



Facts about cheese

Cheese's immense popularity stems from its taste, versatility, many varieties and nutritional package.

Cheese, a concentrated dairy food made from milk, is defined as the fresh or matured product obtained by draining the whey (moisture or serum of original milk) after coagulation of casein, the major milk protein. Casein is coagulated by acid, which is produced through the addition of select microorganisms and/or by coagulating enzymes, resulting in curd formation. Milk may also be acidified by adding food-grade acidulants, which is the process often used in the manufacture of fresh cheese.

Cheese can be made from whole, 2% lowfat, 1% lowfat or fat-free milk, or combinations of these milks. About one-third of all milk produced each year in the United States is used to make cheese. In 2003, a total 8.5 billion pounds of cheese was produced in the United States.

Different ingredients and processes employed during the making and aging of cheese result in a wide variety of available cheeses, each with its own distinct texture and flavor profile. There are more than 200 varieties of cheese produced in the United States; more than 1,400 varieties are catalogued in the [World Cheese Exchange Database](#).

Cheeses are categorized in several ways: natural versus process cheeses, unripened versus ripened and soft versus hard.

Natural cheeses

Natural cheese is a general classification for cheese that is made directly from milk. In fresh, unripened cheese, the curd, separated from the whey, can be formed into cheese immediately, whereas in matured or ripened cheese, the curd may be further treated by the addition of select strains of bacteria, mold, yeast or a combination of these ripening agents. The bacteria, mold and yeast continue to ripen the cheese over time, changing the cheese's flavor and texture as it ages.

When choosing natural cheese as an ingredient, it's important to understand how a cheese will perform in a finished product based on its age and storage conditions.

Natural cheeses are often categorized according to their moisture or degree of softness or hardness. Soft cheeses include Brie, Camembert, ricotta and cottage cheese. Semisoft cheeses include blue, brick, feta, Havarti, Monterey Jack, mozzarella, Muenster and provolone. Hard cheeses include Cheddar, Colby, Edam, Gouda and Swiss. Very hard cheese varieties include Parmesan and Romano.

Process cheeses

These cheeses are made by blending one or more natural cheeses into a homogenous mass, heating the mix and adding emulsifying salts, which modify the appearance, texture and flavor of the cheese. Process cheeses contain more moisture than natural cheeses. Pasteurized process cheeses include American cheese, cheese spreads and cheese foods. Cold-pack cheese is a blend of natural cheeses processed without heat. Flavoring and seasonings are often added.

Cheese powders

Cheese powders, or dehydrated cheeses, are prepared using a single cheese variety or a blend of various cheeses. Products may be all cheese or a blend of cheese with other dairy ingredients (for example, whey, nonfat dry milk, etc.), food ingredients and/or color. Some typical applications for cheese powders include prepared dry mixes, sauces and snack foods.

Enzyme-modified cheese

These cheeses are special flavor ingredients that blend lipases (natural food-grade enzymes) together with natural cheese to intensify the effect of cheese flavor development. Available in paste or powder form, applications include flavor enhancement of pasteurized process cheese and cheese sauce, salad dressing and snack foods.

Cheese analogs

Analog, or cheese substitutes, are cheeselike products made with nondairy ingredients such as corn oil. These nondairy products have less flavor and poor melting performance.

Nutrition information

Cheese is basically a concentrated source of the many nutrients found in the milk from which it was made. Milk itself is regarded as a nearly complete food. It is extremely difficult to present average nutrient values for cheese as a whole due to the differences in manufacturing processes and standards of identity. Even within one variety of cheese, variations in the type of milk, processing, season and locality can lead to marked fluctuations in nutritional composition.

Considering that it takes about 10 pounds (5 quarts) of milk to make 1 pound of whole milk cheese, cheese is a nutrient-dense food. Cheese provides calories; high-quality protein; vitamins; and minerals, such as calcium, phosphorus and zinc. The chart below gives the nutritional profile of some popular cheeses in common servings.

