

Dairy Products: Pivotal for Existence

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Introduction-

What are dairy products?

The products which included in dairy contain the milk of mammals most commonly from cows and buffaloes. Other livestock rearing for dairy are sheep, goat and camels. Facility that produces such products is known as dairy factory or dairy.

Nutritional Properties of Milk –

Although milk is a liquid and most often considered a drink, it contains between 12 and 13 percent total solids and perhaps should be regarded as a food. In contrast, many “solid” foods, such as tomatoes, carrots, and lettuce, contain as little as 6 percent solids. The milk is processed in different ways and the various types of milk after processing have different nutritional values depending upon their fatty portion.

Per 500 ml	Fat(g)	Protein(g)	Energy (kcal)	Calcium(mg)	Carbohydrates (g)
Toned milk	3	3	58	142	4.80
Double toned milk	1.50	3.30	48	150	5.10
Standardized milk	4.50	3.10	72	142	4.80
Skimmed milk	2.5	17.5	195	635	25.5
Full cream milk	6.10	3.30	89	150	5.10

Milk quality and safety-

Pasteurization-

Pasteurization is a simple, proven and effective process, approved by the Food and Drug Administration that kills potentially harmful bacteria without affecting the taste or nutritional value of milk. During pasteurization, the temperature of milk is raised to at least 161° Fahrenheit for 16 seconds and then rapidly cooled. Pasteurization extends milk's shelf life and destroys harmful bacteria. Ultra-high temperature pasteurization, where milk is heated to 280° Fahrenheit for more than 2 seconds, is used to extend shelf life in some dairy foods.

Homogenization-

Homogenization is a mechanical process that starts with pushing milk through tubes so the fat molecules are broken down. The fat molecules are broken up to a small size so they're evenly distributed throughout the milk, producing a uniform

Different tests performed in lab for quality assurance of milk--

→PLATFORM TEST

→ACIDITY TEST for MILK, LASSI and PANEER.

→ MBR (METYHLENE BLUE REDUCTION) TEST to detect bacterial presence.

→ RM (REICHERT-MEISSEL) TEST for ghee purity.

→ GERBER TEST



Various dairy Products-

The main source of all dairy products is milk that comes from livestock. There are many other dairy products rather than processed milk. Some of these dairy products are-

Yoghurt- The milk is boiled and fermented by bacteria and kept for 7-12 hours. After that clod formation in milk takes place. This mixture is known as curd or yoghurt.



Per 100 grams	Fat(g)	Protein(g)	Energy (kcal)	Calcium (mg)	Carbohydrates (g)
Yoghurt	4	3.6	62	243	3

Butter- It is made from the churned cream components i.e. fat and proteins. The fat globules are separated from the buttermilk to make butter. The emulsion is semi-solid at the room temperature consisting of 80 percent butter fat.



Per 100 grams	Fat(g)	Protein(g)	Energy (kcal)	Calcium (mg)	Carbohydrates (g)
Butter	80	0.5	722	24	0

Cheese- It formed by the coagulation of milk protein casein. The milk is acidified during production and the enzymes of rennet are added to convert the protein casein to coagulate. The solid curd is separated from the liquid and pressed into final form. The cheese melt at the cooking temp.



Per 100 gram	Fat(g)	Protein(g)	Energy(kcal)	Calcium(mg)	Carbohydrates(g)
Cheese	25	20	311	721	1.4

Buttermilk- This fluid is prepared by removing the fat(churning cream) of milk. The milk is cultured by specific bacteria and the ripening process takes up to 12-14 hours. The product is stirred continuously after this to break curd and then fat is removed in the form of butter. The fluid left is used as buttermilk. It is a traditional beverage.



Per 100 gram	Fat(g)	Protein(g)	Energy(kcal)	Calcium(mg)	Carbohydrates(g)
Buttermilk	0.9	3.3	40	116	4.8

Ice cream-The milk fat source, non-fat solids, stabilizers and emulsifiers are blended to ensure complete mixing of liquid and dry ingredients. After that the milk is pasteurized and homogenized. Then the liquid flavours and colours are added. The last step is to freeze the mixture in refrigerators.



