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Conclusion and Recommendations

Form the results obtained, it can be concluded that the poultry carcasses can easily carry large numbers of microorganisms, which affected human health or at least render this meat of low keeping quality. Moreover, antibiotic residues in poultry meat and giblets produce harmful effect on human health and production of resistant strains of bacteria in poultry which pass via the food chains to man.

To improve the sanitary status of poultry carcasses the following recommendations are to be considered:-

6.1. At the farm:

1. Control programs to reduce disease in poultry farms and production of disease free primary flocks through regular vaccination and correct treatment.
2. Identifying and keeping records of disease status and treatment of each poultry flock so the complete history of the flock is known when it reaches the abattoir.
3. Application of biological control procedures, which aim to preventing colonization of microorganisms and replacement of antibiotics by probiotics and prebiotics as growth promoting.
4. As antibiotic residues can be adjusted in the farm therefore there the following approaches are advocated.
 - a- Following FDA, JECFA and CODEX instructions in drug using and limitation of certain antibiotics to be used as growth promotores
 - b- Creation of legislation of compulsory following the rules of withdrawal time of drugs.

- c- Restriction to announced withdrawal time.
- d- Authorization for closing farms or feed factories going on without commitment to perfect rules.
- e- Legislation of veterinarian authorization in supervising animal and poultry farms.

6.2. During transportation:

1. Avoid overcrowding and the crates must be thoroughly cleaned between successive collections to reduced spread of infection.
2. Vehicles, which carry the crated, must also be properly cleaned and disinfected to prevent the transmission of infections.
3. Withdraw feed 4 hours prior of slaughtering to reduce crop and intestinal contents and to reduce the level of contamination.

6.3. At the slaughterhouse:

1. Insurance of slaughtering in official abattoirs for animals and poultry.
2. Construction of specified well equipped labs adjacent to animal or poultry abattoirs capable of carrying drug residues analysis and continuous training of specialists.
3. A high standard of hygiene and sanitation in poultry plant is necessary to minimize contamination including water replacements in scalding, chiller and temperature control.
4. Heavily contaminated parts of carcasses such as feathers and viscera should be hygienically removed and treated.
5. Clean equipments and cleaning surface (cutting boards, plates).

6. Healthy workers and regular medical examinations of all handlers have been advocated.
7. After evisceration, birds are washed and cooled rapidly in clean chilling bath at about 2°C.
8. Preventing direct hand contact with raw poultry during preparation.
9. The final products should be best preserved by wrapping them in oxygen- impermeable plastic bags which are the refrigerated or frozen immediately.
10. Infestation with rodents and insects should be prevented.
11. Application and implementation of Hazard Analysis of Critical Control Point (HACCP) system should be done in most poultry processing plants to ensure food safety and control food borne disease.

6.4. For consumer:

1. Public education programs on safe handling of raw poultry carcasses and avoid cross-contamination between raw poultry, carcasses and cooked food.
2. Public education about factors facilitate growth and multiplication of organisms allowing them to reach a level sufficient to cause illness as:
 - a- Insufficient cooking may allow survival of pathogens in the finished product.
 - b- Inadequate cooking, cooling and reheating.
 - c- Cooked food may be contaminated through contact with raw poultry carcasses or materials such as knives and chopping boards as pathogens grow better in cooked meat than row one for lack of microbial competition and thermal breakdown of tissues.

Summary

80 random samples (40) each of poultry thigh and breast as well as 100 random samples of poultry giblets (20) each of (liver-kidney-heart-spleen and gizzard) were collected from different retail shops in El-Gharbia Governorate. The collected thigh and breast samples were subjected to bacteriological examination as well as determination of pH and antibiotic residues while the giblets were tested only for detection of antibiotic residues.

The bacteriological examination revealed that the mean value of Aerobic plate count of examined chicken thigh was $1.37 \times 10^6 \pm 0.35 \times 10^6$ and $6.26 \times 10^5 \pm 0.19 \times 10^5$ for examined chicken breast.

The mean value of total staphylococci count of examined chicken thigh samples was $8.9 \times 10^3 \pm 0.34 \times 10^3$ and for examined chicken breast samples was $2.7 \times 10^3 \pm 0.17 \times 10^3$ while the incidence of coagulase positive staphylococci in examined chicken thigh and breast samples were 38.7 % and 51.5 % respectively. Other staphylococcus species were detected in 64.5 % and 57.6 % of examined sample respectively.

Furthermore *Salmonella typhimurium* and *Salmonella enteritidis* could be isolated from examined chicken thigh while *Salmonella kentucky* and *Salmonella tshiongwe* could be isolated from examined chicken breast samples.

E. Coli could be isolated from 32.5% and 10% of the examined chicken thigh and breast samples respectively.

E. Coli isolated were serotyped into O₅₅: K₅₉ (B₅), O₈₆: K₆₁ (B₇), O₁₁₉ K₆₉ B₍₁₉₎, O₁₂₄: K₇₂ (B₁₇) and O₁₂₆: K₇₁, (B₁₆) serovers from (13)

samples of thigh muscles while in 4 samples of breast muscles belonged to servars O₈₆:K₆₁ (B₇), O₁₁₉:K₆₉ (B₁₉), O₁₂₄:K₇₂ (B₁₇).

Moreover, enteric bacteria other than *E. Coli* and *Salmonella* could isolated from thigh and breast samples and belonged to *Citrobacter freundii* (20%, 15%), *citrobacter diversus* (15% -5%) *Enterobacter aerogenes* (15%, 35%), *Enterobacter cloacae* (7.5%, 2.5%), *Enterobacter hafnia* (5%, -), *Enterobacter agglomerans* (5 %,-), *Klebsiella ozaenae* (10%, 20%) *klebsiella pneumoniae* (17.5 %, 5%), *proteus mirrabilis* (15%, 12.5%), *proteus morganic* (10 %, 27.5%), *proteus nettgeri* (7.5, -), *proteus vulgaris* (30%, 17.5%), *serratia liquefaciens* (7.5%, 2.5%), *serratia marcescens* (5 %, 5 %) *serratia rabidaea* (5 %, -) respectively.

Determination of pH value declared that the mean value of examined chicken thigh and breast samples were (6.37 ± 0.05), (5.9 ± 0.03) respectively.

Regarding antibiotic residues, 42.5 % and 12.5 % of the examined chicken thigh and breast samples, contained antibiotic residues respectively. Higher incidence of antibiotics residues were detected in poultry giblets, liver (85 %), kidney (80 %) heart (60 %), spleen (75 %) and gizzard (45 %) which considered of a great health hazard problem.

The public health significance of the isolated microorganisms as well as the hazard due to presence of antibiotic residues in poultry meat and giblets were discussed.