



Where does **milk** come from?



European Commission
Agriculture and
Rural Development



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Where does **milk** come from?



...as well as butter, cheese,
yoghurt, cream and ice cream.



Where does **milk** come from?

We get most of our milk from cows, but it is also possible to use goat's milk, ewe's milk and donkey milk.



The milking process is carried out by machinery **twice a day** (once in the morning and once in the evening), in a perfectly hygienic area.



Cows typically produce an average of **22 litres of milk a day**, but the real total is often much higher for farms with large dairy herds.





A tanker lorry then collects the milk from the farms and delivers it to **dairies** for processing.



To prevent certain strains of bacteria (microbes) from forming in the milk, it needs to be **thermally treated**, i.e. preserved by being heated to a set temperature.

Milk is a product that is particularly **rich in healthy** nutrients (calcium, lactose, protein, vitamins etc), so milk is just like a 'gold mine' for your body!



Different forms of milk will then be produced, according to the treatment process used.



But do you know the different types of milk?



Raw milk

Raw milk is milk that has been collected from a cow's udder and then immediately chilled to 4°C in a cooler. The cold temperature does not kill the microorganisms present, but simply prevents them from multiplying.

It is strongly recommended that you boil this form of milk prior to consumption.



Pasteurised milk

Pasteurised milk is a form of milk that has been heated to 75°C for 15 seconds and then chilled.

This heating process allows the milk to retain its original flavour, while removing the pathogenic bacteria (the unhealthy microbes).

The name 'pasteurised' comes from 'Louis Pasteur', the man who invented the technique.



UHT (ultra heat treated) milk

This is the most common form of milk in several countries of the European Union.

The milk is heated to approximately 140°C for 3 seconds and then instantly cooled down. The extremely high temperature destroys all of the dangerous bacteria in the milk.



Full-fat milk? Semi-skimmed? Skimmed?

Milk also contains a certain percentage of fat (its fat content or FC), which determines the type of milk.

How do we ensure that the FC is consistent for each type of milk (i.e. how do we standardise milk)?

This is very easy - we simply filter the milk through a device called a 'centrifugal cream separator'. This means that we completely separate the milk from the FC (cream) and then return the desired amount of cream to the milk (that has already passed through the separator). This method ensures that the FC will always be consistent for each type of milk.

- **Full-fat milk** contains: 35 grams of FC per litre of milk (= milk with 3.5% FC)
- **Semi-skimmed milk** contains: 15 grams of FC per litre of milk (= milk with 1.5% FC)
- **Skimmed milk** contains: 5 grams of FC per litre of milk (= milk with 0.5% FC)

Have a close look at the milk bottles next time you go shopping with your parents and try to spot the difference!



Here's a little Greek mythology for you...

Hercules, son of Zeus, was taken in by Hera. The baby was so malnourished that he immediately rushed to her breast. A great spurt of milk then flew across the sky and this created the Milky Way.



