



Make & Taste **DAIRY**



Ricotta Cheese (Grades 6-8)

Lesson Activity

LESSON OVERVIEW:

During this lesson, students will be introduced to both the history and science behind the process of making ricotta cheese. They will also discover ways to incorporate ricotta into healthy snacks and dishes such as dips, toppings, spreads and pasta dishes.

LESSON MATERIALS NEEDED:

Ingredients for each work station (2-4 students)

- 2 cups whole milk (*not ultra-pasteurized*)
- 2 tablespoons distilled white vinegar
- 1/4 teaspoon salt
- For tasting (*optional*):
 - Flat crackers
 - Fresh herbs like basil, parsley, cilantro, etc.
 - Fresh vegetables like tomatoes, zucchini, cucumbers, sweet peppers, etc.
 - Shelled sunflower seeds
 - Black pepper

Tools for each work station (2-4 students)

- Microwave oven
- Large colander
- Large bowl (*colander should fit completely over the bowl to promote draining*)
- 2 food-safe paper towel sheets
- Slotted spoon
- 1 quart or larger microwave safe bowl
- Pot holders

LESSON OBJECTIVES:

During this lesson, students will:

- Become familiar with the history of ricotta cheese
- Explain the basic science of cheesemaking
- Recognize that cheese offers a unique package of essential nutrients
- Follow a simple recipe to make ricotta cheese
- Create a snack plate with nutritious pairings, like fruit and nuts
- List ways that cheese can be part of a healthy meal

ACADEMIC INTEGRATION

- Science
- Health
- Language Arts



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Leader Background

HOW IS RICOTTA CHEESE MADE?

Quality cheese begins with one key ingredient – quality milk. Dairy farmers make it a top priority to ensure milk is safe and nutritious by providing excellent care of their animals. Dairy farmers care for their cows and calves by providing a nutritious diet, good medical care and healthy living conditions. Cheesemakers turn milk into cheese.

HOMEMADE RICOTTA

Ricotta can be made at home or in the classroom by simply curdling and straining whole milk. Making ricotta at home involves lowering the pH of milk and then heating to form curds. Common acidic ingredients used to lower the pH include vinegar, lemon juice or buttermilk. When prepared using this method, the ricotta is made primarily from the casein proteins present in milk and the liquid whey is drained off.

TRADITIONAL RICOTTA

Authentic ricotta is made from liquid whey, which is a byproduct from the production of aged cheese. As a result, traditional Italian ricotta contains very little casein compared to ricotta made at home using milk. Making traditional ricotta involves lowering the pH of whey through fermentation or the addition of acid, and then heating until the remaining proteins coagulate (solidify) to form curds. Today's commercially produced ricotta is sometimes made with a combination of milk and whey.

WHY EAT RICOTTA?

Ricotta is a versatile, delicious and nutrient dense food. A serving of ricotta provides about 6 grams of high-quality protein and is a good source of bone-strengthening calcium. Ricotta also contributes a variety of additional nutrients, including vitamin A, B vitamins, phosphorus, zinc and selenium. With its mild flavor and soft consistency, ricotta works well in a variety of dishes like dips, spreads, pasta dishes, desserts and as a topping for a variety of foods, ranging from eggs to salads to pizza.

HISTORY OF RICOTTA

There are references to ricotta in art, literature and medicine dating back to the early thirteenth century. Food historians believe that ricotta is an ancient food that originated in the Italian island province of Sicily and was likely first produced from sheep's milk rather than cow's milk. Herds of sheep were more common and accessible to the peasants. It is thought that ricotta was first created by peasants who were concerned about wasting the liquid whey which is a by-product of mozzarella production. To avoid wasting the liquid whey, the technique of fermentation and heating was used to make a second or "re-cooked" cheese.



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Teaching the Lesson



CLASS DISCUSSION

1. Begin the lesson by asking students if they are familiar with ricotta cheese. Have they ever tasted it or seen someone cooking with it? It is commonly used in lasagna recipes.

Ricotta originated thousands of years ago in Sicily. Peasants who did not want to waste the liquid (whey) produced from cheese making learned to ferment and re-cook the liquid to form the curds that make ricotta.

The word ricotta literally means “re-cooked” in Italian.
2. Ask students if they know how ricotta cheese is made. Explain the basic process of producing curds from whole milk using acid and heat (*See above for full explanation*).
3. Ask students if they can name some of the nutrients found in ricotta cheese. Point out that ricotta is a good source of protein and calcium, as well as other nutrients like vitamin A, B vitamins, phosphorus, zinc and selenium. Later in the lesson, students will complete an activity sheet using the nutrition facts labels for whole milk ricotta.
4. Explain how the class will break into small groups to create their own ricotta cheese. They will use their ricotta at a tasting station to create delicious, unique ricotta crostini.

Glossary

Casein: The primary protein present in milk. Casein is known to coagulate or thicken when exposed to certain conditions and forms the lumps or curds necessary for cheese making.

Whey: The liquid by-product of cheesemaking. Whey contains significant proteins, lactose and minerals, and is commonly used as an ingredient in other foods.

