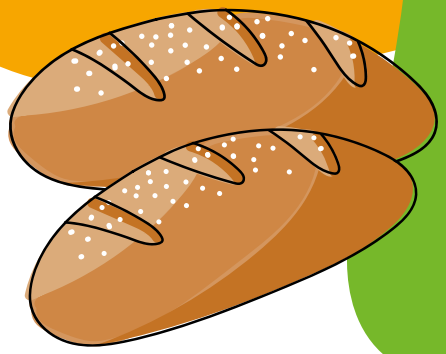
You will need

For the sourdough starter

- Measuring jug
- 700g strong white flour
- Small bowl
- Jar or plastic container with a lid
- Warm water

For the sourdough bread

- Measuring jug
- 500g strong white flour
- Extra flour for dusting
- 300g sourdough starter
- 250ml warm water
- 2 teaspoons sugar
- 1 teaspoon salt
- Parchment paper
- Vegetable oil
- 2 baking trays
- 2 large bowls
- Tea towel



Did you know?

According to the United Nations Food and Agriculture Organisation about a third of all food is wasted. This is why it's important to make use of the discard if you can. You can also use the discard to create a second starter, which you could use and share with your friends!

Instructions

Activity 1
Make the sourdough starter

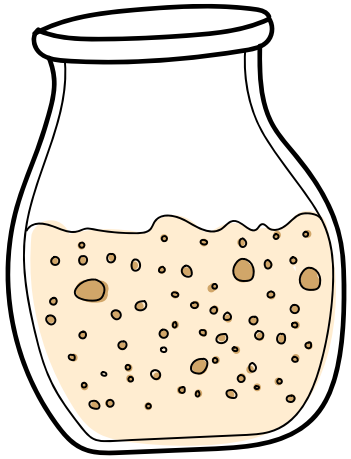
- Mix 100g of flour with 100ml lukewarm water in a small bowl and mix with the spoon until smooth.
- Place the mixture in the jar or container with the lid slightly ajar in a warm place for 1 hour.
- After 1 hour seal the lid and leave at room temperature for 24 hours.

For the next 6 days

Each day discard half the starter in the jar and add an extra 100g of flour and 100ml of warm water. Mix well and then seal the jar up till the next day.

What happens?

After a few days, bubbles will appear on the surface and the mixture will start to smell slightly acidic.



Activity 2
Make the bread

- Mix the flour, sourdough starter, sugar, salt, and water in a bowl.
- Place the mixture on a clean, dry surface and knead for 5-10 minutes until you can stretch the dough until it's so thin you can see through it.
- Lightly oil a clean bowl and add the kneaded mixture.
- Cover the bowl with a damp tea towel and leave in a warm place for about 2 hours. The mixture will rise a little.
- Sprinkle a little flour over a clean surface and roll the dough into a ball shape.
- Place it back in an oiled bowl and cover with a damp tea towel for another 2 hours.
- Place a sheet or parchment paper on a baking tray and pop the dough on top.
- Preheat the oven to 230°C.
- Place a little water on a clean baking tray and pop in the oven for a few minutes to create steam.
- Sprinkle the dough with a little water and bake for 30-40 minutes.
- The loaf should sound hollow if you tap the base once fully baked.

Challenge 1

Sachin doesn't know if his sourdough starter is ready, how can he tell?

Add a little of the sourdough starter to a glass of water, if it floats it is ready! If it sinks, look after and feed the starter for a few more days and try again.

Challenge 2

Lily is worried about food waste and wants to make sure she doesn't waste the sourdough starter. How can she keep it safe for a period of time?

If the sourdough starter is kept in the fridge, it will become dormant as bacterial and yeast growth will slow down. To activate it again, the starter just needs to be removed from the fridge and fed with a water and flour mix. After a few hours it will be ready to use again.

Did you know?

The fun thing about making a sourdough starter is that no two are the same. The flour and water microbial mixture is affected by temperature, type of flour, bacteria in the environment and how often you feed it.

Acid produced by lactic acid bacteria in the starter helps prevent growth of harmful bacteria and mould. Luckily yeast can tolerate a slightly acidic environment.

What's happening?

As the yeast and bacteria multiply, more and more carbon dioxide is released as there are more organisms respiring. These bubbles make the sourdough starter less dense. When it is less dense than the water it will float!

The number of bubbles in the starter is an indicator of how developed it is.