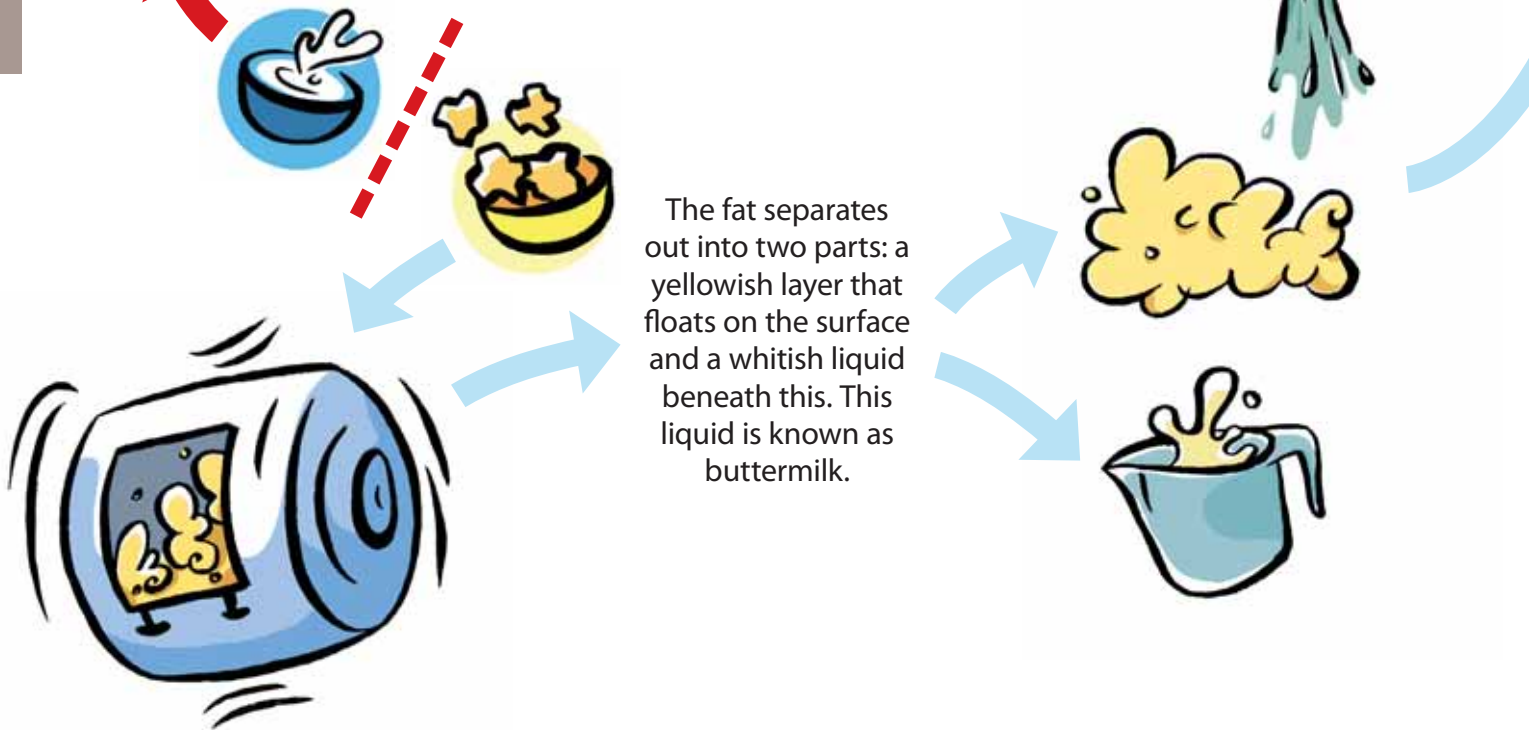
Where does **butter** come from?

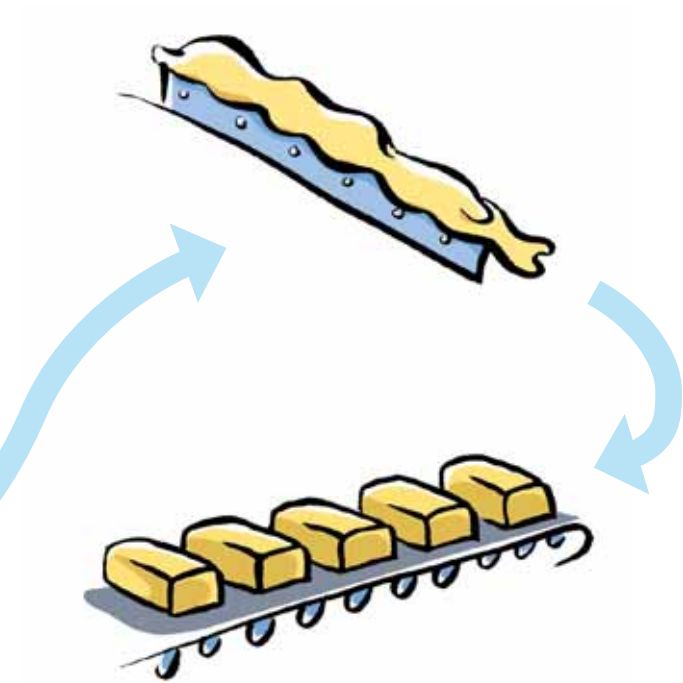
Did you know that humans have been making butter for at least 5000 years and that the Romans also used to use it as a form of medicine?

But how do we make butter?

The process is simple – first we separate the fat from the milk, then we churn this fat.

The yellow substance on the surface is subsequently rinsed and kneaded to form a product with a soft consistency: butter!





It takes approximately 22 litres of cow's milk to make 1 kg of butter!!



Have you ever noticed that lots of little bubbles appear in butter when you heat it in a frying pan? This is basically the water content in butter evaporating.



