INTRODUCTION

The importance of milk and milk products has been recognized since Vedic times. A lion’s share of milk is converted into indigenous milk products by the traditional method. The inherent simplicity of the traditional technology enables its easy transfer to the talks of average calibre. Further, the characteristic features of this cottage level technology involve the application and simple equipment, low-grade energy sources and simple process control concepts. The small-scale technology is beneficial in the initial stage of dairy development when the milk production and procurement are low. However, as the level of operation gets increased the small-scale technology should make place for modern dairy processing facilities capable of handling a large volume of milk.

Milk food delicacies make the movement of milk possible over long distances without any heavy investment in plant and equipment. Milk sweets are generally popular among all the communities in the country. Moreover, dietary patterns and preferences are so infix deeply that consumers do not hesitate to pay substantial price for milk sweets. The manufacture and consumption of milk based sweets therefore, achieve the objectives of not only making use of the intrinsic nutritional values of milk but also its extra value as a supplement to other deficient foods. Current market trends indicate that consumers prefer to pay higher price for ready-made milk products than the liquid milk.

Gulabjamun in India is characterized by an unorganized nature of business. There is no denying the fact that indigenous products have come to stay as a vital fibre in the fabric of the country’s dairy industry. Obviously, the indigenous products have a big potential of becoming the main stay of the emerging dairy industry under the
organized sector and technological developments in their production will have far-reaching implication on it.

Gulabjamun refers to the indigenous dairy product. Almost all the states of the country use Gulabjamun as one of the essential and most commonly consumed sweet. Different states using different shapes and size of Gulabjamun viz; cylindrical, oval and spherical, but most commonly found shape is spherical.

As defined by FSSAI, khoa is an indigenous milk product obtained from cow or buffalo milk or a combination thereof by rapid drying. The milk fat content shall not be less than 30 per cent on dry matter basis of the finished product. Dhap khoa having 40 -45 per cent moisture is normally used for its preparation. Like other sweets, the manufacture of Gulabjamun is also largely in the hands of halwai who adopt small scale batch method. Though there is large variation in the sensory quality of Gulabjamun, the most liked product should have brown colour, spherical shape, soft and slightly spongy body free from lumps and hard central core, uniform granular texture, mildly cooked and oily flavour, free from doughy feel and fully succulent with sugar syrup. It shall have optimum sweetness. The gross chemical composition of Gulabjamun varies widely depending on numerous factors, such as composition and quality of khoa, proportion of ingredients, sugar syrup concentration, etc.

The composition of Gulabjamun, on the drained weight basis, varies in the following range: moisture 25 – 35 percent, fat 8.5 -10.5 per cent, protein 6 – 7.6 per cent, ash 0.9 – 1.0 per cent and total carbohydrates 43 – 48 per cent. In Gulabjamun manufacture, dipping in sugar syrup is a key unit operation. This gives not only its characteristic sweetness but also its typical texture. The characteristic sweetness is only due to the diffusion of sugar syrup into fried Gulabjamun balls. Hence the diffusion is one of the key processes taking place in Gulabjamun manufacture.
There has been laudable increase in milk production in India during the post-independence era. It has increased more than four folds, from 74 million tonnes during 1998 to 1048 million tonnes during 2008. Despite several efforts to increase the milk production, the per capita availability of milk still remains less than the minimum nutritional requirement. As a result, there is a widespread protein malnutrition in the poorer strata of the society on the other hand, consciousness to the high milk fat intake has become apparent due to increasing occurrence of the coronary complications. Under these circumstances, utilization of milk solids (like SMP) offers great promise to boost Gulabjamun production on one hand and to lower its cost of production on the other hand. Researchers and medical boards have considered that milk fat is more saturated as compared to vegetable fats containing PUFA. Excessive fat (saturated) intake is a major causative factor of high blood pressure, coronary heart disease and has been linked to a number of other disorders as well. High intake of fat increases risk of heart attack because of high proportions of saturated fats in the diet. In view of the increasing occurrence of coronary complications, there is considerable interest to replace the milk fat in Gulabjamun with vegetable fat.

Among the milk-based sweets, Gulabjamun occupies a prominent place as a delicacy. The shelf-life of Gulabjamun conventionally prepared from Khoa hardly exceeds one week at ambient temperature. Considerable variations are observed in the textural and compositional properties of the sweet sold in the market, as a consequence of varying quality of raw material and techniques used in the preparations. Hence, in view of the growing demands for Gulabjamun, the methods for manufacture, packaging and storage should be standardized. There is also a great need for developing the sensory standards for the various traditional milk delicacies. The present investigation was planned with a view to standardize the process for production of Gulabjamun mix from Spray and Drum dried Skim milk powder that could easily be used both at household and industrial levels.
The formulated Gulabjamun mix will meet the consumers’ requirement at festivals and other occasions. Consequently many Gulabjamun mixes have been developed in recent years. Most of the Gulabjamun mixes sold in the market are governed by the patent regulation and the general public is not aware of their recipes and compositions.

JUSTIFICATION OF PROPOSED STUDY

The method of preparation and the fame of ethnic dairy foods are region specific. Gulabjamun is one of such ethnic foods which are choice of millions as a delicacy across the country. Traditionally, it is prepared from the admixture of khoa, maida and baking powder. Traditional method of Gulabjamun making has several limitations such as non-availability of khoa all the year round, variation in its quality and the resultant sweet is of poor shelf-life.

Dried milk products offer the benefits of enhanced quality, substantial economy in storage space and reduced transportation cost. The proposed formulation may promote the utilization of surplus milk powder for Gulabjamun making and help to eliminate most of the problems associated with the traditional methods of preparation of milk sweets. This investigation was planned with a view to standardize the process for production of Gulabjamun mix using spray and drum dried skim milk powder, which lead to the production of better quality Gulabjamun. The addition of vegetable protein and lipids in the form of wheat flour (semolina & maida) improve the nutritional value of native milk proteins. Gulabjamun mix may provide low cost and high quality sweet.

The present research work “Process Standardization for Preparation of Gulabjamun Mix by using Spray and Drum Dried Skim Milk” was undertaken with the following objectives:-
Objectives:

- To standardize the process to formulate Gulabjamun mix from Spray and Drum dried skim milk with other ingredients.

- To study sensory characteristics of the Gulabjamun prepared from the formulated mix.

- To study the chemical and microbiological properties of the formulated mix.

- To estimate the cost of production of formulated Gulabjamun mix.