CHAPTER - I

INTRODUCTION
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People all over the world depend on milk as an important source of nutrition. It has been recognized as the most wholesome and complete single food available in nature for health and as a medicine, both preventive as well as curative. Ancient chronicles as recorded in the Upanishads, Puranas and Vedas extol the beneficial and therapeutic properties of milk and milk products. It has been stated in these scriptures that cow’s milk, curd and ghee impart knowledge and radiance, cure heart trouble and anemia besides other bodily diseases. Modern science with the help of sophisticated analytical techniques and tools, seem to be discovering the age-old wisdom on dairy products described in these ancient sacred texts.

Milk provides excellent support towards human nutrition, as it contains balanced quantities of required nutrients such as protein, fat, carbohydrate, minerals and vitamins. Recent research in the areas of biochemistry, nutrition, health and therapy has generated considerable interest in manufacture of probiotic and other health food from milk. Clinical reports have established that there exists a close relationship between the type of food intake, microbial ecological system of the gut and human health.

The growth of world milk production is continuing in 2006 having already been strong in 2005. The quality expected in 2006 is 644 million tons, which compares to 632 million tones in the years 2005 and 543 million tones in 1996. Main areas of growth are china, India and America. The estimated production of milk in India in 2004-05 was 91 million tons projected to increase to 127 million tons by the end of 11th five years plan (Anon 2006)

The term “Indian Dairy Products” refers to the milk products which originated in undivided India. It is estimated that about 50 to 55 percent of milk (approx. 42 million tonnes) produced in India is converted into a variety of traditional milk products, using process such as heat and acid coagulation, heat desiccation and fermentation. (Banerjee, 1997)

Dairy markets in the new millennium are being increasingly shaped by twin strands of globalization and liberalization. The spotlight is on the developing world that
has shown a remarkable growth in the disposable income accompanied by rapid urbanization. The sophisticated consumer today sees foods, particularly dairy products as a means of health and happiness. In the wake of changing eating habits, rising concern for quality and health, the present day dairy processor is being compelled to redefine his operational priorities so as to meet the needs of product diversification and value addition.

Fermentation is used as a method of value addition and conversion of raw materials by microorganisms and enzymes into various types of products with distinct nutritional and sensory properties. Fermented milk products have been reported to have therapeutic, anticholesterotemic, and anticarcinogenic properties beyond their basic nutritive value. They provide important nutrients and are considered superior over non-fermented dairy products in terms of nutritional attributes as the micro flora present, produce simple compounds like lactic acid, amino acid and free fatty acid that are easily assimilable.

Beverages are an integral part of human diet and fermented milk beverages have attracted humans since ages owing to their therapeutic and dietetic properties. Scientific evidence based on clinical trials has revealed many beneficial effects of fermented milk thus carving a definite niche for these products as health foods. There are several principal reasons for the success of fermented dairy products, which relate to nutrition and health, versatility and marketing. Scientific and clinical evidence is also mounting to corroborate the consumer perception of health from fermented milks.

In the Indian subcontinent also, the indigenous dairy products are India’s largest selling and most profitable segment after liquid milk and account for 50 percent of milk utilization. The market for traditional dairy products is valued at more than Rs 250 million (Patil, 2002) of these fermented milk products constitute a major portion. The demand for fermented milk products is increasing in India is used for preparation of traditional fermented milk products such as dahi (curd) lassi (sweetened yoghurt drink like product), chhach (buttermilk) and shrikhand (drained curd added with sugar and flavouring) which figure prominently in people’s diet.
Dahi is an age-old indigenous fermented milk of India and has managed its popularity in Indian diet despite changing lifestyles and food habits. About 6.9 per cent of total milk produced in India is utilized for making dahi intended for direct consumption. The volume of curd and curd products was reported to be 6.0 million tones with a market value of 120 billion rupees (Aneja et. al 2001). In India lassi made out of dahi is a widely consumed traditional fermented milk beverage, popular in all parts of the country and has a great potential in the domestic as well as overseas markets. Lassi is a nutritious, refreshing, delicious and easily digestible beverage. The value of lassi obtained while ghee making (90000 tonnes per annum) is Rs. 25000 million (Anon 1997). Those who don’t relish milk due to lactose intolerance, for them lassi is an alternative vehicle to relish the nature’s wonder food “milk”

