Molecular Characterization of Multidrug Resistant-Extended Spectrum β -Lactamase Producing Zoonotic *Enterobacter* spp. from Poultry of Bangladesh

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Abstract: *Enterobacter* spp. especially *Enterobacter cloacae* are frequent cause of neonatal sepsis in humans. In this study, the occurrence and characteristics of multidrug resistant-extended-spectrum β -lactamase (MDR-ESBL) producing *Enterobacter* spp. isolated from live and dead poultry of Savar, Bangladesh were investigated. Between May 2009 and June 2011, 106 samples derived from live and dead birds were collected of which 22 presumptive *Enterobacter* isolates were screened through phenotypic (morphological, cultural and biochemical) detection. Antibigram against 10 commonly used antibiotics revealed that all isolates were resistant to Amoxicillin, Ampicillin, Penicillin, and Erythromycin. Furthermore, resistance pattern showed by the isolates were Nitrofurantoin (19, 95%), Gentamycin (11, 55%), Streptomycin (18, 95%), Sulfonamides (13, 65%), Tetracyclines (15, 75%) and Ciprofloxacin (12, 60%). Genetic fingerprinting methods RAPD (randomly amplified polymorphic DNA) and ARDRA (arbitrary ribosomal DNA restriction analysis) distributed the 22 MDR *Enterobacter* into four groups. Three genetically related groups were found to be plasmid free having isolates resistant to 10 antibiotics. One distinct group of *Enterobacter* with four isolates contains a common 2.7 kb plasmid, encoding bla_{TEM1} gene. The genotypically diverse groups belonged to either *Enterobacter cloacae* or *Enterobacter hormaechei* on the basis of 16S rRNA gene sequence analysis indicating their zoonotic potential. The prevalence of MDR-ESBL *Enterobacter* among poultry and its zoonotic relevance implicates not only the poultry but also the consumers and handlers are at risk. Therefore, urgent intervention is required to limit the emergence and spread of these bacteria as well as prudent use of antibiotics among farmers in Bangladesh.

Key words: *Enterobacter* spp., MDR, ESBL, bla_{TEM1}, 16S rRNA gene, Zoonosis.