

Chapter 32

Dairy Foods

Lactose Intolerance

Directions: Read the following selection. Then answer the questions under *Thinking Critically*, and complete the activities as directed by your teacher.

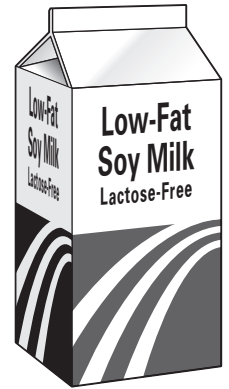
In Chapter 34, you read that milk is an almost perfect food. It is also versatile. Milk can be added to foods to improve their nutrient content. Even desserts can contribute valuable nutrients when made with milk.

As the only food humans and mammals consume in early life, milk must contain all necessary nutrients. Milk is so important to infants that, in areas where dairy animals are not available, young babies often sicken and die if older siblings are also consuming the mother's breast milk. A protein-deficiency disease (a form of malnutrition) known as *kwashiorkor* often occurs in impoverished areas of the world in which a diet high in starchy vegetables and low in protein (such as dairy protein) is common. According to the U.S. National Institute on Health, this disease often occurs during times of drought and political unrest.

Unfortunately, many adults cannot consume milk. Before reaching adulthood, some individuals lose their ability to digest and tolerate lactose, the sugar found in milk. People with lactose intolerance who drink more than a small amount of milk may experience digestive upsets, such as gas, cramps, and diarrhea.

People become lactose intolerant usually because their bodies stop manufacturing *lactase*, the digestive enzyme that breaks down lactose. The loss of the enzyme can occur at any age past infancy. For example, a teen that can digest lactose may lose this ability when he or she reaches twenty, forty, or even eighty years of age. The average age at which some humans lose their ability to tolerate lactose varies. The loss of lactose as people age is not surprising. Humans, unlike other species, continue to consume milk after infancy.

Dairy animals that eat only grass and other plant foods that humans cannot digest can provide a food containing most of the nutrients humans need. They can graze on land that is not suitable for farming. One dairy animal can provide a renewable, portable source of nutritious food for years. For example, a member of the crew who joined Captain Cook's first voyage to the Pacific expressed thanks to the goat that traveled with them. In those days, many a sailor died of malnutrition on long voyages.



People who have trouble digesting milk need to read labels carefully because milk products are added to many foods. They should also ask about ingredients in restaurant foods.

Some people who are lactose intolerant can digest cultured milk products, such as yogurt and hard cheeses. Others may benefit from taking lactase as a digestive aid or buying milk that has been treated with lactase.

Those who can't tolerate any milk products must find other sources for such nutrients as protein and calcium. In Asia, for example, people generally obtain much of their protein and calcium from soybean products. In markets, you can find soy substitutes for dairy products, such as soy milk, soy cheese, and soy yogurt.

People who can digest and tolerate milk are fortunate. This nearly perfect food is one of the most efficient ways to obtain a wide range of essential nutrients.

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Thinking Critically

1. Why do you think milk contains so many important nutrients?

2. How would lactose intolerance have made survival more difficult for early humans? Use Internet or print resources to assist in finding your answer.

3. Why might lactose intolerance present a particular challenge for a vegetarian? What foods would you recommend for a vegetarian who cannot tolerate dairy products or who chooses to avoid them?

For Further Study

- ◆ Conduct research to learn more about the enzyme lactase, its role in digestion, and how it relates to lactose intolerance. Summarize your findings in a brief report, and submit it to your teacher.
- ◆ Conduct research about making yogurt and other cultured milk products. Why does the culturing process help make these products more digestible? If possible, make yogurt in the foods lab to share with the class. Summarize your findings in a brief report to share with the class.
- ◆ Choose a recipe for a dish or baked product that contains milk. Through research or experimentation, find out how you could eliminate milk from the recipe and achieve comparable results. Write a modified recipe using an alternative for the milk or dairy product. Prepare the traditional recipe and your modified recipe in the foods lab or at home. Have your classmates or family taste-test the results of each recipe. Draw conclusions about their reactions to the flavor, texture, aroma, and appearance of each product. Write a brief summary of your findings, and submit it to your teacher.