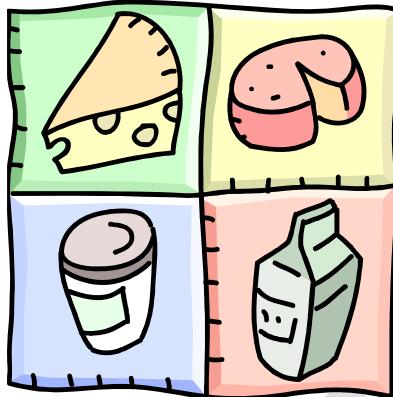


Hip Hop Healthy Heart for Children™ – Nutrition Module

Lesson 6 – Blue Day: The Magnificent Milk Group



Magnificent Milk Poem:

Magnificent milk is a super deal!
Nutrient-dense, it completes each meal.
Calcium, Phosphorus, vitamin D,
Builds strong bones and teeth, you see.

A glass of milk, some yogurt, cheese,
Make them low-fat, if you please.
Breakfast, lunch, snacks and dinner,
Drink some milk, become a winner!

Magnificent Milk! A Meal in itself! This lesson gives you a variety of teaching options:

- **Teacher Background Information** – gives you a solid knowledge base organized by multidisciplinary links.
- **Core Activities** – give all the basics for a 20-30 minute class.
- **Optional Activities** – can be added to this lesson, or taught throughout the year as multidisciplinary tools. Optional activities take 20-60 additional minutes depending on the activity and the number of students in your class.
- **Choice of Handouts** – use all or some of them for this lesson or distribute them throughout the year to compliment your mandated curriculum.
- **Appendix**– offers supporting charts, wall photos, and extra questions to use during the lesson or throughout the year.

Teacher Background Information: Introduction

- **What is milk?** Milk is an opaque white liquid produced by the mammary glands of female mammals to feed their young.
- **Why is milk so healthy for humans?** Because it is one of the most nutrient-dense foods providing good to excellent sources of nine essential nutrients. This means it provides a high level of essential nutrients compared to its calories. In fact, each serving of milk provides 10% or more of the recommended daily intake for calcium, vitamin D (if fortified), protein, potassium, vitamin A, vitamin B12, riboflavin and phosphorus. Milk is nutrient-dense because it is the primary source of nutrition for newborn mammals before they are able to digest other types of food. Without it, the babies would starve. Mother's milk can also reduce the risk of many diseases in babies because it contains the mother's antibodies¹.
- **What is Cheese?** A food made usually the milk of cows, buffalo, goats, or sheep, by coagulation. The milk is acidified, typically with a bacterial culture, then the addition of the enzyme rennet or a substitute (e.g. acetic acid or vinegar) causes coagulation, to give "curds and whey". Some cheeses also have molds, either on the outer rind (e.g. camembert, brie) or throughout (e.g. blue, Roquefort).
- **How many types of cheese are there?**² Hundreds. Their different styles, textures and flavors depend on the origin of the milk (including the animal's diet), whether it has been pasteurized, butterfat content, the species of bacteria and mold, and the processing including the length of aging. Herbs, spices, or wood smoke may be used as flavoring agents. The yellow to red color of many cheeses is a result of adding annatto. Cheeses are eaten both on their own and cooked in various dishes; most cheeses melt when heated.

Teacher Background Information: Milk History

- **When did Humans first start consuming milk?** When they learned to *domesticate* animals. There is archeological evidence that goats and sheep were first domesticated in the area now known as Iran and Afghanistan in about 9000 B.C. By about 7000 B.C. cattle were being herded in what is now Turkey and parts of Africa. Goats, sheep and cows were a perfect choice for *nomads* as well as early farmers because they can survive on a diet of dry grass. This is a useless food for humans, but it is a food that can easily be found in dry areas. It is also a food that can easily be harvested from wild grasses, stored and used as animal feed months after cutting. Although goats, sheep and cows were probably first domesticated for meat and hides, ancient man quickly discovered that the milk provided over an animal's lifetime was far more valuable and longer lasting than what could be gained from slaughter.³
- **When was cheese invented?** Cheese is an ancient food whose origins predate recorded history. Cheese was really more discovered than invented thousands of years ago. Proposed dates for the origin of cheese making range from around 8000 BCE (when sheep were first domesticated) to around 3000 BCE. The first cheese may have been made by people in the Middle East or by nomadic Turkic tribes in Central Asia. There is no conclusive evidence indicating where cheese making originated, either in Europe, Central Asia or the Middle East, but the practice had spread within Europe prior to Roman times. According to Pliny the Elder, cheese making had become a sophisticated enterprise by the time the Roman Empire came into being.
- **Why has cheese valued by ancient people?** Cheese was valued for its portability, long life, and nutritional content. It is high in nourishing fat, protein, calcium, and phosphorus, nutrients that keep nomadic people alive when other food is scarce. It is also more compact and lasts longer than the milk from which it is made.
- **Could early man always drink milk?** No. There is evidence from DNA extraction of skeletons from the Neolithic period that people in northern Europe were missing the necessary genes to process lactase. Scientists claim it is more likely that the genetic mutation allowing the digestion of milk arose at some point after dairy farming began.⁴ The use of cheese and butter spread in Europe, parts of Asia and parts of Africa.

¹ Part of the immune system, **antibodies** are proteins generally found in the blood that detect and destroy invaders, like bacteria and viruses.

