

TITLE: DETECTION OF EXTENDED-SPECTRUM-BETA-LACTAMASE PRODUCED BY ENTEROBACTERIAS FROM BROILERS

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ABSTRACT

Chickens destined for human consumption are able to act as reservoirs of enterobacteria often associated with cellulitis and aerossaculitis, being important the sanitary and microbiological control in the production environment. To have high productivity, the irrational use of antimicrobials as food additive can occur, avoiding possible infections and economic losses to the properties, but contributing to the development of bacterial resistance. Among the mechanisms of resistance to antibiotics in Gram-negative bacteria, the most important is the production of β -lactamases enzymes, such as extended-spectrum β -lactamases (ESBL), which are capable of hydrolyzing cephalosporins of a broad spectrum, being sensitive to β -lactamase inhibitors, such as clavulanic acid. In order to investigate these enzymes, samples were collected from cloaca and trachea of broiler chickens on farms in the mountainous region of Rio de Janeiro in 2016 according to the permission of the Ethics Committee for the Use of Animals, CEUA nº 3664040915. A total of 135 enterobacteria were identified by the MALDI-TOF method. The presumptive detection of β -lactamases was performed through the interpretative reading of the diffusion in agar with β -lactam discs and the isolates suspected of producing ESBL were subjected to the phenotypic confirmatory test using β -lactam antibiotic markers. In the genotypic step, the total bacterial DNA was extracted by means of thermal lysis, followed by the PCR (Polymerase Chain Reaction) technique to detect the 16S rRNA and the ESBL gene *bla*CTX-M. A total of 21,48% of the strains (29/135) were suspected of ESBL production and the confirmatory test indicated 5.18% (7/135) ESBL producer, all *Escherichia coli*. Of these ESBL producer, 85,7% (6/7) presented *bla*CTX-M gene and another 6 *E.coli* ESBL-negative also presented the gene. In the next step, another ESBL genes such as *bla*SHV and *bla*TEM will be tested. The detection of ESBL and *bla*CTX-M in chickens is an alert about the use of feed additives and allows a better understanding of the epidemiological profile of multiresistant enterobacteria, contributing to the maintenance of poultry health and the evaluation of the dissemination of bacterial resistance in the animal production environment. Allowing the development of data that help in understanding the concept of One Health, since it can also affect the human through the consumption of chicken meat.

Keywords: antimicrobial resistance, enterobacteria, one health, polymerase chain react, poultry production

Development Agency: Centro Nacional de Desenvolvimento Científico e Tecnológico – CNPq; Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – CAPES