There is a cathedral in France, in a city called Rouen (in Normandy), with a tower known as the 'Butter Tower' (*Tour de Beurre*). Do you know why? This is because the tower was partially financed by the alms paid by (XVI century) parishioners so that they could consume butter during Lent (this was forbidden at that time).

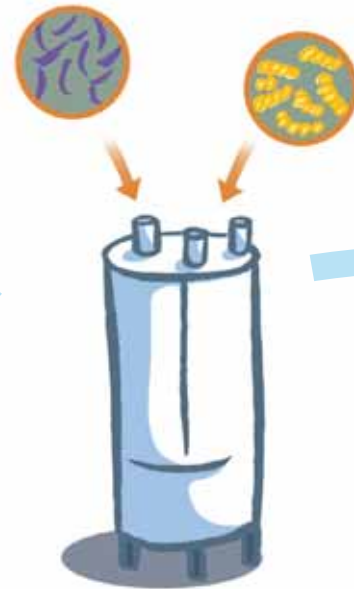


Where does **yoghurt** come from?

Yoghurt comes from...milk (naturally!)
To make yoghurt, you need to start with warm, freshly pasteurised milk and cool it to approximately 45°C.



You then add two forms of bacteria to the milk (inoculation):
Lactobacillus bulgaricus and *Streptococcus thermophilus*.

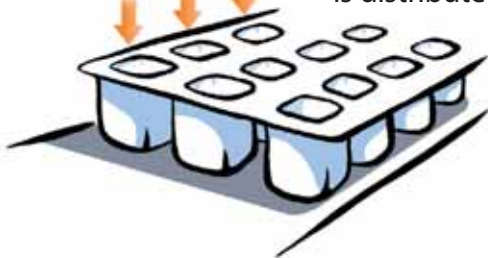


These bacteria may have terrible-sounding names, but they are actually two very helpful bacteria: they initiate the milk transformation process. The first bacterium makes yoghurt acidic and the second bacterium gives yoghurt its distinctive flavour. Yet as you well know, there are liquid yoghurts and solid yoghurts and this is the point in the production process where the distinction is made.

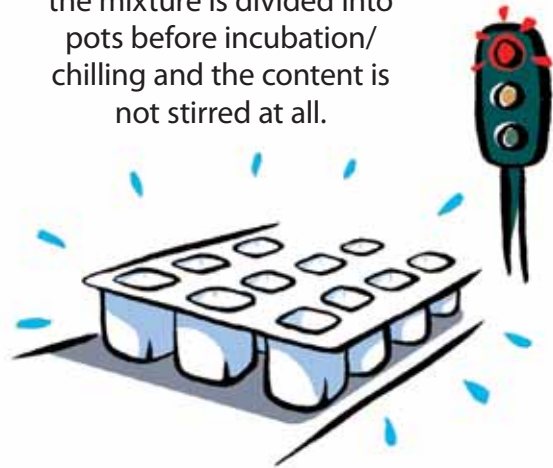


For liquid yoghurt: after the inoculation process, the product is moderately heated (= incubation) to allow further bacteria to develop.

After a certain period of time, the entire mixture is chilled and then stirred, before the resulting yoghurt is distributed into pots.



For solid yoghurt: the mixture is divided into pots before incubation/chilling and the content is not stirred at all.



Naturally, fruit can be added to either of the two varieties of yoghurt to change the flavour. Simple, isn't it?



If you want to be even more clever:

Who introduced the first industrial processes for making yoghurt?...
Isaac Carasso.

He was a practicing doctor, who lived in Barcelona. He used yoghurt to treat young patients suffering from intestinal complaints. For this reason, yoghurt was sold in pharmacies.

In due course, he industrialised the production of this commodity.



Where does **cheese** come from?

Or should we rather talk about cheeses in the plural? There are millions of different forms of cheese around the world: 'hard' cheese, 'soft' cheese, 'sandwich' cheese, 'cream' cheese...

We make cheese from cow's milk, sheep's milk, goat's milk or buffalo milk.

Almost all forms of cheese are made in the same way.

Step 1: curdling

Given that milk is a fluid, **rennet** and **lactic fermenting agents** are used to help it solidify.

Rennet naturally exists within the stomach of ruminants (i.e. animals that chew the cud).

Lactic fermenting agents (bacteria or leaven) give cheese its characteristic smell.



