



## Livelihood with Dairy Products

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India ranks first in the world in milk production. The current milk production is 221.1 million tonnes. According to the Indian Council of Medical Research, the recommended daily intake of milk is 300 grams while the per capita availability of milk in the country is 444 grams per day. In India, out of the total milk produced, nearly 60% is consumed in the form of milk and the remaining 40% is used to make dairy products like ghee, butter, curd, cova, milk powder, paneer, cheese, ice-cream, kulfi etc. Of the milk sold, 70% is managed by the unorganized sector and only 30% by the organised sector.

### Importance and nutritional value of milk and dairy products

Milk is a complete nutrient. It contains all the nutrients required for the growth of the body such as proteins, fats, lactose, minerals and vitamins. Milk is easily digestible and is very useful for children, the elderly and those suffering from illness. Cow's milk is an alternative to mother's milk. Milk is one of the most abundant sources of proteins and calcium needed to build muscle and bone health. There is a deep belief among the people of India that the rural people of the country are healthy because they get enough of the unadulterated, genuine pure milk. Not only is milk high in nutrients, it also helps in the growth of healthy microorganisms in the intestines and the vitamin-A present in milk is like srirama raksha for the health of the eyes. Milk is rich in calcium, riboflavin and vitamin-A but is low in iron and vitamin-C. Milk is a vitamin-B12 source for those who do not eat non-vegetarian food. Ghee is a rich source of vitamins, antioxidants and healthy fats. Yogurt is rich in proteins, calcium, phosphorus, riboflavin, vitamin-B2, vitamin-D, iodine, and healthy intestinal healthy bacteria (probiotics). Buttered milk is rich in proteins, lactose and moisture that helps in weight loss.

Milk and dairy products play an important role in keeping body weight under control, in the care of bones and teeth, in the prevention of insomnia, in relieving depression, in the prevention of cancer, in building muscles, in balancing the amount of water in the body, and in boosting immunity.

### Precautions to be taken for clean milk production

Milk squeezed from a healthy animal in a clean vessel by a healthy man in a clean environment is called 'clean milk'. Clean milk contains a small number of udder cells and germs. There will be no dust or dirt. Color, taste and smell are good. The milk does not break if heated. Unclean milk is rich in body cells and germs. They are dusty and dusty. There is a difference in colour, taste and smell.

Clean milk does not spoil quickly. They are stored for a long time. Dairy products like butter, ghee, curd, etc., made from clean milk have a good taste and aroma and last for a long time. Neither the milk collection centre, the refrigeration centre nor the milk treatment plant will accept the milk and send it back. There is a possibility of paying a higher price. This type of milk gives health to the consumer.

In order to have a clean milk, a lot of care must be taken in respect of the following:

- All the cattle that are given milk should be healthy. There should not be any diseases. Especially the mastitis should not be a disease. Wash the animal with clean water before milking and let all that water drain out. The udder should be washed with clean water or with a solution mixed with potassium permanganate and wiped with a dry cloth. The tail should be tied

to one leg without moving it. As far as possible, the calf should make a habit of milking without any time. Not only does the quality of milk not decrease if milk is squeezed in this order, but mastitis can also prevent the spread of mastitis from one animal to another. Recently weaned cattle and more milking animals should be milked first. Then the cattle in the middle of the chulu, then the cattle at the end of the chulu and the cattle that are slowly parting for a long time, and then the cattle that are reduced by the swelling of the udder, have to be squeezed.

- The milking man should be healthy. A person suffering from cold, cough, fever, fatigue, dehydration and infectious diseases should not breastfeed. The milking person should take a clean bath, put on washed clothes, comb his head thoroughly, and if possible put a cap on his head and milk. Cut the nails, wash the hands thoroughly, wipe them with a dry cloth and squeeze the milk. Do not talk, cough, sneeze, smoke a cigarette or roll, chew gutka paan masala while milking. If you do that, the microbes in the milk will increase. As far as possible, a man who is milking should not be changed.
- It is better to use vessels with lids for milking. Use stainless steel utensils as much as possible. Once the milking is over, all the utensils should be washed with hot water or a mild soap solution and stored in a clean place so that it dries wet and dry.
- The milking environment should be clean. Wash the shed thoroughly and let it dry before milking. The shed should be wiped with water without dust and dirt. Avoid flies, mosquitoes, other insects, lizards, rodents, etc., otherwise there is a risk of them falling into the milk. Dry fodder and green fodder should not be applied before milking. It is better to wet it with water or make a habit of breastfeeding without eating anything. The soil should be dry at the place where the milk is being squeezed.
- Two to three streams should be released before milking. They are rich in cells and germs. These threads can be seen in a strip cup with a clothed strip, where there are flour and milk lumps, and mastitis can be detected. The milk should be squeezed quickly (in 7-8 minutes).
- Strain the mashed milk. Milk should be stored in cold weather. If possible, it is better to put a wet cloth on the can. If the milk temperature drops to 4 degrees Centigrade within one to two hours of grinding, the quality of milk will be maintained till it is added to the milk collection centre or the chilling centre, which is a consumer such as hotels, hostels, etc.

