

PREVALENCE OF MULTIDRUG RESISTANT (MDR) FOOD BORNE PATHOGENS IN RAW CHICKEN MEAT IN DHAKA CITY, BANGLAESH: AN INCREASING FOOD SAFETY CONCERN

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Executive Summary

Contaminated raw chicken meat is one of the main sources of food borne illnesses and a potential risk of the transmission of zoonotic infections. The present study was performed in order to investigate the prevalence of multidrug resistant (MDR) food borne pathogens in raw chicken meat in Dhaka city, Bangladesh: an increasing food safety concern. A total of 100 meat samples (of which 05 from each market) were collected from randomly selected 20 retail markets of Dhaka city using sterile polythene bags in a view to prevent extraneous contamination. The collected meat samples were then transferred into the laboratory immediate after collection using ice box. Then the samples were processed and inoculated onto nutrient broth and nutrient agar plates for isolation and preserved the stock cultures in agar slant and 20% sterile buffered glycerin. The isolated organisms were identified based on staining, motility, colony morphology and different biochemical tests such as sugar fermentation test, Catalase test, Coagulase test, Methyle red test, Voges-Proskauer test and Indole test according to standard laboratory methods. The isolated bacteria were also subjected to characterize their antibiotic sensitivity. In the present study, it was revealed that 100% of samples were contaminated by at least one species of bacteria belonging to 5 genera such as *Staphylococcus*, *Escherichia coli*, *Salmonella*, *Enterobacter* and *Bacillus*. In the prevalence study, out of total 100 meat samples, 56% were contaminated with *Escherichia coli* whereas 42% were contaminated with Coagulase positive *Staphylococcus* and 36% were *Salmonella* species followed by 20%, 14% and 10% were contaminated with *Enterobacter* species, Coagulase negative *Staphylococcus* and *Bacillus* species respectively. A total of 174 bacteria were isolated and identified from raw chicken meat samples inspected of which 29.89% were *Escherichia coli*, 24.14% were Coagulase positive *Staphylococcus*, 20.69% were *Salmonella* species, 11.49% were *Enterobacter* species, 8.05% were Coagulase negative *Staphylococcus* and 5.75% were *Bacillus* species. The antimicrobial sensitivity tests showed that 96.15% of *Escherichia coli* (50 out of 52), 95.24% of Coagulase positive *Staphylococcus* (40 out of 42) and 86.11% of *Salmonella* (31 out of 36) isolates displayed multidrug resistance phenotypes (resistant to more than two antimicrobial agents). All most all the isolates of *E. coli*, coagulase positive *Staphylococcus* and *Salmonella* were more resistant to tetracycline, amoxicillin, ampicillin and streptomycin whereas less resistant to Ceftriaxone and Cefotaxime. The resistance patterns against azithromycin, ciprofloxacin, chloramphenicol, gentamycin, nalidixic acid and kanamycin were fluctuated from 25% to 71.43% among the isolates. This increasing development of multidrug resistance is alarming for the poultry industry and an increasing food safety concern. Further molecular characterization is prerequisite to detect multidrug resistant genes in order to find out the ways to prevent multidrug resistance properties of food borne pathogens.

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