

Microbial Contamination of Beef and Beef Products

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Beef provide an animal protein of high biological value for consumers at all ages, where they contain all the essential amino acids required for growth. Moreover, beef is good source of different types of vitamins as niacin, riboflavin, thiamine and ascorbic acid as well as sodium, calcium, iron, phosphorus, sulpher and iodine.

The intact tissues of healthy slaughtered birds cattle are mostly sterile but, the meat may be contaminated during processing from the hands, worker's clothes, knives, hide, gut or from the environment resulting in an underling or even unfit quality for human consumption. Contaminated Beef may compose a public health hazard.

Beef and beef products are very popular food throughout the world since they are delicious and nutritious food, characterized by good flavor.

Microbial contamination of beef and their cuts are a natural result of different procedures necessary to produce retail products from living cattle. Contamination of beef products may be occurred throughout initial processing, packaging and storage until the product is sufficiently cooked and consumed. Heavy bacterial loads enter the processing operations with the living cattle and these bacteria can be disseminated throughout the plant during processing.

Beef is an important source of animal protein so its consumption is increased.

Cattle contamination mostly occur during slaughter and processing procedure due to contact of carcass mainly with intestinal content.

Presence of large numbers of microorganisms in raw meat, there will be changes such that it becomes unappealing and unsuitable for human

consumption.

Various hazards kinds of microorganisms from different sources starting from the cattle carcass itself and throughout the processing plant contaminated meat and its products.

Fresh carcasses have higher coli forms, faecal coliforms, *E. coli* and *Staph. Aureus* count than the frozen one. Lack of sanitary measures in traditional meat shops lead to contamination of cattle carcasses as cross contamination occurs during processing.

Total aerobic plate count is used as indicator for bacterial population on the sample but not differentiate types of bacteria.

Aerobic plate counts can be useful to indicate quality, shelf life.

Enterobacteriaceae count may be used as indicator for enteric contamination and as assessment of the general hygienic status of food product.

Sources of coliforms in meat are soiled hands, knives used for cutting and contaminated water. Fecal coli forms had been used as indicator for fecal contamination.

Escherichia coli is very important indicator for fecal contamination and its presence in beef reveal to improper sanitation.

Salmonella reported as the most frequent food born pathogen worldwide. Also *Salmonella* microorganism may be going under multiplication steps along food chain, which consists of production, processing, distribution, marketing, handling and preparation.

Staph. Aureus presence in beef indicate non-hygienic habits during slaughtering, contamination with intestinal contents or skin of the carcass and through contaminated knives. *Staph. Aureus* bacteria can be killed by cooking of the beef products but its enterotoxins are heat-stable.