

Cheesy Chemistry

Collect

- 3 cups whole milk
- Salt
- Distilled white vinegar
- Apple cider vinegar
- Lemon juice
- Cheescloth and/or colander
- Large slotted spoon
- 3 microwave-safe bowls
- 3 small plates

Prep the milk

1. Pour one cup of milk into each of the three microwave-safe bowls. Add a small pinch of salt to each bowl and mix well.
2. Add one tablespoon of distilled white vinegar to the first bowl. Add one tablespoon of apple cider vinegar to the second bowl. Add one tablespoon of lemon juice to the third bowl.

Heads up! Ultra-pasteurized milk is heated to a much higher temperature during the pasteurization process and will not make good cheese curds. Regular pasteurized milk will work well!

Separate the curds and whey

1. Place the first bowl in the microwave and cook on high for 2 to 4 minutes. Keep an eye on the milk so that it doesn't boil over.
2. If the curds (solids) have formed, gently stir to separate from the whey (liquid). If the curds haven't separated, microwave again for 30 seconds at a time until curds form.
3. Line the inside of the colander with cheesecloth and use the spoon to scoop the curds from the bowl into the colander.
4. Allow to drain for a few minutes.
5. Label the first plate "distilled white vinegar" and place your finished cheese on the plate.
6. Repeat these steps for the remaining two bowls, making sure to label the plates, too.

Tasting time

1. Try a little bit of each type of cheese. Can you taste the difference between the white vinegar and apple vinegar? What about the difference between the vinegars and lemon juice? Which cheese flavor do you prefer?
2. Share some of your cheese with family or friends. Make a chart to record everyone's favorite cheese!

What's happening?

The cheese made during this experiment is the result of a chemical reaction between the milk and the acid. Milk contains a protein called casein and when you add acid, like vinegar or lemon juice, it causes those proteins to clump together. The solid clumps are called curds, and the leftover liquid is called whey—just like “Little Miss Muffet”.

Take it further

Once you figure out your favorite acid to use, play around with your cheese a little bit. You can change the texture of your cheese depending on how long you let it drain. For a super creamy cheese, drain and eat your cheese right away. For a more firm and crumbly texture, leave it to drain overnight in the refrigerator. You can also try seasoning your cheese to create different flavor profiles for your cheese.