



Food Science/ Healthy Living:

Project: Dairy – Ricotta Cheese

Supplies:

- 1/2 gallon whole milk
- 1/2 gallon 2% milk
- 1/2 gallon UHT milk
- Other types of milk, as desired
- 2 Tbsp. white vinegar (acid)
- 2 tsp. cream of tartar (acid)
- 2 Tbsp. lemon juice (acid)
- Muslin cloth
- Gram scale

Time: 1 hour

What to Do:

1. Pour the milk into a pot and set it over medium heat. Let it warm gradually to 200°F, monitoring the temperature with a thermometer. The milk will get foamy and start to steam; remove it from heat if it starts to boil.
2. For each type of milk, pour three 2-cup samples and label each with the type of milk and the type of acid (vinegar, cream of tartar, or lemon juice) to be added.
2. Add each type of acid to each type of milk. Stir the acid in slowly. Continue to stir the mixture slowly for 2 minutes and then let it sit for 8 more minutes.
3. Each sample should have produced curds. Pour each sample through a muslin cloth that has been draped and secured over a colander.
4. After the liquid has drained away, rinse the curds with tap water.
5. Weigh and then taste each curd sample.

Reflect:

Table 1. Cheese from Different Milk-Acid Combinations

	White Vinegar (weight and taste)	Cream of Tartar (weight and taste)	Lemon Juice (weight and taste)
Whole Milk			
2% Milk			
UHT Milk			
Other			
Other			

1. Explain the differences between the various combinations of milk and acid.
2. Why do these ricotta cheese samples taste different than cheddar cheese? Bleu cheese?
3. Why do these ricotta cheese samples have a different texture than hard cheeses like parmesan cheese?

Apply:

Cheese can be categorized as unripened (or fresh) or ripened cheese. There are four categories of ripened cheeses: soft, semisoft, firm, and hard. Although the different varieties of cheese differ in flavor, aroma, age, and shape, they are all produced similarly. Most cheese begins as milk (typically sheep, goat, or cow). The milk protein, called casein, is then coagulated by the addition of an enzyme or acid. As the milk coagulates, it separates into solid curds and liquid whey. After draining off the whey, the curds can be made into fresh cheese or pressed into different shapes and aged, depending on the variety. The most popular fresh cheeses include cottage, cream, pot, and ricotta.

Italian mozzarella-type cheese, used in pasta dishes, must have good melting quality and mild flavor. Hard cheese such as Romano and Parmesan must be dry with distinct flavor. Mexican cheese, often used in fried foods, must be stable at high temperatures. The variety among cheeses has arisen from differences in milk quality, diversity among native microflora (microorganisms naturally occurring in a given region) and differences in handling during processing.

Source: http://aces.nmsu.edu/pubs/_e/E216/welcome.html

Tips!

You can also try other milks available to you such as goat's milk, sheep's milk, skim milk, etc. to see how the flavors and textures differ. Another tip would be to buy some bread rounds and toast them under a broiler to taste the ricotta cheese on. There are many different toppings you could add as well: savory ingredients like tomato chunks, basil, scallions, and spices or sweet toppings like honey, fruit, and chocolate.

Background:

In North America, cheese is usually made from the milk of cows or goats. Cow's milk consists of 88% water with 3.7% fat, 3.4% protein, 4.8% sugar (lactose), and 0.7% minerals and vitamins. About 10 pounds (1.25 gallons) of milk are required to make one pound of cheese.

Like milk, cheese contains calcium and phosphorus, which can help build and maintain strong bones and teeth.

If you need to limit lactose in your diet, choose Cheddar, Swiss, Monterey Jack or mozzarella.

Source: <https://dairygood.org>