

Chapter 5

Milk and Cheese

Milk, cheese, yogurt and ice cream are all part of the dairy group. Drinking milk helps you build strong bones! Kids, ages 2 to 8, need to eat or drink 2 cups from the dairy group a day. Older kids need 3 cups from the dairy group every day. Sadly, most Americans do not drink or eat enough foods from the dairy group. In this chapter, you will learn about good bacteria in your food and how milk is used to make yogurt.

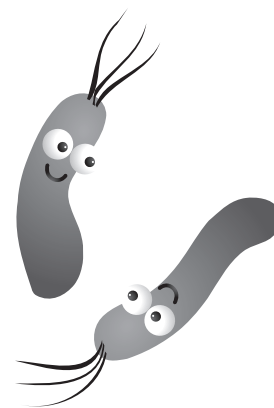
Enjoy exploring magnificent milk!

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Bacteria for Breakfast



Did you know that bacteria can be good for you?

The **dairy products** we eat come from milk. Microorganisms called bacteria grow in the milk you drink. Before you can drink milk it should be **pasteurized**. Pasteurization occurs when milk is heated to an elevated temperature for a period of time. This process will kill the bad bacteria found in milk.

Lactobacillus is a type of bacteria that doesn't make you sick. It is actually good for you. Your body uses it to help you digest food. It also uses good bacteria to fight bad bacteria. For example, food poisoning is caused by bad bacteria.

Lactobacillus is used to turn the sugar in milk, **lactose**, into **lactic acid**. Lactic acid causes the milk to thicken. Dairy products like yogurt, buttermilk, sour cream and cheese are made when lactobacillus is added to milk.

Yogurt, for example, has a thick pudding-like texture. You can find it in your local grocery store! The yogurt you eat today is easily made. First, milk is heated then cooled. Next, the bacteria culture is added. Once the milk and bacteria are mixed, it is time to let the mixture sit. It should sit for at least four hours at about 120 degrees Fahrenheit. After that the yogurt is cooled, it is now ready to eat.

DOODLE BUGS

In the reading, circle the name of the bacteria that is used to make yogurt.

Draw a box around two ways your body uses good bacteria.

What kinds of yogurt have you tasted?



MATHEMATICS INVESTIGATIONS: Comparing Yogurt



You will need:

1 calculator

1 pencil





Things to know:



= $\frac{1}{2}$ cup

Find out how much yogurt each student in the Yogurt Pictograph made.

Yogurt Pictograph

Group 1	Stephanie	
	Emily	
Group 2	Jonathan	
	Stewart	

MATHEMATICS INVESTIGATIONS:
Comparing Yogurt (continued)

1. How many cups of yogurt did each student make?

- a. Stephanie _____ cups
- b. Emily _____ cups
- c. Jonathan _____ cups
- d. Stewart _____ cups

2. How many cups of yogurt did each group make?

- a. Group 1 _____ cups
- b. Group 2 _____ cups

3. How many more cups did Group 2 make than Group 1?

_____ cups

4. How many total cups of yogurt did the students make?

_____ cups



MATHEMATICS INVESTIGATIONS: Comparing Yogurt (continued)

Fix the recipe

Group 1 is Stephanie and Emily. Group 2 is Jonathan and Stewart. The next day both groups were given the same yogurt recipe. Group 1 decided to add vanilla flavoring to their recipe. Group 2 decided to double their recipe. It is your job to find out if each group correctly changed their recipes.

Ingredient	Original Recipe	Group 1	Group 2
Milk	2 cups	2 cups	4 cups
Yogurt	2 Tablespoons	2 Tablespoons	1 Tablespoon
Vanilla Flavoring	NONE	2 teaspoons vanilla flavor	NONE

1. Did group 2 correctly double their recipe? (Circle one)

Yes

No

2. If something was wrong, which ingredient do they need to fix?

3. How much of each item does Group 2 need?

_____ cups milk

_____ Tablespoons yogurt



4. Which group's yogurt would you eat and why?

FUN WITH FOOD: **Yummy, Yummy Yogurt**



You will need:

1 large pot with lid
1 burner
1 thermometer
1 spatula
1 small bowl
1 whisk

PREP TIME: 20 minutes

water
1 cooler
4 glass jars with lids
4 cups low-fat or skim milk
4 Tbsp. yogurt (active cultures)
Help from an adult
Recipe makes 4 cups (undrained).

Observe, taste and record the changes that occur when you make yogurt!

Make your own yogurt!

1. Pour the milk into the pot. Heat the milk to 200°F at medium heat, stirring to prevent burning.
2. Let the milk cool until it is about 115°F.
3. Once the milk has cooled, add about 1 cup of the milk to a small bowl with the yogurt.
4. Whisk together until the yogurt and milk have smoothly blended.
5. Add the mixture to the milk and whisk until blended.
6. Pour warm water (110°F) into the cooler
7. Pour the yogurt mixture into glass jars and place in cooler for 4-6 hours. The jars filled with the yogurt mixture should be surrounded by the warm water. This is an important step in the yogurt making process, since bacteria need a warm, moist place to grow. Check the temperature often to make sure it stays around 110°F.
8. When the yogurt has thickened, it is ready to be refrigerated.
9. Once the yogurt has been cooled, drain the liquid from the top. Stir your yogurt and it is ready to eat!

Fun Fact

The bacteria used to make yogurt helps your body digest food.

FUN WITH FOOD:

Yummy, Yummy Yogurt

Record and draw your observations

1. Describe the milk appearance, taste and texture before heating.



2. Describe the milk appearance and texture after mixing yogurt in.



3. Describe the yogurt appearance, texture and taste once it has been refrigerated.



Proficiency Questions

Circle the best answer:

1. What is the sugar in milk called?

- a. lactic acid
- b. lactose
- c. glucose
- d. none of the above

2. _____ helps your body digest food.

- a. bad bacteria
- b. good bacteria
- c. both
- d. none of the above

3. Katie decided to make yogurt. Using the pictograph below, how many cups of yogurt did Katie make? (1 yogurt = $\frac{1}{2}$ cup)



- a. 4.5
- b. 8
- c. 2.5
- d. 5