



Paneer – A protein rich dairy product

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Introduction:

Paneer, also known as Indian cottage cheese is an acid coagulated dairy product. About 5 % of the milk produced in India is converted into paneer and paneer production is growing annually at the rate of 14 %. Paneer is generally sold as blocks or slices and very popular in northern region. Paneer is used in various combinations with other vegetables and dishes, and form an important ingredient of the Indian traditional cuisine. Paneer is a viable option for vegetarians, it acts as meat analogue by mimics its mouthfeel and protein content.

Nutritional Facts-

The nutritional value of paneer per 100 g	
Sources	Amount per 100 g
Fat	22 g
Protein	20 g
Carbohydrates	4 g
Calcium	480 mg

Production

Cow milk paneer is weak and Buffalo milk paneer is slightly hard.

Therefore, standardized milk is preferable for paneer production. Standardized milk is heated up to 90 °C without holding and cooled down to 70 °C. The process called 'coagulation' takes place when coagulant added into the milk slowly with continuous stirring until whey separates clearly. The coagulation is allowed for further 5 minutes to settle the curd mass. Muslin cloth is used to drain off the whey from coagulated mix. The obtained curd mass is called 'chhana' and pressed by hooper, the resultant product is paneer. The pressure applied on the chhana is at the rate of 0.5 to 1.0 kg/cm². Pressed Paneer is immersed in cold water (4°C) to integrate the pressed solid mass particles. After 2 to 3 hours, paneer is packed and stored in refrigerated temperature.

Coagulants

Citric acid and vinegar are generally used as coagulant. About 1 % concentration is preferred for good yield and delicate textural properties. Lemon juice is used as coagulant at household level.

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Cost Of Production and Price

The cost of production for paneer by using 1 litre of milk is approximately

MATERIALS	COST
STANDARDIZED MILK (1litre)	45
COAGULANT	03
MISCELLANEOUS COST	02
TOTAL	50

➔ *Approximately 150 g paneer is obtained from 1 litres of milk.

The price of paneer per kg ranges from INR 500 to 550 depends on the brand. The profit margin in paneer making business is decent. By handling higher level of production, paneer business is most profitable dairy product.

Yield

Yield of the paneer depends on the solid contents such as fat, protein available in the milk retained while production. Cow milk paneer is soft compared to the buffalo milk, it disintegrates easily during cooking. Buffalo milk have high solid contents 15 to 16 % compared to cow milk 14 %. So, buffalo milk influences more yield.

- Yield by using buffalo milk – 17 to 19 %
- Yield by using cow milk – 16 to 18 %

Packaging and Shelf Life

Vegetable parchment paper and polyethylene bags are generally used for paneer. The shelf life of paneer is one day at

room temperature and more than one week in refrigerated storage but loses its freshness after 3 days. Currently, vacuum packaging is widely used in industries to enhance the shelf life up to 21 days by using Ethylene vinyl acetate (EVA), Polyethylene (PE) and Polyamide materials.

Market View

The paneer market in India is reached in INR 75,000 crore in 2020. Looking Forward, expects the market to grow at CAGR (Compound Annual Growth Rate) of 15 % during 2022-2026 period (The Hindu Business Line, 24 Jan 2021). In India, Uttar Pradesh state represents higher market share in paneer production followed by Maharashtra and Rajasthan. Mother Dairy, AMUL, Parag milk foods, VRS food Ltd, GCOMMF operates the prominent role in Paneer Market. In South India, the paneer consumption rate is slowly picking up at the rate of 30 % while in North India at the rate of 10 %. Currently, World's largest fully automated plant for paneer is owned by Milky Mist Dairy, Erode, Tamil Nadu (Times of India, 22 Feb 2022).

Trends In Paneer Sector

Membrane technology is emerging in dairy industries, paneer obtained from UF(Ultrafiltration) membrane concentrated milk have more yield and superior sensory properties. Dehydrated paneer is evolving in the market, which is prepared by drying the

paneer cubes in dryer to reduce the moisture for enhance the shelf life. Soy paneer is prepared by partial or whole replacement of milk, which have high nutritional value and suitable for lactose intolerance people. Low Fat Paneer (using skim milk, additives, lecithin and whey protein isolate) is introduced for obese peoples due to paneer have saturated fatty acids. Ready To Serve paneer containing paneer with masala mixes is trending in market for making convenient to the consumers.

Problems In Paneer Making

Paneer is challenging dairy product because tiny errors can easily spoil the product.

- Major problems encountered in paneer making is lack of refrigeration facility, faulty method of production and quality of milk.
- The shelf life of paneer is quite low and it is easily spoil in one day if refrigerated storage conditions is not available.
- Faulty method of production leads to low yield, hard body, coarse texture, unpleasant flavour and improper integration of paneer curd mass.
- Unhygienic quality of milk causes weak body and sour taste in final product.

Conclusion

Paneer have more nutritional benefits such as source of low carbohydrate and high protein. It contains rich amount of calcium and phosphorus that helps to strengthen the bones and teeth. Higher amount of protein helps to muscle building and brain development for younger age peoples. Apart from this, paneer business is emerging as a profitable venture due to its high demand. Among the dairy products, paneer business has a greater scope in the near future.

