

Microorganisms in the food industry

Introduction

Many of the foods and drinks we consume have been made using microorganisms. For example, yeast is added to bread to make it rise, and bacteria are used to make yoghurt.

The production of both bread and yoghurt involves fermentation. Fermentation is a type of anaerobic respiration – the microorganisms respire without oxygen, breaking down sugars to transfer energy.

In this activity you need to choose one food or drink product made using microorganisms. You will then use your research skills to find out about:

- the microorganism used
- how fermentation is involved in the production of the food
- how the product is manufactured.

You will be using your literacy skills to produce a leaflet explaining how your chosen product is manufactured on a large scale.

Brief

You are going to produce a leaflet explaining how your chosen food or drink product is manufactured on a large scale.

Your leaflet should:

- describe the type of microorganism involved in the production of the food or drink
- describe the importance of the fermentation reaction
- include a step-by-step description of how the product is manufactured on a large scale
- include pictures of any equipment used during production
- be made from one folded piece of A4 paper
- use appropriate scientific terminology, with any key words defined.

Step 1

Find a food or drink that is made using microorganisms, then research the following topics:

- what microorganism is involved in the manufacture of your chosen product
- how fermentation is used in the production process
- how the product is manufactured on a large scale.

Step 2

Organise the manufacturing process into a step-by-step sequence. Find pictures to illustrate the process.

Step 3

Plan appropriate sub-headings to structure your leaflet and the important information you want to include.

Step 4 (extension)

Probiotic yoghurts are yoghurts that have had additional species of bacteria added to them. The manufacturers claim that these bacteria aid digestion. Carry out some further research to find out whether probiotic yoghurts are more beneficial to health than normal yogurts.

Step 5

Make your leaflet.

Sources**Fermentation, beer, and wine**

This website contains information on fermentation using yeast and the production of beer and wine.

www.bbc.co.uk/schools/gcsebitesize/science/triple_ocr_gateway/beyond_the_microscope/useful_microorganisms/revision/2/

Making beer

This website contains information on how beer is manufactured.

resources.schoolscience.co.uk/sgm/sgmfoods10.html

Making cheese and yoghurt: an introduction

This website contains information on fermentation using bacteria and the production of cheese and yoghurt.

www.bbc.co.uk/bitesize/standard/biology/biotechnology/living_factories/revision/6/

Making cheese

This website contains a step-by-step guide on how cheese is manufactured.

<https://www.greatbritishchefs.com/features/how-cheese-is-made>

Making yoghurt

This website contains information on how yoghurt is made and a brief introduction to probiotics.

www.animalsmart.org/kids-zone/jr-animal-scientist-e-news/how-is-yogurt-made-

Probiotics

This website contains information on probiotics and studies into their uses.

<https://www.saga.co.uk/magazine/health-wellbeing/treatments/supplements/probiotics>

Writing frame

You are going to produce a leaflet explaining how your chosen food or drink product is manufactured on a large scale.

Summarise your research findings on the key areas below.

Product:

Microorganism used:

Other ingredients
needed:

Fermentation reaction:

How product is manufactured (step-by-step)

Probiotics (extension)

Plan for layout of
factsheet

Important points

- Make sure your leaflet fits on one folded piece of A4 paper.
- Include pictures of any equipment used during the manufacturing process.
- Use bullet points to summarise your main findings.
- Use scientific language, where appropriate, but make sure you explain any key terms.

Your work

You have now made a leaflet that explains how a food or drink product, created using microorganisms, can be manufactured on a large scale.

Look at the questions below and check if you have met all the criteria given in the brief.

- Have you described the type of microorganism involved in the manufacture of the product?
- Have you described the importance of the fermentation reaction?
- Have you included a step-by-step description of how the product is manufactured on a large scale?
- Have you included pictures of any equipment used in the manufacture of your chosen product?
- Is your leaflet made of one folded piece of A4 paper?
- Have you used appropriate scientific terminology and defined any key words?