

Dairy Products Exam RESOURCES 2008

In an effort to de-emphasize the significance of memorizing facts, which may change, a basic list of dairy-foods--related FACTS is provided below. Outside of memorizing these facts, students should UNDERSTAND and REMEMBER the major concepts outlined in the following web-based information links. ([Exam questions were written from the information found in the following references.](#))

FACTS:

Pasteurization: involves heating raw milk to a certain temperature for a specific period of time. In the U.S., pasteurized milk must be heated to a minimum of 145°F for 30 minutes or to 161°F or more for 15 seconds.

Pathogen: an **infectious agent**, or more commonly germ, is a biological agent that causes disease or illness to its host. (from Wikipedia)

The body contains many natural defenses against some of the common pathogens (such as *Pneumocystis*) in the form of the human immune system and by some "helpful" bacteria present in the human body's normal flora. However, if the immune system or "good" bacteria is damaged in any way (such as by chemotherapy, human immunodeficiency virus (HIV), or antibiotics being taken to kill other pathogens), pathogenic bacteria that were being held at bay can proliferate and cause harm to the host.

Lactose: milk sugar

Lactase: Lactase is essential for digestive hydrolysis of lactose in milk. Deficiency of the enzyme causes lactose intolerance.

Casein: primary protein found in milk

Whey: Also known as milk plasma, is the liquid remaining after milk has been curdled and strained; it is a by-product of the manufacture of cheese or casein and has several commercial uses. Sweet whey is manufactured during the making of rennet types of hard cheese like cheddar or Swiss cheese. Acid whey (also known as sour whey) is obtained during the making of acid types of cheese such as cottage cheese. [Whey is used to produce ricotta and brown cheeses and many other products for human consumption. It is also an additive in many processed foods, including breads, crackers and commercial pastry, and in animal feed.]

Lactic Acid: The casein in fermented milk is coagulated (curdled) by lactic acid.

Rennet: is a natural complex of enzymes produced in any mammalian stomach to digest the mother's milk, and often used in the production of cheese.

Hydrolysis: is a chemical reaction during which one or more water molecules are split into hydrogen and hydroxide ions which may go on to participate in further reactions.

Dental caries: is a disease that damages tooth structures, resulting in what is commonly called tooth decay or cavities, which are holes in the teeth.

Whole Milk : 3.25% fat, contains 150 calories and 8 grams (g) of fat per serving (8 fluid oz).

2% Reduced-Fat Milk: 2% fat, contains 120 calories and 5 grams (g) of fat per serving (8 fluid oz).

1% Lowfat Milk: (also called Light Milk) 1% fat, contains 100 calories and 2.5 grams (g) of fat per serving (8 fluid oz).

Fat-Free Milk: (also called Skim or Nonfat Milk) 0% fat, contains 80 calories and 0 grams (g) of fat per serving (8 fluid oz).

Chocolate Milk : (fat-free, 1% lowfat, 2% reduced-fat, whole milk) is milk to which chocolate or cocoa and a sweetener have been added.

Evaporated Milk: 6.5% fat, is made by removing about 60% of the water from whole milk.

Evaporated Fat-Free Milk: 0.5% fat or less, is a concentrated, fortified (vitamins A and D) fat-free (skim or nonfat) milk that is canned and sterilized.

Sweetened Condensed Milk: 8% fat or less, is a canned milk concentrate of whole milk to which sugar has been added.

Storing Milk: Refrigerate milk at 40 degrees F, or less, as soon as possible after purchase and store in the original container.

Children Consuming Milk: Infants can be fed whole milk, not lowfat or reduced-fat milks, beginning at 12 months of age, according to the American Academy of Pediatrics.

Is Milk Fattening?

Not necessarily, being overweight, results from consuming too many calories and getting too little exercise. There are a variety of milks with different calorie and fat contents. Fat-free milk, for example, has only 80 calories, no fat and all the calcium of other milks. (Mountain Dew has 110 calories per 8 oz. serving.)

Lactose Intolerance: Many individuals who have difficulty digesting lactose (milk's sugar) can consume a glass or two of milk a day with meals with few, if any, symptoms.

Origin of Cheese: Cheese is an ancient food whose origins predate recorded history. There is no conclusive evidence indicating where cheese making originated. Proposed dates for the origin of cheese making range from around 8000 BCE (when sheep were first domesticated) to around 3000 BCE. Since animal skins and inflated internal organs have, since ancient times, provided storage vessels for a range of foodstuffs, it is probable that the process of cheese making was discovered accidentally by storing milk in a container made from the stomach of an animal, resulting in the milk being turned to curd and whey by the rennet from the stomach. There is a widely-told legend about the discovery of cheese by an Arab trader who used this method of storing milk. The legend has many individual variations.