When rennet is added to milk, the milk transforms into two distinctive substances:

Curds
(the solid substance)

Serum
(the liquid substance, also known as 'whey')



Step 2: straining

This step separates the curds from the serum. This process will naturally take place on its own, but it is very slow, so the milk is stirred to accelerate the process.

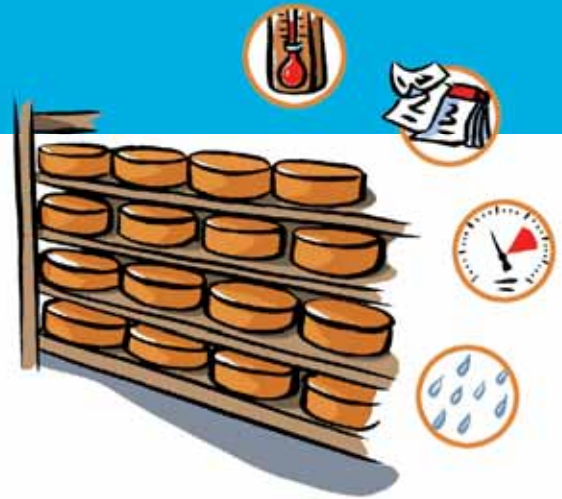




Step 3: moulding

The moulding process ensures that the cheese assumes the correct shape. The curds are placed in a perforated mould, so that any remaining serum will drip away.

Salt is often added to the cheese after moulding, either by salt being rubbed into the rind of the cheese or by the curds being dipped in a brine bath (= salty water).



Step 4: maturing

Cheese is then stored for anything from a few days up to several months in adapted cellars, where the temperature, hygrometry (humidity) and air flow are moderated.

During this period, the cheese acquires its full flavour.

Have a guess: Which country in the European Union consumes the most cheese?

Greece (were you possibly thinking of another country?)



Do you know who wrote the following text?

Polyphemus, the Cyclops, sat down to milk his ewes and his bleating goats and he gave the young ones back to their mothers, so they could suckle; Then he left half the milk in plaited baskets, to curdle and make cheese, and placed the other half in vessels, to drink for his supper.

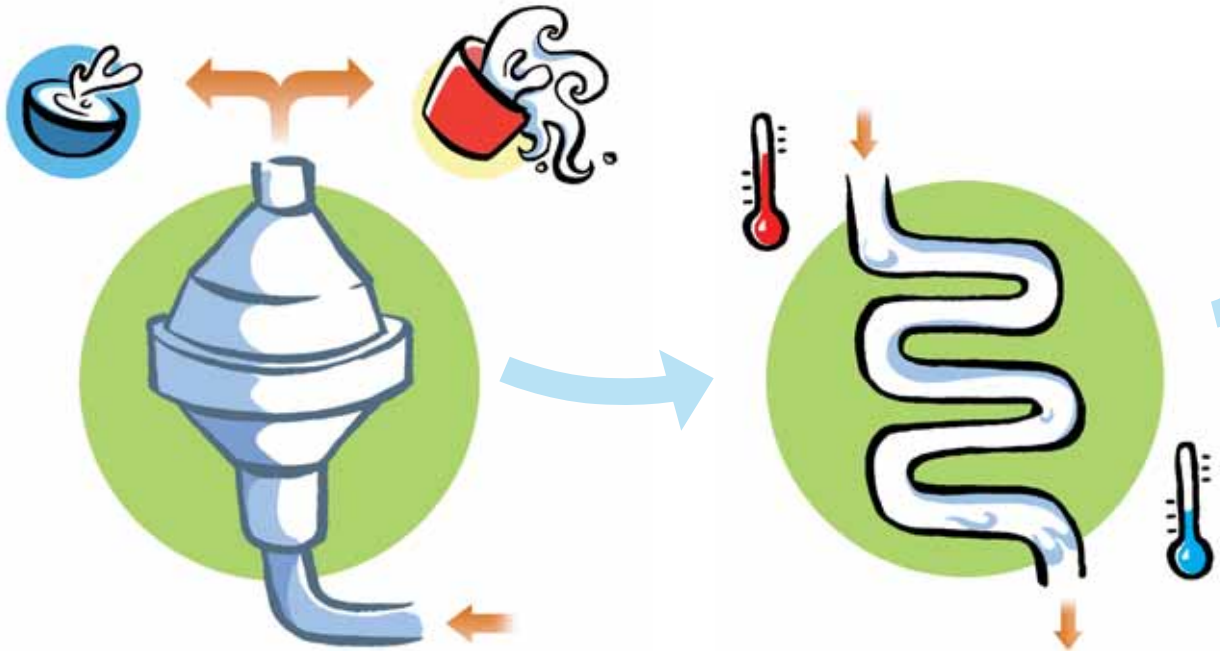
...This comes from Homer's *Odyssey* (dating back to approximately 800 BC). This just goes to show that people were already making cheese back then! As cheese-making meant that our ancient ancestors could make use of any milk by-products, they had no need for fridges!



