

SUMMARY

Irradiation process ensures microbiological safety of meat and meat products. The radiation sensitivity of microbes is affected by the extrinsic environment including atmosphere, temperature and intrinsic characteristics such as pH and chemical composition of the product. Formation of ion pairs, free radicals, reaction of free radicals with other molecules, recombination of free radicals and related physical and chemical phenomena provide mechanisms by which microorganisms and food constituents are altered during irradiation. These changes are responsible for preservation of foods. Radurisation, radicidation and radappertisation are different irradiation processes depending on radiation dosages used to irradiate meat and meat products.

Bacterial spores are more resistant to the germicidal action of ionizing radiations than are the vegetative cells. Most food enzymes are more resistant to ionizing radiations than even the spores of bacteria. Very high radiation dosage required for inactivation of enzymes destroys food constituents and impairs safety of food. For these reasons, irradiation alone is not suitable for food stability. Hence combination of processes is employed. Enzymes are more easily inactivated by heat (even blanching) and by certain chemicals. Low temperature, modified atmospheres, mild thermal treatment, vacuum packing in combination with irradiation can ensure minimum changes in physico – chemical, biochemical and sensory quality attributes and provide better quality meat product.