Cheese by the numbers

Serving size	Calories (Kcal)	Fat (g)	Calcium (mg)
American, pasteurized process, 1 oz.	106	8.4	174
Cheddar, 1 oz.	114	8.9	204
Cottage, 1/2 cup	81	1.1	68
Cream cheese, 1 oz.	98	9.3	22
Mozzarella, part-skim (low moisture), 1 oz.	79	4.6	207

Source: USDA Nutrient Database for Standard Reference.

The fat content of cheese varies by type. For healthy people, cheese can be a part of the everyday diet when consumed in moderation, like any other food. Fat is necessary in the human diet to transport fat-soluble vitamins A, D, E and K into the body. Many cheeses are an excellent source of calcium and a good source of protein and phosphorus while being low in trans fatty acids.

For individuals wishing to lower their calorie or fat intake, a variety of lowfat cheeses are also available.

These include:

Lowfat cheese: 3 grams or less of fat per reference amount (1 ounce for most cheeses, 4 ounces for cottage cheese).

Reduced-fat cheese: 25% less fat per reference amount than its full fat counterpart.

Fat-free cheese: less than 0.5 grams of fat per reference amount.

Recent research indicates that cheese, like all fat-containing dairy foods, is a significant source of conjugated linoleic acid (CLA), the conjugated dienoic fatty acid isomer of the essential fatty acid linoleic acid. CLA is highly concentrated in the fat of ruminant animals, such as cows. The enzymes in a cow’s digestive tract and mammary tissue convert linoleic and linolenic acid from the diet to CLA; CLA is passed on to consumers when they consume dairy products such as cheese.

Numerous studies over the past 25 years in several carcinogenic animal models have demonstrated that dietary CLA inhibits a variety of cancers including skin tumor initiation, forestomach neoplasia as well as mammary and colon tumorigenesis. Indeed, a National Academy of Sciences report has pointed out that “CLA is the only fatty acid shown unequivocally to inhibit carcinogenesis in experimental animals.”

Other research has discovered that CLA reduces the development and regression of atherosclerosis in experimental animals and may offer cardio-protective benefits. Research suggests that CLA may act to channel energy away from adipose tissue and towards oxidation in skeletal muscle.

Many cheeses are also an excellent source of calcium. The calcium content is largely influenced by the acidity at coagulation and during expulsion of whey from the curd. In ripened, whole-milk cheese made with a coagulating enzyme (for example, Swiss, Cheddar and brick), the calcium and phosphorus of milk largely remains in the curd. Cheese coagulated by lactic acid alone (as in cottage and ricotta) retains less calcium and phosphorus because the calcium salts are removed from the casein as casein is precipitated at its isoelectric point. For example, Cheddar cheese contains 721 milligrams calcium per 100 grams, whereas dry curd cottage cheese contains only 32 mg. Regular cottage cheese contains more calcium (60 mg/100 g), indicating that the creaming mixture or other additives contribute calcium to the product.

With the emphasis placed on calcium and its role in the prevention of osteoporosis, cheese is an excellent way to boost the calcium content of prepared foods. The addition of cheese may enable a calcium content claim, providing the food meets the guidelines for content claims as defined by the Nutrition Labeling and Education Act (NELA). Generally, cheeses that are high in calcium contain other minerals such as phosphorus in appreciable amounts. Manufacturing procedures can affect the content of several minerals. For example, if a high acidity is developed during the manufacture of a specific variety of cheese, calcium and magnesium salts become more soluble and hence are removed with the whey. Similarly, frequent washings tend to lower the mineral content of the curd.

The sodium content of cheese is variable due to addition of sodium chloride (salt) as an optional ingredient during manufacture.

Cheese is also defined as a source of high-quality protein. This means that cheese contains the essential amino acids in amounts proportional to the body's need for them. When proteins are consumed, they assist with building and repairing body tissue; form antibodies, hormones and enzymes; and provide energy.

Cavity fighter

Consuming certain cheeses—including aged Cheddar, Swiss, blue, Monterey Jack, Brie, Gouda and processed American cheese—immediately after meals or as a between-meal snack has been shown to help prevent tooth decay. Calcium, phosphorus and other components in cheese may contribute to this beneficial effect.