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7. RECOMMENDATION

The contaminations occur in an abattoir are derived from the animals entering it as well as from the procedures of slaughter and carcass dressing.

The accumulation of animals in lariages further increases the possibility of carcass contamination unless strict attention is paid to cleanliness and the avoidance of over crowding, while some resting of animals prior to slaughter is essential for the production of a high quality end product.

Inside the meat plant, bacteria are spread by contact with personnel, clothing, surfaces and equipments. So the following precautions must be taken to produce meat of high keeping quality.

1. Concerning the construction of the abattoir:
 - a. Walls should be build from stone and covered internally by glazed tiles to be easily cleaned and disinfected.
 - b. Floor should be hard, impervious and sloping to the direction of gutter.
 - c. Slaughterhouse should have a good drainage system.
2. Cleaning operation
 - a. The cleaning of every thing in the abattoir must be with potable water.
 - b. The use of high impact water pressure is necessary for dissolving dirties.

- c. The temperature of water used for cleaning must not less than 60 ° C.

3. Employee training

- a. High standard personal hygiene and responsibility towards cleanliness in the employees themselves.
- b. All employee should have medical certificate and must be subjected for training program of hygiene and for periodic medical examination.

4. The preparation of slaughter

- a. Like sheep and cattle, buffaloes are usually selected from farms or sale yards by livestock buyers and trucked to the slaughter plant. Transport and general stock handling should be of high standard to minimize bruising and avoid excitement. On arrival at a slaughter plant, buffaloes are unloaded into paved yards, which may or may not be covered, and held (as in some) countries for 24 hours prior to slaughter. This holding time assists in emptying of the paunch and allowing time for buffaloes to rest.
- b. Dirty stock must be washed.
- c. Objective sanitation
 - i. Visual hygiene: freedom from obvious dirt.
 - ii. Chemical hygiene: no residues of cleaning compounds.
 - iii. Microbiological hygiene: freedom from potential pathogens. The use of HACCP system will be of value in determining possible hazards.

5. Injury of the intestinal tract during evisceration process should be avoided and if it is accidentally done should be quickly hygienically disposed.
6. Rapid hygienic disposal of the intestine and rumenal contents.
7. Carcasses should be kept away of slaughterhouse floor during the dressing operation.
8. Proper ventilation in refrigeration storage rooms is necessary where circulating air may dry the surface of carcasses and containers.
9. Periodical cleaning and disinfection of transport vehicles.
10. Periodical inspection of the abattoir building and associated traffics and repairing any abnormal faults appear.

Finally for improving the sanitary status of meat, the hazard analysis critical control points (HACCP) approach should be applied for assessment of microbiological hazard associated with preparation or processing of meat, determination of critical control point at which do control the hazard that have been identified, and establishment of procedures through which critical control points can be monitored (WHO, 1995 and ICMSF, 1996).

The HACCP approach provides the greatest protection for the consumer than any of the other approaches for food safety, including line inspection, sanitary inspections and examination of raw meat for indicator of fecal contamination (Bryan, 1995).

8. SUMMARY

A total of three hundred swabs were taken from 75 buffalo carcasses slaughtered at Cairo abattoir. The swabs were taken from four areas represented by abdomen, round, shoulder and brisket (each of 50 cm²) swab samples were examined bacteriologically for aerobic plate count, Enterobacteriaceae count, coliform count, *Staphylococcus aureus* count and isolation of Salmonellae.

The mean aerobic plate count of abdomen, round, shoulder and brisket were 8×10^5 , 6.3×10^5 , 9.4×10^5 and 1.5×10^5 , respectively.

While the mean Enterobacteriaceae count were 2.7×10^4 , 9.4×10^3 , 1.6×10^4 and 1.5×10^4 in examined samples of abdomen, round, shoulder and brisket, respectively.

Concerning the mean *Staphylococcus aureus* count was 7.5×10^2 , 4.5×10^2 , 6.2×10^2 and 1.5×10^2 , respectively. While coliform MPN/cm² were 1.3×10^2 , 0.4×10^2 , 1.7×10^2 and 2.9×10^2 for abdomen, round, shoulder and brisket, respectively. Salmonellae were found in 6.7%, 1.3%, 18.7%, 2.7% and 7.3%, while *Escherichia coli* was found in 16%, 8%, 20% and 8% for abdomen, round, shoulder and brisket, respectively. Totally Salmonellae were found in 7.3% and *E. coli* was found in 13% of total swab samples.

Serological isolates of Salmonellae were *S. typhimurium* in 4.33%, *S. anatum* in 2%, *S. agona* in 0.66% and *S. montivedeo* in 0.3% of total swab samples while, *E. coli* serotypes isolates were O₅₅:K₅₉ in 4%, O₁₁₁:K₅₈ in 3.33%, O₂₆:K₆₆ in 2.33%, O₁₁₉:K₆₉ in 2% and O₄₄:K₇₄ in 1.33%.

The public health importance of isolated organisms as well as the suggested measures for improving the quality of buffalo carcasses were discussed.