Name: _____ Date: _____

How Salt Keeps Food From Spoiling

Circle group

Before there were refrigerators, people kept food from spoiling with salt. They packed fish, pork, and even butter in salt. Sailors and explorers took salted food on long trips. It works because of how water moves through cell walls.

Bacteria and molds spoil food. They are alive, and they need water to grow. Salt pulls water toward itself. Food may be packed in salt or soaked in salty water called brine. Then osmosis starts. Water moves through cell walls toward the salt. The water in the food is pulled out. The food gets drier.

The same thing happens to the tiny microbes. When a bacterium lands on very salty food, the salt pulls water out of its cell. It cannot grow or make more bacteria. Many kinds stop being a problem.

Salt cannot keep every food safe forever. Some tough microbes can live with it. But salt plus drying, smoke, or cool storage helps food last a long time. Today, people still cure ham, anchovies, and some cheeses with salt. They often do it for the flavor and the tradition, since most kitchens have a refrigerator.

Questions

1. Why do bacteria and molds need water?

_____

_____

2. What is brine?

_____

_____

3. What does osmosis do to food packed in salt?

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_____

4. What happens to a bacterium on very salty food?

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_____

5. Why are very salty foods often dry?

_____

_____

6. Why do people still use salt to cure food when they have a refrigerator?

_____

_____

Words to know

brine: water with a lot of salt dissolved in it
osmosis: the movement of water through a thin cell wall
microbes: living things too small to see without a microscope

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: _____

How Salt Keeps Food From Spoiling

Triangle group

Long before refrigerators, people kept food from spoiling by burying it in salt. Fish, pork, and even butter were preserved this way, and sailors and explorers depended on salted food for long trips. The method works because of how water moves through the thin walls of living cells.

Bacteria and molds that spoil food are living things, and they need water to grow. Salt is very good at attracting water. When food is packed in salt, or soaked in salty water called brine, a process called osmosis begins. Water moves through cell walls from the area where it is plentiful toward the area where salt is concentrated. The water inside the food is drawn out, and the food becomes drier.

The same thing happens to the microbes. When a bacterium lands on heavily salted food, the salt pulls water out of its cell. Without enough water, it cannot grow or multiply, and many kinds simply stop being a problem.

Salt cannot keep every food safe forever, and some tough microbes can survive it. But combined with drying, smoking, or cool storage, it greatly extends how long food lasts. Today, salt curing is still used for foods such as ham, anchovies, and some cheeses, although it is now often chosen for flavor and tradition rather than necessity, since most kitchens have a refrigerator.

Questions

1. Why do bacteria and molds need water?

_____

_____

2. What is brine?

_____

_____

3. What does osmosis do when food is packed in salt?

_____

_____

4. What happens to a bacterium that lands on heavily salted food?

_____

_____

5. Why are heavily salted foods often dry?

_____

_____

6. Why do people still cure foods with salt when they own a refrigerator?

_____

_____

Words to know

preserved: treated so that food lasts a long time
brine: water with a lot of salt dissolved in it
osmosis: the movement of water through a thin cell wall
microbes: living things too small to see without a microscope
concentrated: packed closely together in one place

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: _____

How Salt Keeps Food From Spoiling

Square group

Long before refrigerators existed, people prevented food from spoiling by burying it in salt. Fish, pork, and even butter were preserved in this manner, and sailors and explorers relied upon salted provisions during lengthy journeys. The technique succeeds because of the way water travels through the thin walls of living cells.

The bacteria and molds that spoil food are living organisms, and they require water in order to grow. Salt is exceptionally good at attracting water. When food is packed in salt, or soaked in a salty solution called brine, a process known as osmosis begins: water moves through cell walls from the region where it is plentiful toward the region where salt is concentrated. The moisture inside the food is drawn outward, and the food gradually becomes drier.

Microbes suffer the same fate. When a bacterium settles on heavily salted food, the salt draws water out of its cell, and without sufficient water it can neither grow nor multiply. Many kinds of microbes therefore cease to be a problem.

Salt cannot keep every food safe indefinitely, and certain hardy microbes are able to survive it. Combined with drying, smoking, or cool storage, however, it dramatically extends how long food will last. Salt curing is still used today for foods such as ham, anchovies, and some cheeses, although it is now frequently chosen for flavor and tradition rather than necessity, because most kitchens contain a refrigerator.

Questions

1. Why do the bacteria and molds that spoil food need water?

_____

_____

2. What is brine?

_____

_____

3. What does osmosis do to food that is packed in salt?

_____

_____

4. What happens to a bacterium that settles on heavily salted food?

_____

_____

5. Why do heavily salted foods tend to be dry?

_____

_____

6. Why is salt curing still popular even though refrigerators are common?

_____

_____

Words to know

preserved: treated so that food lasts a long time
brine: water with a lot of salt dissolved in it
osmosis: the movement of water through a thin cell wall
microbes: living things too small to see without a microscope
concentrated: packed closely together in one place

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: How Salt Keeps Food From Spoiling

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

Circle: How Salt Keeps Food From Spoiling

Easier · 186 words · Flesch-Kincaid grade 4

1. They are alive, and they need water to grow.
2. Salty water that food is soaked in.
3. Water moves out of the food toward the salt, so the food gets drier.
4. The salt pulls water out of its cell, so it cannot grow.
5. The salt pulls the water out of the food.
6. They like the flavor, and it is a tradition.

Triangle: How Salt Keeps Food From Spoiling

This passage · 222 words · Flesch-Kincaid grade 7.7

1. They are living things, and they need water to grow.
2. Salty water used to soak food.
3. Water moves out of the food toward the salt, so the food gets drier.
4. The salt pulls water out of its cell, so it cannot grow or multiply.
5. The salt draws water out of the food.
6. They often like the flavor, and it is a tradition.

Square: How Salt Keeps Food From Spoiling

Harder · 236 words · Flesch-Kincaid grade 10.4

1. They are living organisms, and they need water in order to grow.
2. A salty solution used for soaking food.
3. Water moves out of the food toward the salt, so the food becomes drier.
4. The salt draws water out of its cell, so it can neither grow nor multiply.
5. The salt draws moisture out of the food.
6. People often choose it for its flavor and for tradition.