Cultured buttermilk is economical, delicious and healthful. It is also an ideal beverage for weight watchers. It is so easy to digest that people with poor appetite can readily assimilate it. Cultured buttermilk has a high nutritive and therapeutic value. It is a good source of protein, riboflavin and calcium. Those with digestive problem are often advised to drink buttermilk rather than milk as it is more quickly digested. Many bakers use cultured buttermilk in biscuits, pancakes and other similar product because of the tangy flavour it imparts. Consumers need to be careful with cultured buttermilk because it is a soured product. Although harmful bacteria should not be able to thrive in it, if the flavour is slightly off, it is better to dispose of the buttermilk than to experience minor gastrointestinal distress as the result of bacteria or molds (Sinha and Sinha, 2000)

Maize (Zea mays L.) is an important coarse grain cereal crop holding third position in world production next to wheat and paddy. The pre-eminence of corn is due to its wide diversity of uses and highly useful products into which it can easily be transformed. Maize was domesticated in Central America 6,000 to 10,000 years ago. It spread to the rest of the world in the 16th to 18th centuries. (FAO 1992 and CIMMYT, 1997)

Maize is a major cereal crop for both livestock feed and human nutrition, world wide. With its high content of carbohydrates, fats, proteins, some of the important vitamins and minerals, maize acquired well deserved reputation as a poor man’s
nutricereal’. Several million people, particularly in the developing countries, derive their protein and calorie requirements from maize (Prasanna et. al 2001). The typical corn kernel (Zea mays L.) contains approximately 70-73 percent starch, 9-10 percent protein, 4-5 percent fat, 1-2 percent ash, 2 percent sugar and 3 percent crude fibre (UNIDO, 1986).

Maize crop has a special place in Indian agriculture and is staple food of people of Utter Pradesh, Punjab, Rajasthan, especially for low socio economic group (Deosthale and Pant, 1971; Reddy et. al 1991). Maize is consumed mainly in the form of roti, sattu, dalia, phullae, etc. in India. It is used also as an important industrial ingredient for the manufacture of starch, glucose – syrup, dextrose, high fructose syrup, industrial alcohol, beer and whisky (Bhat and Puri, 1971). Maize flour is also used for the manufacture of cereal products, snack foods, cornflakes, instant foods, biscuits, wafers, crackers supplementary foods etc (Kent, 1976).

Cornflakes are a popular breakfast cereal originally manufactured by kellogg’s through the treatment of corn (maize). A patient for the product was filed on May 31, 1895 and issued of April 14 1896. (Wikipedia, 2007)

Recent findings reveal that one third males and half the females in urban areas are suffering from obesity in India. In addition, India is reported to have 40 million diabetics, the highest in any country and current trends indicate that this silent killer would hit a whopping 57 million lives in India by 2025 (Anon, 2002a). Health awareness around the globe has led to on increasing demand for low calorie products in all food categories (Lotz and Bagley. 1991) and promotion of added-value products such as probiotic and other functional yoghurts, reduced fat and enriched milk products and fermented dairy drinks and organic cheese. The addition of non-nutritive artificial sweeteners in fermented beverages would not only help diabetic or obese people but also aid product diversification and enhance the market place.

Fermented milks like yoghurt, dahi, lassi and buttermilk are well known for there therapeutic properties more over, in the use of chemicals in their foods and beverages because of potential health risks.
Processed convenient food have right place in the diets of urbanized people, due to change in life style, and purchasing power especially among urban population has necessitated the research efforts for formulating ready-to-use fermented dairy drink with added convenience, enhanced shelf life, and added nutritive value with attractive packaging. Corn flakes used in preparation of low fat fermented dairy drink are very nutritious and low cost fermented dairy drink, Milk is an important source of nutrient like protein, fat, carbohydrates, vitamin and minerals, but it is deficient in vitamin C, iron and fibre. Cornflakes contain these nutrients in higher amounts. So nutritive value of fermented dairy drink is increased by addition of corn flakes. Low fat dietetic fermented dairy drink is highly recommended for the people suffering from disease like digestive, heart disease, diabetes, obesity as well as old age people.

The present research work “Development of low fat dietetic fermented dairy drink” was conducted with the following objectives.

1) To develop suitable technology for preparation of dietetic fermented dairy drink.
2) To ascertain the level of fat in milk suitable for the production of dietetic fermented dairy drink.
3) To study the effect of level of cereals on the quality of dietetic fermented dairy drink.
4) To evaluate the organoleptic quality, chemical quality, microbiological quality and energy value of dietetic fermented dairy drink.
5) To work out the cost of the product.