Name: _____ Date: _____

Curds and Whey: How Milk Becomes Cheese

Circle group

Milk is a liquid, but cheese is solid. How does milk change? A cheesemaker does it in steps.

First, the milk is warmed in a big vat. Then the cheesemaker adds a starter. A starter is a group of friendly bacteria. They eat the sugar in the milk and make acid. The milk gets a little sour.

Next, the cheesemaker adds rennet. Rennet makes the milk protein clump together. The milk turns thick and soft, like pudding. Then it is cut into small pieces. The solid pieces are called curds. The yellow liquid that drains off is called whey.

The size of the pieces matters. If they are cut small, more whey drains out. Then the cheese is dry and hard. If they are cut big, the cheese stays soft. The curds are pressed into molds and salted.

Last, the cheese is aged. It sits in a cool room for weeks or years. Bacteria and molds slowly change the taste. Young cheese is mild. Old cheese can be sharp.

Questions

1. What do the bacteria in the starter eat?

_____

_____

2. What does rennet do to the milk protein?

_____

_____

3. What are curds, and what is whey?

_____

_____

4. Why are the curds for hard cheese cut small?

_____

_____

5. Why might old cheese taste sharper than young cheese?

_____

_____

6. Why are the curds for soft cheese cut into big pieces?

_____

_____

Words to know

starter: a group of helpful bacteria added to milk
rennet: an enzyme that makes milk thicken into curds
curds: the solid lumps that form when milk thickens
whey: the watery liquid left after curds form

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Curds and Whey: How Milk Becomes Cheese

Triangle group

Milk is a liquid, yet cheese can be firm enough to slice. The change begins when a cheesemaker warms the milk in a large vat and adds a starter, which is a group of friendly bacteria. The bacteria feed on the natural sugar in the milk and produce acid. The acid makes the milk slightly sour and prepares it for the next step.

Next comes an ingredient called rennet, an enzyme that has traditionally come from the stomachs of young calves, although some modern cheesemakers use versions made by microbes. Rennet causes the main milk protein, casein, to clump together. Within a short time the milk thickens into a soft mass, something like pudding. The cheesemaker cuts it with long blades into small pieces. The solid pieces are called curds, and the yellowish liquid that separates from them is called whey.

The smaller the cheesemaker cuts the curds, the more whey drains out, and the drier and harder the cheese will turn out. A soft cheese is cut into big pieces and handled gently, while a hard cheese is cut small and stirred in the vat. Then the curds are pressed into molds and salted, where they knit together into one block.

Last comes aging. Cheese is stored in a cool room for weeks, months, or even years. During that time, bacteria and molds slowly change its flavor and texture. This is why a young cheese tastes mild and creamy while an old one can taste sharp and crumbly.

Questions

1. What do the bacteria in the starter feed on?

_____

_____

2. What does rennet do to the milk protein called casein?

_____

_____

3. What are curds, and what is whey?

_____

_____

4. Why is a hard cheese cut into small curds?

_____

_____

5. Why might an old cheese taste sharper than a young one?

_____

_____

6. Why would a cheesemaker keep the curds large for a soft cheese?

_____

_____

Words to know

starter: a group of helpful bacteria added to milk
rennet: an enzyme that makes milk thicken into curds
curds: the solid lumps that form when milk thickens
whey: the watery liquid left after curds form
aging: storing cheese for a time so its flavor changes

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Curds and Whey: How Milk Becomes Cheese

Square group

Milk is a liquid, yet cheese can be firm enough to slice, and the transformation between the two depends on a carefully ordered series of steps. A cheesemaker begins by gently warming the milk in a large vat and stirring in a starter, a community of friendly bacteria. These bacteria feed on the natural sugar in the milk and produce acid, which makes the milk faintly sour and prepares it for what follows.

Next comes rennet, an enzyme that has traditionally been taken from the stomachs of young calves, although some modern cheesemakers prefer versions produced by microbes. Rennet causes casein, the principal milk protein, to clump together, and within a short time the milk thickens into a soft mass resembling pudding. The cheesemaker then cuts this mass with long blades into small pieces. The solid pieces are called curds, while the yellowish liquid that separates from them is known as whey.

The size of the pieces determines much of what the cheese will become. The smaller the curds are cut, the more whey drains away, and the drier and harder the finished cheese will be. A soft cheese is cut into large pieces and handled delicately, whereas a hard cheese is cut small and stirred vigorously in the vat. Afterward, the curds are pressed into molds and salted, and they knit together into a single block.

The final stage is aging. The cheese rests in a cool room for weeks, months, or even years, and during that time bacteria and molds gradually transform its flavor and texture. This explains why a young cheese tastes mild and creamy, while an old one may be sharp and crumbly.

Questions

1. What do the bacteria in the starter feed on, and what do they produce?

_____

_____

2. What effect does rennet have on casein, the main milk protein?

_____

_____

3. How do curds differ from whey?

_____

_____

4. How does the size of the curds affect a hard cheese?

_____

_____

5. What might explain why an old cheese tastes sharper than a young one?

_____

_____

6. Why would a cheesemaker leave the curds large when making a soft cheese?

_____

_____

Words to know

starter: a group of helpful bacteria added to milk
rennet: an enzyme that makes milk thicken into curds
curds: the solid lumps that form when milk thickens
whey: the watery liquid left after curds form
aging: storing cheese for a time so its flavor changes

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: Curds and Whey: How Milk Becomes Cheese

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: Curds and Whey: How Milk Becomes Cheese

Easier · 169 words · Flesch-Kincaid grade 1.8

1. The sugar in the milk.
2. It makes the protein clump together, so the milk gets thick.
3. Curds are the solid pieces, and whey is the yellow liquid that drains off.
4. More whey drains out, so the cheese is dry and hard.
5. Bacteria and molds have had more time to change the taste.
6. Big pieces keep more whey, so the cheese stays soft and moist.

Triangle: Curds and Whey: How Milk Becomes Cheese

This passage · 249 words · Flesch-Kincaid grade 6.5

1. The natural sugar in the milk.
2. It makes the casein clump together, so the milk thickens.
3. Curds are the solid pieces, and whey is the yellowish liquid that separates from them.
4. Small curds let more whey drain out, so the cheese is drier and harder.
5. Bacteria and molds have had more time to change its flavor.
6. Large pieces hold on to more whey, so the cheese stays moist and soft.

Square: Curds and Whey: How Milk Becomes Cheese

Harder · 277 words · Flesch-Kincaid grade 9.3

1. They feed on the natural sugar in the milk and produce acid.
2. It makes the casein clump together, so the milk thickens into a soft mass.
3. Curds are the solid pieces, while whey is the yellowish liquid that separates from them.
4. Small curds release more whey, so the cheese turns out drier and harder.
5. Bacteria and molds have had far longer to change its flavor.
6. Large pieces hold on to more whey, which keeps the cheese moist and soft.