



# SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)



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## UNIT-IV CONFECTIONERY PRODUCTS

### **Definition, importance of sugar confectionery. General technical aspects of industrial sugar confectionery manufacture - compositional effects**

#### **Introduction**

Confectionery is an important food item of great popularity among wide range of population. It has been enjoyed as a major food delicacy from ancient times. The term confectionery is ambiguous and describes a spectrum of sweet goods and takes on different meaning depending on the country in which it is used, for example in the United Kingdom the term applies to any sweet product including cakes. In the United States confectionery is candy and includes sugar confectionery and chocolate confectionery. Globally, confectionery foods represent 50% by volume of foods produced and 60% by value. The Indian confectionery market is estimated to be 1,38,000 metric tonnes (in 2005) and is segmented into sugar-boiled confectionery, chocolates, mints and chewing gums. Sugar-boiled confectionery consisting of hard-boiled candy, toffees and other sugar-based candies, is the largest of the segments and it is valued at around Rs. 20,000 million. Some of the largest companies active in the confectionery sector are Cadbury, Nestle and Perfetti. In India, confectionery foods are worth Rs.2,250 Crore with an annual growth rate of 2%.

#### **Confectionery Production Principles**

All confectionery products have a number of common requirements. They must have an extended shelf life under ambient storage conditions and although this may be assisted by protective packaging their inherent properties must provide stability against microbial deterioration and stability of shape. In sugar confectionery, shelf life is achieved by reducing water activity through control of the composition and RH during storage. Stability of the shape is aided by the inclusion of ingredients such as gelling agents or fats which create structure and prevent flow during storage.

By formation of a gloss as in hard boiled sweets, toffee and nougat or by allowing crystal growth as in fondant creams. Also, soft or liquid centres may be held firm by being enclosed within a rigid shell.

## General Technical Aspects of Industrial Confectionery Manufacture

The successful manufacture of sugar confectionery products is dependent on a limited but key group of physical and chemical changes which influence recipe composition and methods of production. To development of desirable qualities in sugar confections and in particular good shelf life, fine eating qualities and desirable flavouring. The development of quality in confectionery dependent on following six factors: 1) Compositional effects 2) Change of composition 3) Change of state 4) Environmental behaviour 5) Evaporation 6) Sweetness or acidity

Compositional effects: The composition of recipe for the manufacture of sugar confections based on the use of carbohydrates, fats, thickeners and stabilizers and also proteins.

### Sugars

conventional products. This change produces a large absorptive capacity whilst still remaining stable under normal environmental conditions.

**Glucose syrup:** It is a mixture of various carbohydrates held in water and is manufactured by utilizing the break down of starch when treated by acids or enzymes under control conditions. The hydrolysis process is followed by a series of purifications stages. The syrup when produced from corn starch called as corn syrup.

**Speciality starch syrups:** The most interesting starch syrup is high fructose starch syrup (HFCS or HFCS). This is produced by a further tranche of treatments on conventional glucose syrup using enzymes such as alpha amylase, glucoamylase and glucose isomerase. Around two-fifths of the sugars present in the syrup are fructose, the sweetest of all common sugars.

A further range of syrups has been developed by the selective hydrogenation of the base syrup in the presence of suitable catalyst. The resulting products are sweeter and have a reduced tendency to crystallize. The second class of speciality syrups is high maltose syrups in which maltose can be present at level of up to 60 degree. These are prepared by the use of selective amylase and contain a mixture of alpha and beta maltose. Powder isomaltitol is also high in maltose and is produced by the enzymic conversion of sucrose.

**Invert sugar:** It is not a pure sugar but a mixture of dextrose and fructose formed when sucrose is broken down in to two simpler sugars. To break down in to products water is essential feature for reaction. And also ply dextrose, sorbitol, xylitol, mannitol, lactose hydrolysates, lactic acid, with these and also intense sweeteners effect the composition of confections.

**Thickeners and stabilizers:** These are also known as gelling agents to sugar confections. These are gelatin, agar agar, pectin, starch and gums. Some of these products are extremely complicated in structural terms. Gelatin for example contain proline, arginine and hydroxy proline. Pectin contains a high no. of galacturonic acids units in the form of methyl esters. The degree of esterification controls the rate and quality of the gel produced using the pectin. The rapid set pectins have esterification levels of 75%, while slow set pectin's only 50%. These are mainly to improve resistance to water attack from atmospheric deposition and resistance to graining by inhibiting crystallization.

**Proteins:** The final class of base materials in the production of sweetmeats is proteins. The presence of proteins in a recipe can give rise to one of the major chemical reactions which takes place during the productions of sugar confections the proteins are those found in milk and used in the manufacture of caramel. Caramel have a considerable resistance to deformation flow or deformation can still occur, particularly at the ends of each cut piece (deformation piece) of

confection this effect is due to the internal structure of the product which can be visualized as a product with sectional layers sliding under shear forces, this force is due to viscosity contributed by the reaction between milk protein and reducing sugars and to the level of fat present in the confection. The textural responses mainly by the viscosity of the product.