SUMMARY

Sugar is the generalized name for sweet, short-chain, soluble carbohydrates many of which are used in food. They are composed of carbon, hydrogen, and oxygen. There are various types of sugar derived from different sources. Simple sugars are called monosaccharides and include glucose (also known as dextrose), fructose, and galactose. The table or granulated sugar most customarily used in food is sucrose a disaccharide ($C_{12}H_{22}O_{11}$). Other disaccharides include maltose and lactose. Sucrose (raw sugar) is found in the tissues of most plants, but is present in sufficient concentrations only in sugar beet (beta vulgaris) and sugarcane (Saccharum spp.) The refining of raw sugar removes unwanted tastes and results in refined or white sugar. The first stage of refining is known as affination and involves immersing the sugar crystals in concentrated syrup that softens and removes the sticky brown coating without dissolving them. The crystals are then separated from the liquor and dissolved in water. The resulting syrup is treated either by a carbonatation or by a phosphatation process. Both involve the precipitation of a fine solid in the syrup and when this is filtered out, many of the impurities are removed at the same time. Removal of color is achieved by using either a granular activated carbon or an ion-exchange resin . The sugar syrup is concentrated by boiling and then cooled and seeded with sugar crystals, causing the sugar to crystallize out. The liquor is spun off in a centrifuge and the white crystals are dried in hot air and ready to be packaged or used. The International Commission for Uniform Methods of Sugar Analysis sets standards for the measurement of the purity of refined sugar, known as ICUMSA numbers; lower numbers indicate a higher level of purity in the refined sugar. Refined sugar is widely used for industrial needs for higher quality. Refined sugar is purer (ICUMSA below 300) than raw sugar (ICUMSA over 1,500).