Ricotta: A type of fresh cheese made from liquid whey or milk (or sometimes, a combination of the two). In Italian, the word means “re-cooked,” which refers to the process of using the leftover liquid whey from producing aged cheeses to make the fresh cheese known as ricotta.

Curdle: In cooking, it refers to when a protein ingredient separates into lumps. It is generally caused by heat and/or acidic ingredients. Curdling milk and capturing those curds is the process used in making ricotta cheese.



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Making & Tasting



MAKE YOUR OWN RICOTTA CHEESE

Number of participants per group: 2-4

Ingredients

- 2 cups whole milk (*not ultra-pasteurized*)
- 2 tablespoons distilled white vinegar
- 1/4 teaspoon salt

Yield

2 cups of whole milk will yield approximately 1/2 cup of ricotta. The liquid drained from the ricotta contains protein and other nutrients and can be used in soups, mashed potatoes, baked goods or other recipes.

Equipment

- Microwave oven
- Large colander
- Large bowl (*colander should fit completely over the bowl to promote draining*)
- 2 food-safe paper towel sheets
- Slotted spoon
- 1 quart or larger microwave safe bowl
- Pot holders

Food Safety

- Thoroughly clean table or preparation area with soap and warm water before starting this project.
- Always wash hands with soap and warm water before beginning food preparation
- All ingredients should be kept chilled, both before and after preparation.

DIRECTIONS

1. Place the colander over the mixing bowl, making sure there is room for liquid to drain into the bowl.
2. Place two paper towel sheets inside the colander and set aside.
3. Combine milk, salt and vinegar in a microwave-safe bowl.
4. Microwave on high power until milk is lightly bubbling around the edges. This generally takes around 3 minutes. Do not leave unattended.
5. Using pot holders, remove the bowl from the microwave and stir gently for a few seconds. The milk should quickly separate into solid white curds and transparent liquid whey.
6. Using a slotted spoon, transfer the curds to the paper towel lined colander and drain for at least 5 minutes.
7. The curd left on top of the paper towels is your ricotta cheese! Carefully spoon the ricotta into a container and proceed to the tasting table. Ricotta keeps in the refrigerator for up to 5 days.
8. For tasting: spread crackers with ricotta and top with herbs and vegetables of your choice.



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References



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<http://www.serious eats.com/2010/02/how-to-make-fresh-ricotta-fast-easy-homemade-cheese-the-food-lab.html>
5. **Ricotta Cheese, Canadian Dairy Commission**
www.milkingredients.ca/index-eng.php?id=190
6. **Nutrition Facts label from Organic Valley whole milk ricotta**
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Ricotta Cheese Activity

Answer the following questions:

- History of ricotta cheese:
 - Ricotta cheese originated in which country?
 - What is the English translation of the word ricotta?
 - Why did peasants begin making ricotta from the liquid (whey) that remained after making cheese?
- The process of making ricotta from milk requires:
 - An acidic ingredient to lower the pH milk
 - Fresh herbs to provide flavor
 - Heat
 - Both A and C
- Ricotta is a hard cheese and will keep in the refrigerator for several weeks.
 - True
 - False
- Use the nutrition facts label for ricotta on the right to answer these questions:
 - How many grams of protein are in a 1/4 cup serving of ricotta?
 - If you had a 1/2 cup of ricotta topped with strawberries for a snack, how many milligrams of calcium would you consume?
 - How much added sugar is in ricotta?
- List at least three ways that ricotta can be combined with other foods or in recipes.

Nutrition Facts	
8 servings per container	
Serving size	1/4 cup (55g)
Amount Per Serving	
Calories	100
<small>% Daily Value*</small>	
Total Fat 7g	9%
Saturated Fat 4g	20%
<i>Trans Fat</i> 0g	
Cholesterol 20mg	7%
Sodium 100mg	4%
Total Carbohydrate 3g	1%
Dietary Fiber 0g	0%
Total Sugars 3g	
Includes 0g Added Sugars	0%
Protein 6g	12%
Vitamin D 0mcg	0%
Calcium 150mg	10%
Iron 0mg	0%
Potassium 60mg	2%
<small>*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.</small>	



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Ricotta Cheese Activity

WORD FIND: Find and circle the following words: *calcium, milk, salt, cheese, protein, vinegar, Italy and ricotta.*

R	I	C	O	T	T	M	N	A	Y
A	C	H	E	E	U	S	I	T	L
E	I	S	E	I	A	S	E	T	A
Y	T	O	C	M	A	K	T	O	T
E	A	L	N	D	F	L	O	C	I
U	A	N	T	O	A	E	R	I	A
C	T	D	Q	S	C	R	P	R	K
C	R	A	G	E	N	I	V	A	I
F	T	I	X	I	K	L	I	M	T
E	S	E	E	H	C	C	G	O	W

SECRET SENTENCE: Complete the sentence below by writing the first 36 uncircled letters in the blanks.

_____!

QUESTIONS: Answer the following questions using the words found in the word search above.

1. What are the ingredients used to make homemade ricotta?
2. What are two of the most important nutrients found in ricotta?
3. Ricotta cheese originated in which country?