

TITLE: DETECTION OF EXTENDED SPECTRUM BETA LACTAMASE (ESBL) PRODUCING IN SAMPLES OF BROILERS

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ABSTRACT:

Carbapenem-resistant and ESBL (Extended Spectrum Beta-Lactamases) producing Enterobacteriales are listed as level 1 priority pathogen by The World Health Organization (WHO). The major genes responsible for ESBL production include TEM (*bla*TEM) and CTX-M (*bla*CTX-M). The continuous evolution of the antimicrobial resistance profile is a serious threat to public health by limiting the ability to treat bacterial infections. Furthermore, antimicrobials are the most consumed medicines globally, turning the control of resistance spread into a big challenge in human and veterinary medicine. The present study aimed to evaluate ESBL production in strains from broilers production. A total of 32 Gram-negative pathogens was isolated from the broiler's cloaca. The MALDI-TOF technique identified it as *Escherichia coli* 70% (22/32) and 30% (10/32) as non Enterobacteriales. Presumptive ESBL *E.coli* producers were screened by disk diffusion using: ceftriaxone (CRO; 10µg), cefepime (CPM; 30µg), cefotaxime (CTX; 30µg), ceftazidime (CAZ; 30µg), aztreonam (ATM 30µg), and amoxicillin with clavulanic acid (AMC; 30µg). A combination of CTX and CAZ associated with clavulanate (CLA; 10µg) was used to confirm ESBL producer strains. The genotypic analyses were carried out by PCR, searching the genes: *bla*CTX (862pb) and *bla*TEM(831 bp). PCR confirmed five isolates as ESBL producers, where 80% (4/5) amplified for *bla*TEM gene and 20% (1/5) presented both genes, *bla*CTX and *bla*TEM. The detection of isolates carrying ESBL production genes reinforces the importance of monitoring the animal production environment and confirms the public health risk considering that these animals take part in the food production chain. The research of ESBL producer strains at veterinary scene is crucial to understand its impact in a One Health perspective, improving the control measures to prevent this dissemination.

Keywords: antimicrobial resistance, *Escherichia coli*, One-Health

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