Comparative Analysis of Extended Spectrum β-Lactamase (ESBL) Producing *Enterobacteriaceae* Isolated from Local and Broiler Chicken Samples in Dhaka City: A Study in Antibiotic Resistance

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Enterobacteriaceae family, a diverse group known to cause infections in both healthcare and community settings. ESBL-producing bacteria pose a significant challenge as they exhibit resistance to commonly prescribed antibiotics. To better understand this resistance mechanism, we focused on isolating and comparing ESBL-producing bacteria from local and broiler chicken samples, as contamination through various sources exacerbates the spread of ESBL infections. Tissue samples including leg, wing, breast, thigh, neck, liver, gizzard, and kidney were collected from a Dhaka-based slaughterhouse. Microbiological analysis utilizing MacConkey agar revealed 16 strains from local chicken and 10 strains from broiler chicken samples. After organism detection test 75% & 80% *Klebsiella spp.* Followed by 25% & 20% *E. coli* were detected from local chicken and Broiler chicken respectively. Further phenotypic and genotypic characterizations were conducted, and the double disk synergy test confirmed ESBL production using Ceftazidime & Cefotaxime (CAZ/CTX ± clavulanic acid). The results indicated that 50% of local chicken strains (8 out of 16) and 40% of broiler chicken strains (4 out of 10) were ESBL producers. Subsequent genetic analysis was done by ESBL-producing genes (*blaCTX-M, blaTEM & blaOXA*). Polymerase Chain Reaction (PCR) followed by gel electrophoresis result revealed that all of the genes present in broiler chicken, while the couple of genes present in local chicken except *blaOXA*. These findings underscore the potential influence of ESBL genes within the food chain on future treatment options for Gram-negative *Enterobacteriaceae* infections. Addressing antibiotic resistance is critical, necessitating the development of strategies to reduce antibiotic usage.

Keywords: Extended-Spectrum β-Lactamase (ESBL), ESBL-producing genes, antibiotic