

MAKING YOGHURT: ACTIVITY PACK



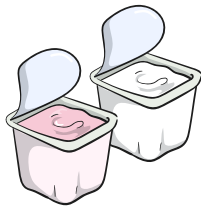
Introduction

It's easy to forget that yogurt is a microbial product. Bacteria use the sugars present in milk to grow and change many of the properties such as the physical appearance and taste. In this activity pack, we are going to make our own yogurt using milk and bacteria that we can find in shop bought yogurt. Please note that this activity pack outlines the production of food using microbes. Please follow the health and safety guidelines in your region or country. If you are uncertain of anything please consult with your local education authority.

YOU WILL NEED



1 litre of whole milk



2 different types of yogurt



2 clean tablespoons
for measuring



5 clean lidded containers
to make 200 ml of yogurt



A clean measuring jug



A thermometer



Small pan



A marker pen

WHAT TO DO

STEP

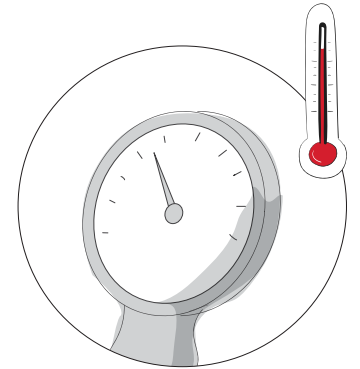
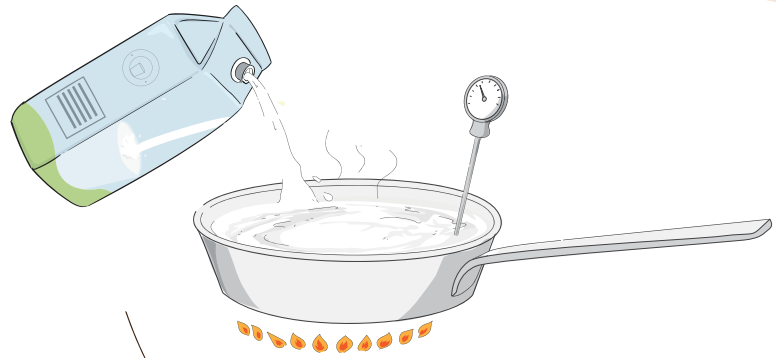
1

Setting Up

Add 1 litre of milk to the small pan and heat gently. Use the thermometer to keep checking the temperature.

Try and get the temperature as close to 90°C as possible. Note that the temperature will increase a little even after you remove the pan from the heat, so you may have to remove it before the thermometer reads 90°C .

Now let the milk cool to 40°C .



Why do we heat the milk to 90°C

Why do we need the milk to be at 40°C ?

STEP
2

Adding the yogurt starter

Take the first yogurt and add 1 tablespoon each to two of the containers. Repeat this for the second yogurt, adding 1 tablespoon each to two different containers. Take care not to mix the yogurts by using different tablespoons.

Now you should have 4 containers with yogurt. 2 containers with one type of yogurt and 2 containers with a different type. The 5th container should be empty.



Yoghurt 1



Yoghurt 2



Using the clean measuring jug, add 200 ml of the warm milk to each container. Mix in the yogurt gently with the appropriate tablespoon and place the lid on the containers. The seal doesn't need to be airtight as long as it will prevent debris from entering into the container.

You should also add 200 ml of milk to the container that doesn't have any yogurt, but here there is no need to stir.

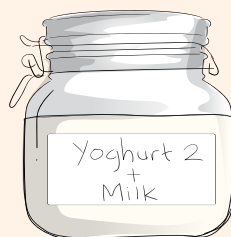
You can label your jars using a marker.
You can label them 1 - 5 and use this list as a reference.



