

## Importance of Indian Dairy Products in Human Health

Soumitra Banerjee<sup>1</sup>, Vivek Kumar<sup>1</sup>, Dr. S. L. Shrivastava<sup>2</sup>

*Agricultural and Food Engineering Department,  
Indian Institute of Technology, Kharagpur-721306*

Significant portion of milk produced in India is utilized for production of traditional Indian dairy products. Recent advancements in the field of engineering and technology have helped Indian dairy product sector to grow and take an important place in dairy market. Recent scientific studies indicate that these Indian dairy products are not only delicious but also have certain health benefits and therapeutic values. This review paper gives a brief introduction about different traditional dairy products and their importance to human health. Objective of this paper is to make consumers aware of the beneficial aspects of Indian dairy products that they consume in their day to day life.

### Introduction

India is the largest producer of milk. Food products which contain major portion as milk along with other components may be referred as dairy products. Indian dairy products are those milk products that were originated in India. From ancient Vedic period, the benefits of milk and milk products have been understood. Historical documents suggest that milk and milk products were well known to cure diseases. In Ayurveda milk and milk products are considered to be the curer of diseases especially those associated with mental disorder, i.e. irritability, restlessness, and overexertion. These products also relieve insomnia, calm and sooth the mind (Damodar, 2012). Modern day's research also corroborates the beneficial effects of dairy product consumption.

Till date milk and milk products are given much importance. United States Department of Agriculture (USDA) has clearly mentioned in its Dietary Guidelines to include milk and milk products in the diet.

Major components of milk are water (86-88%), fat (3-5%), protein (3-4%), lactose (4.5-5%) and minerals (0.7%). Beside this milk also contains other minor components like phospholipids, sterols, vitamins, enzymes, pigments etc. Proteins helps for muscle building, energy production and body repair, fat and carbohydrates as major energy source, minerals necessary for teeth, bones and body cells. Vitamins are required for regulation and performing vital actions for body. Proteins present in milk contain all the essential amino acids in fairly large quantity, so milk proteins are referred as complete protein. Milk fat plays significant role in nutritive values. Besides serving as rich source of energy, milk fat also contains significant amount of essential fatty acids. Lactose supplies energy and helps to establish mildly acidic reaction in intestine and facilitates assimilation. Vitamins present in milk are essential for normal growth, health and reproduction of living organisms. Milk is good source of vitamin A, vitamin D, thiamine, riboflavin etc. but milk lacks in vitamin C. (De, 2002)

In dairy products, milk components are present in significant amounts. On consumption of dairy products, these components play important role in maintenance and development of human body besides contributing their therapeutic and other beneficial effects. These roles are described in the present paper associated with different traditional milk products.

### Traditional Indian Milk Products

As defined above, traditional Indian dairy products (TIDP) are those dairy products that originated in India. Dr. W. L. Davies was the first to publish document on TIDP. Now-a- days the value of TIDP is well-known and considerable research is ongoing in National Dairy Research Institutes and other Dairy Food Research facilities. Due to the application of modern technological advancement, there is rapid growth in Indian dairy

<sup>1</sup>Ph. D Scholar

<sup>2</sup> Assistant Professor

product sectors. Due to the rising global demand of good quality TIDP, there is significant improvement in keeping qualities and packaging techniques. Dairy industry today is no more limited within India, but has expanded itself in global market (Aneja et al., 2002). Classification and manufacturing process of TIDP are shown in Fig 1.

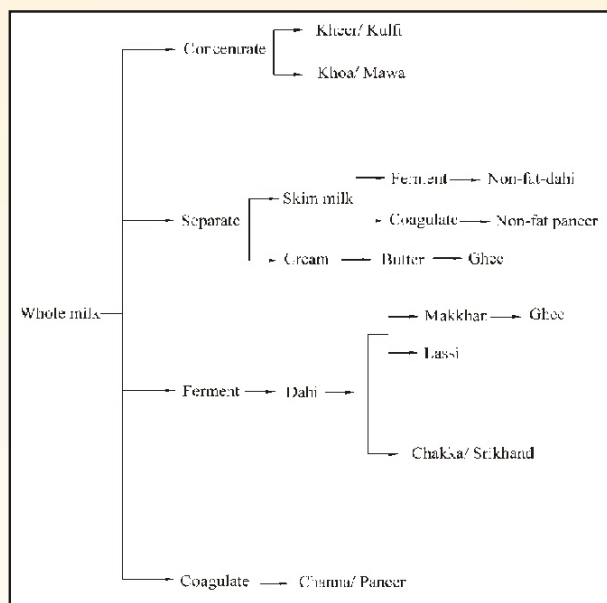


Fig. 1. Traditional Dairy Products Process flow chart (Source: De, 2002)

### Beneficial Effects of Traditional Dairy Products

According to Andersen (2011), food and health are interdependent. Food once consumed gives good health and nutrition to the consumer. Due to consumer’s awareness and understanding of nutritional value of food, there is more demand of foods which are beneficial for bodies and have therapeutic values. Naturally our Indian dairy products contain different healthy components that have therapeutic values present through inherent nature e.g. antiallergenic qualities, osteoporosis prevention, and reduced risk of heart disease, antimicrobial qualities, immune enhancement, anti-diarrhoeal aspects, and alleviation of lactose intolerance etc. Some traditional dairy foods with their therapeutic qualities are described below in sub-paragraphs.