Where does **cream** come from?

Just like the other dairy products, cream is also made by skimming milk, i.e. by separating the cream (the fat content) from the milk.

The cream is then pasteurised, to kill off any nasty bacteria in the milk.





Inoculation

And yes, we also have to add good bacteria here, to give cream its particularly lovely flavour and help make it thicker.



Finally, we place the cream in cartons or pots and we're all set to make great recipes!



On the subject of recipes... have you ever made crème fraîche before?

It's simple – you take 50 cl of full fat cream (it won't work with reduced fat cream) and leave it in the fridge for an hour before use.

As soon as you take the cream out of the fridge, place it in a bowl and start beating it with an electric whisk, while gradually adding approximately 30 g of icing sugar.

You will see – you'll be licking your lips! But be careful: crème fraîche should be consumed in moderation.

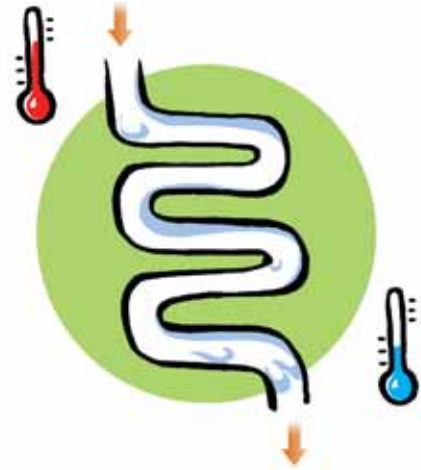


Where does **ice cream** come from?

Ice cream is a mixture of several basic ingredients, which include: Milk, sugar, milk fat, stabilisers and emulsifiers (these two agents are often derived from vegetable oil and they give ice cream its soft consistency).

Mixing

These products are all mixed together to form a 'mix'.



Pasteurisation

Do you remember the process for pasteurised milk? Well the principle of pasteurisation is exactly the same here – you heat the product to eliminate any harmful bacteria. The same process therefore applies to the ice cream mix.

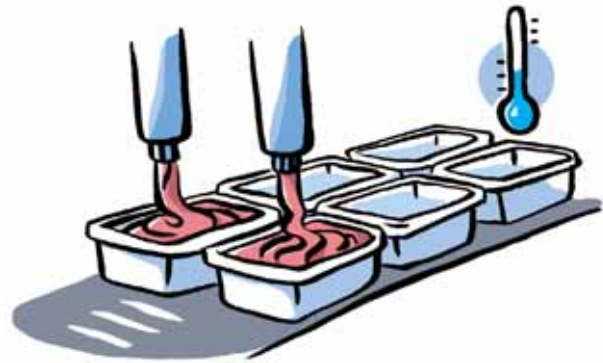
Freezing

During this process, the mix acquires a moussy consistency. The product is then chilled to -4°C . After this stage, different flavours or fruit can be added to the ice cream mix.



Packaging and storage

The ice cream is divided into (plastic or cardboard) containers and then chilled once again, but to a temperature of -40°C this time, before the finished goods are finally stored in freezers that are not quite so cold!!



17



Did you know that the Roman emperors even served their guests a form of sorbet, made from mountain ice, which they flavoured with fruit and honey?

Please note

You may also eat sorbet, but this frozen dessert does not contain any dairy products at all, but rather a mixture of water, sugar and fruit.



4 Where does **milk** come from?



8 Where does **butter** come from?



10 Where does **yoghurt** come from?



12 Where does **cheese** come from?



14 Where does **cream** come from?



16 Where does **ice cream** come from?



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Have you ever wondered what the different types of milk were?

Have you ever wondered how butter, cheese, yoghurt, cream or ice cream were made?

Then, quickly, open this book and you will find straightforward answers to your questions!

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