### Precautions to be taken in the process of selecting dairy cattle

Our elders said that the choice of good dairy cattle is like a foundation stone for the dairy industry.

- In order to choose cows, one has to choose hybrid cows such as Jersey and HF cows, and among buffaloes, one has to choose breeds such as murra and graded murrhah. In order to choose indigenous cows, one has to choose dairy cows species like Sahiwal, Gir and Tharparkar.
- If crossbred cows have the highest yield of 15 litres per day during the first three months of weaning, they give an average of 10 litres of milk per day during the dairy season. Similarly, if the buffaloes have the highest yield of 12 litres per day in the first three months of weaning, they will feed on an average of 8 litres per day during the dairy season. Dairy cattle with such milk yield potential should be selected. It is advisable to buy dairy cattle in one or two swims, including the calf, after 15 days of weaning. Cattle between the ages of two and six years should be selected. The family history of the dairy cattle, the father's milk, the mother's milk yield information, is available only to the cattle in the farms. These details are not available in other cattle. Therefore, farmers should choose the best milch animals only on the basis of the characteristics of the milch animals and milk yields.
- The characteristics of the breed should be known based on the colour, shape and horn characteristics of the dairy cattle. The herds should be healthy, active and attractive with female characteristics. It should be ensured that there are no diseases like sore throat, swelling of the jaw, drowsiness, cough diseases, mastitis, brucellosis, milk fever, etc. It should be noted whether all the parts of the body are fully prepared and in the right proportions. The cattle should be triangular in shape when viewed from the front, from the side or from the back. This indicates that the chest, stomach, udder, uterus are large and shoulder and neck are small. The head should be in proportion to the rest of the body shape. The jaws should be strong. The touch should be wide and moist, and the eyes should be wide and shiny actively. The back should be wide along with the jaw body. The legs should be strong, thin, left and straight, and the toes should be thick, but with the soles of the soles resting parallel to the ground. The neck should be short and thin. The ribs should be wide, thick and long. From the back, the thighs should be kept apart and there should be more room for the udder in the middle. The chest should be broad.

- Udder plays a major role in the selection of dairy cattle. The udder should be spread wide between the two thighs and clinging to the abdomen. Mammary glands should be filled with tissue and free from diseases such as mastitis. If the udder is touched by hand, it should be sensitive, contractile, dilated and soft as cotton. It should be free from any tumours. As soon as the milk is taken, the udder should be wrinkled and folded slightly. The four breasts on the udder should be of the same size and arranged in a square shape. The channas should be soft and long. The yield of milk is higher if the leaves on both sides of the udder are very large and clearly swollen upwards and extend into sacchards.

### Classification of traditional dairy products

- Concentrated dairy products: Khowa, Rabri, Basundi.
- Products broken by heat and acid: Paneer, Channa
- Fermented/fermented milk products: Dahi (curd), Mishti Dahi, Chakka, Shrikhand.
- Fat-based dairy products: Ghee, makkhan (desi butter), malai.
- Cold-frozen milk products: ice cream, kulfi, malai – ka – baraf.
- Ingredients that are made by drying milk: Milk powder, baby foods.
- Cereal based dairy products: Kheer, Payasam.
- Indian milk sweets: Gulab Jamun, Barfi, Kalakand, Rasgulla, Rasamalai, Sandesh
- Refreshing drinks: Lassi, chach, rabdi.

