

STUDIES ON VETERINARY ANTIBIOTIC RESIDUES AND RESISTANCE IN FARM PRODUCES TO ENSURE SAFE AND QUALITY FOOD OF ANIMAL ORIGIN; A SAFE FOOD CONCERN

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Abstract

Antibiotic residues in farm products are widely considered as a significant cause of antibiotic resistance. However, no comprehensive work has been documented to date on this issue in Bangladesh. Therefore, this study aimed to explore residual antibiotics and resultant Antimicrobial Resistance (AMR) in farm produces. A total of 1000 samples (300 meat samples, 300 milk samples and 400 eggs samples) were collected from different parts of the country and analyzed by European Four Plate Techniques, Enzyme-Linked Immunosorbent Assay (ELISA) and Antibiotic Residue E-Reader. Microbial loads in farm produce were determined by conventional cultural methods. Antibiotic resistance of the isolates was determined by Kirby-Bauer disc diffusion method using 10 most commonly used antibiotics in veterinary medicine. As high as 37%, 59% and 75.70% of meat, milk and egg samples, respectively were found qualitatively positive to contain residual antibiotics. Quantitative analyses by ELISA showed that levels of all antibiotics residue except penicillin) in farm produces were below maximum residue limit (MRL). Salmonella, E. coli and Staphylococcus aureus were isolated from most of the samples. Isolated pathogenic organisms had multi drug resistance. The present study findings showed that food of farm origin in Bangladesh contains residual antibiotics though most of them are below the Maximum Residue Limit (MRL). However, still these residual antibiotics may contribute to the development of antibiotic resistance in zoonotic organism that may threaten food safety and public health. Present study revealed that microorganisms are getting resistance against essential antibiotics that in turn might compromise public health in great extent. Therefore, the study suggests to ensure judicious use of antibiotics in all cases.

Keywords: antibiotic resistance, farm products, pathogenic bacterial strains