1 yoghurt 1 + milk



2 yoghurt 1 + milk



3 yoghurt 2 + milk



4 yoghurt 2 + milk



5 milk only

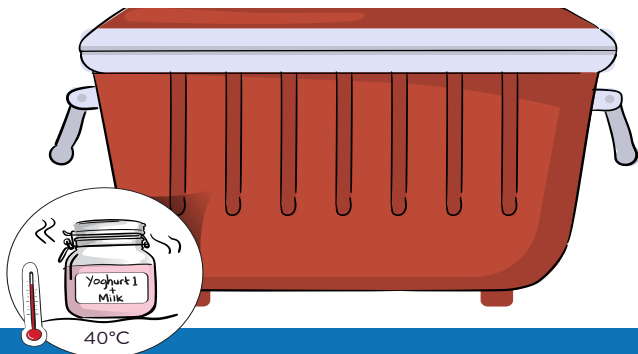
STEP

3

Leave in a warm place

Now the bacteria need to get to work. They will grow and convert the milk into yogurt but for that, we need to keep them warm. There are a few different ways to do this, depending on what you have available to you.

Place in a cooler box containing warm (40°C) water.



Keep the jars in the warmest place in your school or house.



The yogurt will form between 6 and 48 hours.

STEP

4

Is the yogurt ready?

Take a small amount of your yogurt from one of the jars and put it onto a dark coloured plate or in a bowl.

Carefully spread the yogurt around and answer the following questions.

Is it thick like yogurt or runny like milk?

Briefly describe the texture and consistency?



If your yogurt is still runny, then the bacteria haven't finished their work. Place the container back in its warm place and leave it for up to 48 hours until the yogurt has thickened.

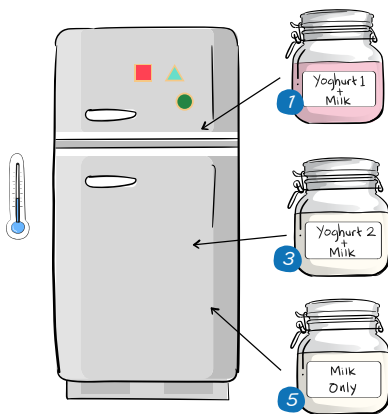
STEP

5

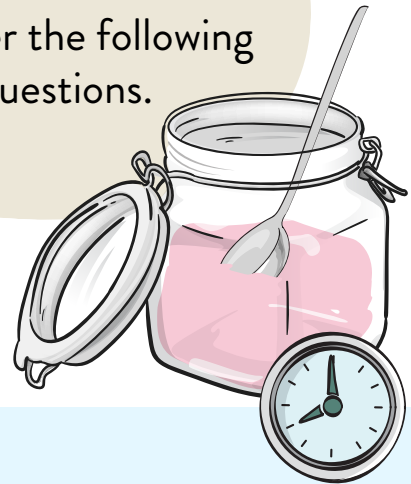
Are there any differences?

Now you have yogurt made from two different starters as well as some warm milk that didn't contain any yogurt. It's time to see if there are any differences.

Take containers numbered 1, 3 and 5 out from their warm place and put them in the fridge for 2 hours.



After two hours, remove the containers and taste them. Answer the following questions.



What is the difference between the jars containing yogurt and the jar containing milk only?