Processed cheese, process cheese, prepared cheese, or cheese food: is a food product made from regular cheese and sometimes other unfermented dairy ingredients, plus emulsifiers, extra salt, food colorings, and/or whey. Processed cheese is sometimes sold in blocks, but more often sold packed in individual slices, sometimes with plastic wrappers or wax paper separating them. The various definitions are mainly used to distinguish minimum/maximum amounts of cheese ingredient, moisture content, and milkfat.

- **Pasteurized process cheese** (Includes "American Cheese" and "Pasteurized process American cheese"), (e.g., "Kraft Deli Deluxe American Cheese")
- **Pasteurized process cheese food**, which contains as little as 51% cheese
- **Pasteurized process cheese product** (e.g. *Kraft Singles*, *Velveeta*), which contain less than 51% cheese

Milk's Unique Nutrient Package Fact Sheet **(nine essential nutrients provided by milk)**

Calcium -- 30% Daily Value

An 8-ounce serving of milk provides 30% of the Daily Value of calcium. Calcium helps build and maintain strong bones and teeth. This mineral also plays an important role in nerve function, muscle contraction and blood clotting.

Vitamin D -- 25% Daily Value

When fortified, a glass of milk provides about 25% of the Daily Value for vitamin D. Vitamin D helps promote the absorption of calcium and enhances bone mineralization. Milk is one of the few dietary sources of this important nutrient.

Protein -- 16% Daily Value

The protein in milk is high quality, which means it contains all of the essential amino acids or "building blocks" of protein. Protein builds and repairs muscle tissue, and serves as a source of energy during high-powered endurance exercise. An 8-ounce glass of milk provides about 16% of the Daily Value for protein.

Potassium -- 11% Daily Value

Potassium regulates the body's fluid balance and helps maintain normal blood pressure. It's also needed for muscle activity and contraction. By providing 11% of the Daily Value of potassium, milk contains more than the leading sports drink.

Vitamin A -- 10% Daily Value

A glass of milk provides 10% of the Daily Value of vitamin A. This nutrient helps maintain normal vision and skin. It also helps regulate cell growth and maintains the integrity of the immune system.

Vitamin B₁₂ -- 18% Daily Value

Vitamin B12 helps build red blood cells that carry oxygen from the lungs to working muscles. Just one 8-ounce glass of milk provides about 13% of the Daily Value for this vitamin.

Riboflavin -- 24% Daily Value

Milk is an excellent source of riboflavin, providing 24% of the Daily Value. Riboflavin, also known as vitamin B2, helps convert food into energy – a process crucial for exercising muscles.

**Niacin -- 10% Daily Value
(or Niacin Equivalent)**

Niacin is important for the normal function of many enzymes in the body, and is involved in the metabolism of sugars and fatty acids. A glass of milk contains 10% of the Daily Value for niacin.

Phosphorus -- 23% Daily Value

Phosphorus helps strengthen bones and generates energy in your body's cells. Providing 20% of the Daily Value, milk is an excellent source of phosphorus.

Other Milk Facts

Hormones: Hormones are present naturally in all milk.

Bovine somatotropin (bST) is a hormone that is naturally produced by cows; it directs how energy and nutrients are used for growth and milk production. rbST is a synthesized copy of this naturally occurring hormone. Milk from rbST-supplemented cows is safe for human consumption. This has been affirmed and reaffirmed since the use of rbST was approved in the early 1990s. The FDA has determined that there is

no difference between milk from cows treated with rbST and those not given rbST.

Antibiotics: All milk is tested for antibiotics to ensure it meets the government's stringent quality and safety standards.

Pesticides: The most recent FDA data available (2003) indicate that all of the milk tested was found to be completely free from pesticide residue.

The Role of Pasteurization

- Pasteurization involves heating raw milk to a certain temperature for a specific period of time. In the U.S., pasteurized milk must be heated to a [minimum of 145°F for 30 minutes or to 161°F or more for 15 seconds](#). It is a simple, effective method to kill bacteria without affecting the taste or nutritional value of milk.

An Antibiotic-Free Milk Supply

- Sometimes it's necessary for farmers to treat cows with antibiotics when they are ill, just as humans sometimes need medication when they are sick. If a cow is being treated with antibiotics, the milk is taken out of the milk supply and not put back into the milk supply until her milk tests free of antibiotics.

Human Nutrition

Intestinal Health: Yogurt with specific strains of live active cultures has been demonstrated to help maintain the normal intestinal micro-flora balance and suppress harmful bacteria in the intestine. A particular strain of bacteria used in yogurt, *Lactobacillus* strain GG, aids in treatment and prevention of antibiotic-associated diarrhea, traveler's diarrhea, and acute diarrhea in children. In adults, this particular strain of *Lactobacillus* has been shown to stimulate bowel function by altering the micro-flora and suppressing fermentation in the intestine. Yogurt with *Lactobacillus gasseri* may be beneficial for older adults with "atrophic gastritis," a condition that predisposes to intestinal infections and constipation.