#### Kheer

It is a popular Indian dessert which is made by partial dehydration of whole milk in a shallow pan over a direct fire together with sugar and rice. It is associated with Hindu rituals and often prepared in temples and festive occasions (De, 2002).

According to Ayurveda, kheer is considered to have a cool nourishing effect on human body on consumption that helps to control metabolism. It is also a good source of protein as kheer is served with nuts and dried fruits (Janaka, 2011).

#### Kulfi

It is similar to western dairy product counterpart ice-cream, though it contains more cream and is denser than ice cream. The reason of higher density of kulfi is due to no whipping, which results in solid, dense frozen dessert (Wikipedia, 2012).

Kulfi is good source of energy, as it contains high fat content. It also contains other nutritional values similar to that of ice cream. It is specially liked by children and helps to cool down our body during hot summer.

### **Khoa/ Mawa**

It is a heat desiccated product, which is prepared by partial dehydration of whole milk prepared by continuous heating of milk in karahi over a direct flame, while continuous stirring cum scrapping till it becomes semi solid dough like product (Wikipedia, 2012 and De, 2002).

It is a rich source of vitamin A, D, K, riboflavin, B<sub>2</sub> and calcium. Studies show that, consumption of khoa increases bone density and decreases the risk of osteoporosis. Beside these, it is good source of energy, as it contains high fat and SNF (Solid-not-fat) content (Anonymous [b], 2012).

### **Ghee**

It is the pure clarified fat derived from butter or cream. Similar to clarified butter, ghee is manufactured by heating, melting and cooking of butter and separating the clear golden butter fat from milk solid present in the butter. Ghee has longer shelf life than butter and can be stored in air tight container in room temperature (Alfaro, 2012).

Ghee contains fat, which is a good source of energy. It is observed to improve the growth rate and digestibility. It is a valuable source of fat-soluble vitamins (A, D, E and K), which performs various physiological functions in the body. Ghee is anti-carcinogenic since it contains various anti-carcinogens, such as conjugated linoleic acid (CLA), butyric acid, sphingomyelin, ether lipids and vitamins, which are the most effective to prevent cancers (Booth et al., 1935, Aneja et al. 1990 and Parodi, 1996).

### **Dahi/ Curd**

According to PFA (1976), dahi or curd is the product obtained from pasteurized or boiled milk by souring, natural or otherwise, by lactic acid or other bacterial culture. It is an important fermented dairy product which is used as a base to make other dairy products like lassi and shrikhand.

Dahi is a rich source of protein, calcium, riboflavin, vitamin B6 and vitamin B12 and others. It is reported to have better nutritive value than milk. Lactose-intolerant persons can digest dahi, since the lactose present in milk had got converted to lactic acid by bacterial fermentation. Dahi contains living cultures which are found to have anti-diarrheal mechanism (Wikipedia, 2012).

As reported by Surra (2012), dahi contains good bacteria which help in digestion process. This beneficial bacterium helps to prevent probable cancer and other forms of stomach disorder. It reduces cholesterol level and prevents heart attacks. Curd is a probiotic food whose daily intake brings about the health benefits. The protein in curd is easily digestible in comparison to that found in milk. It is found that a majority of curd is digested for the same time that a quarter of the same quantity of milk is digested.

According to the research conducted, eating curd regularly can improve and strengthen one's deficiency of phosphorus as it is good for people suffering from or at risk of osteoporosis. The research also suggests that sphingo-lipids, conjugated linolenic acid and butyric acid found in curd can cure cancer. As far as curative properties of dahi are concerned, it has nutritive content similar to fresh milk plus metabolites (Verma et al., 2011)

### **Srikhand**

It is a semi-soft sweetish sour fermented dairy product that is made from strained curd, known as chakka. Chakka is mixed to required amount of sugar to get srikhand (De, 2002).

### Lassi

It is the by-product obtained during the churning of curdled whole milk/ curd, for production of makkhan. It is also called chhachh or matha. Lassi is consumed round the year, but most often drunk with ice, in the hot summer months (De, 2002 and Wikipedia).

### Chhana

It is the milk solids obtained by acid coagulation of boiled hot whole milk and subsequent drainage of whey. Acid commonly used for coagulation are lactic or citric acid, both in natural and chemical form.

It is a rich source of calcium, which prevents osteoporosis and builds strong bones and teeth. It is a rich source of protein. It reduces cancer risk and according to Ayurveda, it prevents stomach problems. Chhana provides 25% of total calcium requirement of body (Anonymous [a], 2012).

### Conclusion

There is rising demand for traditional Indian dairy products due to recent development in technological advancement and increasing shelf life. The product manufactured now-a-days remains no longer bounded in limited area but gets a wider market e.g. canned rasogolla, desi ghee and other similar delicious mouth watering dairy products. Due to recent research findings about the therapeutic and beneficial values of TIDP consumption, it can be estimated that, there will be rise in demand from diet conscious sector of consumers, both from India and abroad. As described in this paper, more or less every dairy product has certain beneficial roles. But as requirement of our body differs from human to human, so the food requirement also varies. We should keep in mind that health and diet are interlinked with each other. It is recommended to the consumers to consume according to the requirement, else either the food gets wasted or acts negatively in our body.

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Dr. S. L. Shrivastava



Soumitra Banerjee



Vivek Kumar