Per 100 gram	Fat(g)	Protein(g)	Energy(kcal)	Calcium(mg)	Carbohydrates(g)
Ice cream	15	4.9	120	128	12.3

Cream- It composed of the higher fat layer skimmed from the top of milk before homogenization. It is mostly used in chocolate making bakery and biscuit manufacturing.



Per 100 grams	Fat(g)	Protein(g)	Energy(kcal)	Calcium(mg)	Carbohydrates(g)
Cream	25	2	246	173	3.2

Benefits of milk and milk products-

Foods in the dairy food group offer a unique package of nutrients that work together to provide multiple health benefits, including optimal growth and development in children and reduced risk of chronic disease. These nutrients include calcium, vitamin D, protein, potassium, magnesium, vitamin A, vitamin B12, riboflavin and more.. Excellent source of protein.

Some of the milk benefits are-

- Fully rich in vitamin B and D also this products are rich in nutrients like calcium phosphorus and potassium.
- Drinking milk and dairy products may prevent osteoporosis and bone fractures and even help to maintain a healthy weight.
- Is very essential for infants to help to develop their bones and mind. Also keep their teeth healthy.
- Reduce blood pressure.
- Reduce risk of cardiovascular disease and diabetes type 2.
- Improve digestive health

How much milk is needed?

Full cream milk, boiled and kept in the fridge, stored for consumption is the best form of milk you can consume. The buffalo milk contains more fat than cow milk.

Daily recommendation	
Age	Number of servings
2-3 years	2 cups
4-8 years	2.5 cups
Above 9 years	3 cups
Young adults	3 -4 cups
Old people	1 cup

Storage of dairy products-

- The dairy products are stored at cool temperature. At warm places bacteria will grow rapidly and products got spoiled so it's necessary to store them in refrigerators. The temperature requirement for storage of milk is below 40° F as above this temperature bacteria grows easily.
- “The cooler refrigerated milk is kept, the longer it lasts and the safer it is.”
- The refrigerated milk will last up to 2 weeks after storage.



Storage at dairy product industries

Conclusion-

The recent literature reviewed in this article helps shed some light on the role of milk in a balanced diet and nutritional value of various dairy products. The various processes through which milk and its products are passed in industries are elaborated clearly. The demand of milk and its products is increasing day by day not only for their delicious texture but also for their nutritional value. These products are essential part of every individual's diet. A person can't imagine even a single day without milk and its products. Milk provide rid from various diseases and keep our immunity strong so in future it's demand will increase more as diseases are increasing day by day due to inorganic food. However, their relatively high saturated fat proportion [milk fat contains ~70% SFAs; acids combined account for ~50% ,whereas the remainder are mostly short- and medium-chain FAs and oleic acid has flagged them as potentially detrimental food items, especially in terms of cardiovascular health. The vast majority of epidemiologic and intervention studies performed during the past few years suggest that dairy products do not adversely affect surrogate markers of CVD and cardiovascular prognosis. Indeed, some studies suggest that SFAs, namely, shorter-chain SFAs, from milk and its derivatives are benign with regard to inflammation and might actually be beneficial to some population segments. The available evidence suggests that calcium does not play a major role in coronary calcification [at least from an epidemiologic viewpoint: randomized clinical trials are inconclusive and its intake is inversely associated with blood pressure, whereas its potential contribution to prostate cancer development is still controversial. Therefore, the hypothesized association between calcium intake and cardiovascular risk is not currently supported by scientific evidence, and, in fact, the reverse might be true.

To sum up, the dairy products are crucial part of our life so we can't avoid them hope the future studies will help to elucidate the role of milk and dairy products in human health, their use within a balanced diet should be considered in the absence of clear contraindication. According to me, the dairy products and milk are highly nutritious



and does not impact cardio system even make it strong and help us to fight with various diseases.