### Preparation of various value added milk products

#### Paneer

Buffalo's milk is suitable for paneer making. For the preparation of paneer, the milk should be taken in a steel vessel and boiled at a temperature of 82 degrees Centigrade. Then turn off the stove, take the pre-prepared 1% lemon salt solution in the hot milk and mix it slowly until the milk breaks. To separate the whey solution from the broken milk, put it in a cloth (cheesecloth or muslin cloth) to separate the whey solution from the broken milk. Keep the appropriate weight on it for at least 15 minutes. Then remove the weight and wash the paneer block with cold water. This is how paneer can be made.

The yield of paneer is 16-18%. It costs around Rs 380 to make one kg of paneer. The current market value of paneer is Rs 500 per kg. A profit of Rs 120 can be expected from making one kg of paneer.

The nutritive values of paneer are for 100 grams: proteins - 16 grams, energy - 274 kilocalories, carbohydrates - 3 grams and fats - 22 grams.

#### Cova

Buffalo milk is suitable for the preparation of cova. First, fresh milk should be taken in a wide pan and heated on a thin flame. While heating, the milk should be mixed slowly with the spatula. Especially along the bottom of the lid and the edges of the lid should not stick to any material. In the process of doing this, a soft lump-like material will not stick to the bottom. This way the cova can be prepared. The cova yield is 21-23%. It costs approximately Rs. 450 to make a kilo of cova. The current market value of a kilo of good quality cocoa is Rs. 550. One can expect a profit of approximately Rs. 100 by making one kg of cova.

The nutritional value of cova is 100 grams: proteins- 14.8 grams, energy- 341 kilocalories, carbohydrates- 23.2 g and fats- 21 g.

#### Kalakhand

Buffalo milk is suitable for the preparation of Kalakhand. Before making Kalakhand, the milk should be boiled in a wide-nosed kadai and heated. The milk should be boiled and stirred frequently. The boiling milk should be well mixed with lemon salt solution (0.5 grams of lemon salt is required per litre of milk) in this order. In this order, 60 grams of sugar is required per litre of milk. A little cardamom powder can be added for a good aroma. The kalakhand paste should be spread out and cut into pieces in a rectangular shape only when it is hot. The yield of Kalakhand is up to 25%.

The cost of making one kg of Kalakhand is approximately Rs 470. The current market value of one kg of quality Kalakhand is Rs 600. One can expect a profit of approximately Rs 130 from making one kg of Kalakhand.

The nutritional values of Kalakhand are to 100 grams: proteins - 11 grams, energy - 441 kilocalories, carbohydrates - 63.72 grams and fats - 15.8 grams.

#### Aromatic milk

First take the milk in a bowl and boil it. Add the required quantity of sugar (about 80 grams per litre of milk) and stir it till it dissolves completely. Then prepare an almond mix for aroma and add it in sufficient quantity. Then the aromatic milk can be filled in glass bottles up to the neck with the help of a capping machine. Then these bottles should be placed in an autoclave for 121 C.

It costs around Rs 2500 to make 100 bottles (200 ml) of aromatic milk. Currently, the market value of 100 bottles of aromatic milk is Rs 3000. This means that by making and selling 100 bottles of aromatic milk, one can expect a profit of Rs 500.

The nutritive values of aromatic milk per 100 milliliters: proteins - 2.9 grams, energy - 81.8 kilocalories, carbohydrates - 10.8 grams and fats - 3 grams.

### **Curd**

Before curd preparation, heat the milk for 15-30 minutes at a temperature of 80-90 C and then cool it down to a temperature of 25-30 C and mix it clean. At room temperature, the milk is made into curd in 5 to 6 hours. One litre of curd is produced from about one litre of milk. One litre of curd can be decided after seeing some surplus profit.

The nutritive values of yogurt are to 100 grams: proteins- 3 grams, energy- 59.4 kcal, carbohydrates - 5.1 g and fats - 3 g.

### **Buttermilk**

To make buttermilk, prepare curd first and mix it with enough (3 parts water for 1 part of curd) and mix well with clean fresh water. For this mixture and taste, you can mix enough salt, cumin seeds, coriander leaves, green chillies, peppers, sonthi in sufficient quantities with the help of kava or mixer to make buttermilk without any curd lumps.

It costs around Rs 750 to make 100 packets (200 ml) of buttermilk. At present, the market value of 100 packets of buttermilk is Rs 1500. This means that a profit of Rs 750 can be expected by making and selling 100 packets of buttermilk.

The nutritive values of buttermilk per 100 milliliters: proteins - 1.7 grams, energy - 29.3 kilocalories, carbohydrates - 2.3 grams and fats - 1.5 grams.