SUMMARY

Animal health, hide, viscera, feces, oral microflora and carcass handling are all potential sources of cross contamination of sterile muscle during slaughter and dressing operations. Meat can be preserved by discouraging the growth of microorganisms by controlling temperature of meat. Chilling is a process of cooling meat while the meat remains above its freezing temperature. Low temperatures retard microbial growth, enzymatic and chemical reactions, which are responsible for spoilage. Chilling of meat is achieved by mechanical chilling (blowing cold air on meat in a room) or by placing packed meat in contact with ice and salts. Freezing is a process of removing heat so that the water in meat is converted in to ice. Air - blast freezer and contact plate freezers are commercially used for freezing meat. In cryogenic freezing, the liquid nitrogen, carbon dioxide or freon (chlorofluorocarbon compounds) are used as freezants by directly spraying on to the meat to be frozen. Temperature range of - 18 to - 23 °C has been recognized as ideal for storage of meat and products. Thawing, the reverse process of freezing, involves the melting of ice in the frozen product, by absorption of heat from external source. Removal of water from meat by sublimation is referred to as freeze dehydration.

Holding of carcass / meat at chill temperature (also called as ageing of meat) tenderizes meat, which is caused by the activity of proteolytic enzymes present in muscle. Discrete ice crystals formed in meat during freezing can cause mechanical damage to cell membranes and the concentration of solutes in to unfrozen portion of the meat during the freezing process. These changes will denature proteins resulting in to greater drip loss during thawing, which is unattractive to the consumers. Freezing and thawing do not have much adverse effect on cooked color, flavor, odor or juiciness of meat. Most nutrients are retained during freezing and subsequent frozen storage. Some soluble proteins may be lost during thawing.