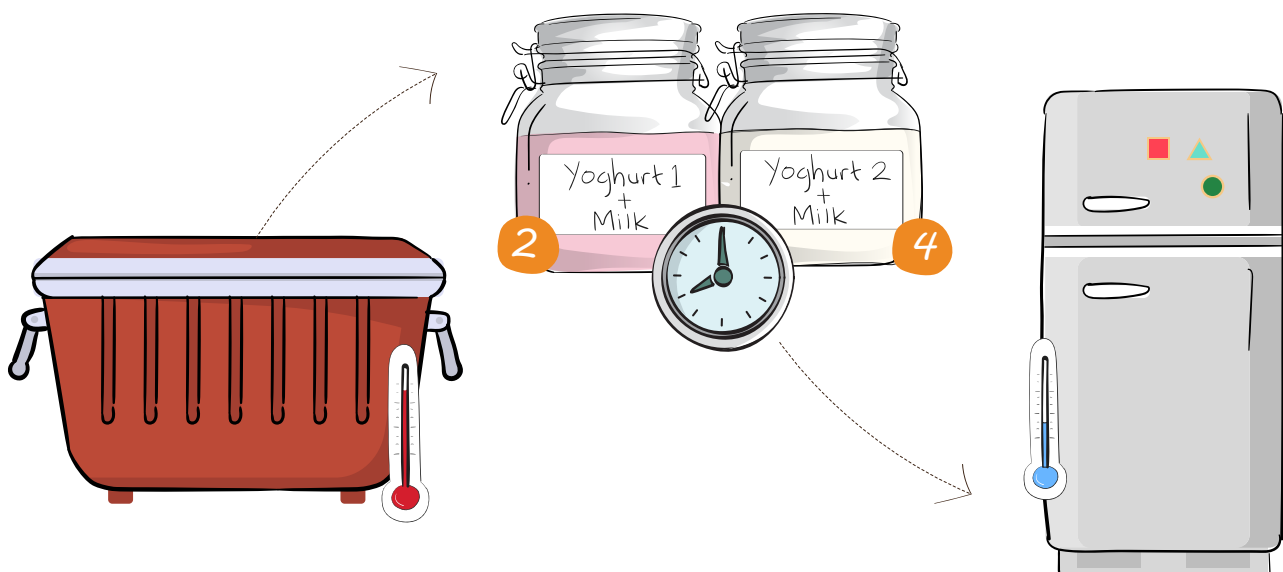
Can you describe the smell of containers 1, 3 and 5. How are they similar and how are they different?

Can you describe the flavour of containers 1, 3 and 5. How are they similar and how are they different?

Can you describe the texture and thickness of containers 1, 3 and 5.
How are they similar and how are they different?

You should still have two containers (numbered 2 and 4) which are being kept warm. Leave these in their warm place for another 6 - 24 hours.

When the time has passed, cool them in the fridge and compare them to the other containers.



Answer the following questions:

How did leaving the container for longer affect the smell?

How did leaving the container for longer affect the texture?

How did leaving the container for longer affect the flavour?

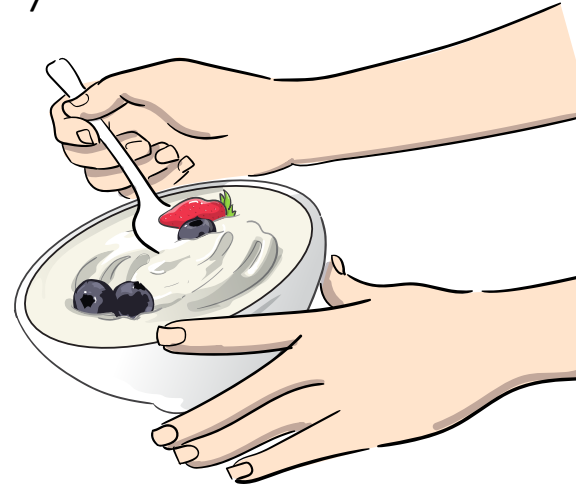
STEP

6

Storing your yogurt

Once you've finished your experiment you can store your yogurt to enjoy later. You can eat your yogurt on its own or mixed with other foods that you like. You can store your yogurt in the fridge for 2-3 days.

How do you like eating your yogurt?
What would you eat it with?



STEP

7

Variations

Now that you've found a way of making yogurt, you can experiment by changing things and checking how it affects the result.

Here are some things you could try:



- Test even more varieties of yogurt.
- Test different types of milk, full fat, skimmed, soy milk, oat milk etc.
- When you heat the milk to 90°C, instead of cooling it straight away, try to hold it at 90°C for some time (between 5 and 20 minutes).
- Try adding other sources of good bacteria such as probiotic drinks.

