Glossory

Milk: Milk may be defined as the whole fresh clean lacteal secretion obtained by the complete milking of one or more healthy milch animals, excluding that obtained within fifteen days before or five days after calving or such periods as may be necessary to render the milk practically collostrum free and containing the minimum prescribed percentages of milk fat and milk solids not fat.

Casein: Casein is component of milk protein. It forms more than 80 percent of the total protein in milk. Casein itself is composed of α, β, γ fractions. α-casein is the component in casein micelle that is responsible for the stabilization of the micelle in milk. α-casein is composed of at least two sub-fractions, viz., αs_1-casein also called 'calcium sensitive casein' precipitable by calcium-ion under certain conditions and K- casein, also called calcium insensitive casein, not precipitable by calcium ion.

Pre-heating: Pre-heating of milk refers to heating before the operation which follows immediately. The usual temperature of pre-heating is 35-40^{O}C, and the equipment used may be a plate or tubular heater.

Filtration: Filtration removes dirt, dust, suspended and foreign particles by the straining process.

Cooling: Milk is generally chilled to 5^{O}C or below and stored cool till it is used, to prevent deterioration in its bacteriological quality.

Standardization: Standardization of milk refers to adjustment of fat and solid-not-fat of milk to fulfill the legal requirements before sale.

Bactofugation: It is a process of removing microorganisms, particularly bacterial spores, from milk by means of a centrifugal machine called 'bactofuge', which is essentially a high-speed clarifier.

Bactotherm: It is a process in which the 'bactofugate' (the bacterial mass entrained in milk protein getting collected in the sludge space of a bactofuge) is subjected to a high heat treatment (130-140 ^{O}C for 3- 4 sec) and then remixed with the milk.

Clarification: It is a process of removing insoluble extraneous matter such as dirt particles, somatic cells (or, blood cells), etc. from milk by using a clarifier', which is a centrifugal machine similar to a cream separator but having only one outlet i.e.

the one for the clarified milk.

Clarifier sludge: It is the semi-solid impurities separating from milk and getting collected in the sludge space of a clarifier bowl. It primarily comprises dust particles, leucocytes, microorganisms and milk protein.

Filtration: It refers to removal of extraneous impurities such as hair pieces, dust, dirt, insects, cell debris, etc. from raw milk by passing it through a filler-bag usually placed in-line during milk processing.

Solids-not-fat: The solids (or constituents) in milk other than fat are called SNF. These include milk protein, lactose and minerals (or, ash).

Standardization: It is the process whereby the composition of milk (in terms of fat, or both fat and SNF) is adjusted to a predetermined level.

Emulsion: It is a colloid in which both phases are liquids. Milk is an “oil-in-water emulsion”.

Lipases: They are the group of enzymes that catalyze the hydrolysis of fats into glycerol and fatty acids. Lipases are naturally present in milk and heat resistant lipases are liberated by psychrotrophs.

Phospholipids: A class of molecules containing a polar head group that contain phosphorus atom and two non-polar hydrocarbon chains. There are many phospholipids due to the various possible types of head groups and hydrocarbon chains of different lengths. The major lipids in milk fat are trigylcerides, which are composed of three fatty acids covalently bound to a glycerol molecule by ester bonds. The remainder of the lipid fraction (~2% of the total) is phospholipids, diglycerides and cholesterol. Milk fat globule membrane is rich in phospholipids

Suspension: It is a mixture of two substances, one of which is finely divided and dispersed in the other. A suspension is different from a colloid or solution. Particles in a suspension are larger than those in colloids or solutions; they are visible under a microscope, and some can be seen with the naked eye. Particles in a suspension precipitate if the suspension is allowed to stand undisturbed.

D-value: It is time in minutes required for one log or 90% reduction of specific microbial population under specified lethal condition viz. constant temperature.

Fo- Value: It is sterilization value. One minute at 121.1 ^{O}C or an equivalent amount of heat is defined as one unit of Fo.

Homogenization: It refers to a process in which milk is subjected to high shear at a temperature, which is above the melting point of the fat. Milk fat, which varies from 1 to 10

micron in size, are broken down into smaller particles and remain dispersed so that they don't rise to the top.

Pasteurization: It is a processing treatment named after the inventor Luis Pasteur that requires milk to be heated to 63 ^{O}C /30 min or 71.7 ^{O}C /15 sec so that all pathogenic organisms are destroyed. Minimum time and temperature conditions are based on the requirements for the destruction of the most heat resistant pathogenic microorganism present in milk i.e. Coxelliae burnettii and Mycobacterium tuberculosis.

Sterilization: It is a process by which all microorganisms present in milk (both vegetative and spores) are destroyed or are rendered incapable of growth so that milk can be stored for longer period without refrigeration. Sterilization of milk refers to subjecting milk to heat treatment at more than 100 ^{O}C for sufficient period of time, so as to destroy almost all spoilage causing microorganisms