² http://en.wikipedia.org/wiki/Cheese#cite_note-0

³ McGee, Harold (1984). "Milk and Dairy Products". *On Food and Cooking: The Science and Lore of the Kitchen*. New York: Charles Scribner's Sons. pp. 3–53. ISBN 0-684-18132-0.

⁴ <http://news.bbc.co.uk/2/hi/health/6397001.stm>

- **When were domestic cows introduced into the Americas?** During the Age of Exploration, a period that lasted from the 15th Century into the 17th Century. During this time Europeans explored the world by ocean searching for trading partners and particular trade goods. They introduced domestic cows to the colonies they set up throughout the Caribbean, South and North America.
- **When where the first large dairies founded in America?** In the 1790's. Prior to the American Revolution most of the dairy products were consumed on the farm where they were produced. By about 1790, cities like Boston, New York, and Philadelphia had grown large enough to become an attractive market for dairy farmer entrepreneurs. To meet the increased demand, farmers began importing breeds of cattle that were the best milk producers of the era. The first Holstein-Friesens were imported in 1795, the first Ayrshires in 1822, and the first Guernseys in 1830.
- **When was milk first commercially pasteurized in the US?** In the 1890's. The first milk processing plant in the United States to install pasteurizing equipment was the Sheffield Farms Dairy in Bloomfield, New Jersey, which imported a German-made pasteurizer in 1891. (for more information about pasteurization, see Teacher Background Information: Science Link Page TK)
- **When did pasteurization become a requirement?** Many dairy operators opposed pasteurization as an unnecessary expense, and it wasn't until 1908 that Chicago became the first major city to require pasteurized milk. New York and Philadelphia followed in 1914, and by 1917 most major cities had enacted laws requiring that all milk be pasteurized.
- **How was milk sold before milk bottles were invented?** In the 19th century, milk was delivered to the market in carelessly washed cans and was doled out to the consumer with a ladle. The consumer carried it home in his own pail or jar. When milk stands for several hours the cream separates and floats to the top of the container. So, the farmer's first customers of the day were the luckiest because they would get the highest cream content while later customers got mostly skim milk (or low fat milk in today's lingo). Some of the milk came from dirty barns at a time when government inspection consisted of testing milk for the amount of solids it contained.
- **Who manufactured first milk bottle in America?** One of the first glass milk bottles was patented in 1884 by Dr. Henry Thatcher, a Potsdam, N.Y., pharmacist. He invented his "Thatcher's Common Sense Milk Jar" after seeing a milkman making deliveries from an open bucket into which a child's filthy rag doll had accidentally fallen. By 1889, his bottle had become an industry standard. It was sealed with a waxed paper disc that was pressed into a groove inside the bottle's neck. The milk bottle, and the regular morning arrival of the milkman, remained a part of American life until the 1950s, when waxed paper cartons of milk began appearing in markets.⁵

⁵http://209.85.173.132/search?q=cache:cGNzJuYgvBgJ:www.mohawkvalleybottleclub.com/ArchiveArticles/PDF_Articles/MilkBottleHistory.pdf+How+was+milk+sold+before+milk+bottles+were+invented%3F&hl=en&ct=clnk&cd=3&gl=us

Teacher Background Information: Milk Group Organization – 5 Categories

For a complete explanation of each Milk Group Food Example, see this table expanded in the Appendix, page 1

Milk Categories:	Milk Group Food Examples:
1. Fluid Milk <small>6 7 8 9 10 , , , ,</small>	<ul style="list-style-type: none"> • Whole • Reduced fat • Low fat • Fat-free • Lactose reduced, Lactose free • Certified Milk • Organic Milk • Buttermilk • Cream • Half and Half • Condensed Milk • Evaporated Milk • Flavored Milk • Fortified Milk
2. Cultured Milk Products	<ul style="list-style-type: none"> • Clotted Cream • Kefir • Sour Cream • Yogurt
3. Cheese	<ul style="list-style-type: none"> • Hard Cheese • Semi Firm • Semi Soft • Soft Cheese • Processed Cheese • Fresh and Curd Cheese
4. Milk-Based Desserts	<ul style="list-style-type: none"> • Milk Shake • Puddings • Frozen Desserts
5. Dry Milk	<ul style="list-style-type: none"> • Powdered Milk • Powdered Buttermilk

⁶ International Dairy Foods Association. *Milk Facts 1998 Edition*. Washington, D.C.: International Dairy Foods Association. October 1998.

National Dairy Council. Flavored milk in perspective. *Dairy Council Digest* 66(3): 13, 1995.

⁷ U.S. Department of Health and Human Services, Food and Drug Administration. Code of Federal Regulations, Title 21, Part 131, Subpart B, Milk and Cream. Washington, D.C.: U.S. Government Printing Office, April 1998, pp. 276-294.

⁸ Kosikowski, F.V., and V.V. Mistry. *Cheese and Fermented Milk Foods. Vol. 1. Origins and Principles*. 3rd edition. Brooktondale, N.Y.: F.V. Kosikowski and Associates, 1997.

⁹ U.S. Department of Health and Human Services, Food and Drug Administration. Lowfat and skim milk products, lowfat and nonfat yogurt products, lowfat cottage cheese: revocation of standards of identity; food labeling, nutrient content claims for fat, fatty acids, and cholesterol content of food. Final rule. *Fed. Register* 61(225): 58991 (Nov. 20), 1996.

¹⁰ National Dairy Council. Flavored milk in perspective. *Dairy Council Digest* 66(3): 13, 1995.