

TITLE: PHENOTYPIC PROFILE OF ANTIMICROBIAL RESISTANCE OF *ESCHERICHIA COLI* ISOLATES OBTAINED IN A CHICKEN MEAT CHAIN

AUTHORS: SCHMIEDT, J.A.¹; TADIELO, L.E.²; SANTOS, E.A.R.¹; RODRIGUES, C.D.¹; MARGATTO, C.¹; ORISIO, P.H.S.¹; YAMATOGLI, R.S.³; NERO, L.A.³; VIANA, C.⁴⁵; BERSOT, L.S.¹

INSTITUTION: ¹UNIVERSIDADE FEDERAL DO PARANÁ, SETOR PALOTINA, PARANÁ, PR (RUA PIONEIRO, 2153, JARDIM DALLAS, CEP: 85950-000, PALOTINA – PR, BRAZIL);

² UNIVERSIDADE ESTADUAL PAULISTA, CAMPUS DE BOTUCATU (UNESP), FACULDADE DE MEDICINA VETERINÁRIA E ZOOTECNIA (FMVZ), BOTUCATU, SP (DISTRITO DE RUBIÃO JR, SN, CEP 18618-970, BOTUCATU - SÃO PAULO, BRASIL);

³UNIVERSIDADE FEDERAL DE VIÇOSA, VIÇOSA, MG (AV. PH ROLFS S/N, CEP 36.570-900, VIÇOSA – MG, BRAZIL).

⁴UNIVERSIDADE FEDERAL DO PARANÁ, PARANÁ, PR (RUA XV DE NOVEMBRO, 1299 - CENTRO, CURITIBA - PR, 80060-000)

⁵CENTRO UNIVERSITARIO AVANTIS - UNIAPAN (AV. MARGINAL LESTE, 3600 - ESTADOS, BALNEÁRIO CAMBORIÚ - SC, 88339-125)

ABSTRACT:

The inappropriate use of antimicrobials has contributed to the significant increase in antimicrobial resistance (AMR). *E. coli* is a commensal microorganism of the microbiota of animals, humans and environment, having the easiness of acquisition and transference of resistance genes to other bacteria, being a relevant indicator of AMR. Therefore, the objective of this work was to evaluate the phenotypic profile of AMR of *E. coli* isolates obtained from samples of the broiler chain. 495 samples were collected in a poultry slaughterhouse regularly inspected by the Federal Inspection Service, in the State of Paraná, Brazil. *E. coli* isolation was performed on MacConkey agar and colonies with typical *E. coli* morphology were confirmed by biochemical tests. Confirmed isolates were evaluated using the agar dilution method, according to the *Clinical and Laboratory Standards Institute* (CLSI), for the following antimicrobials: amoxicillin - AMO (32 µg), ceftiofur - CTF (8 µg), chloramphenicol - CLO (32 µg), tetracycline - TET (16 µg), ciprofloxacin - CIP (1 µg) and sulfametaxazol + trimethoprim - SUT (76/4 µg). *E. coli* isolates resistant to more than three classes of antimicrobials were classified as multidrug-resistant (MDR). A total of 1.128 isolates were obtained from chicken carcass samples after bleeding, after plucking, after evisceration and after the chiller step, scalding waste water and chiller, poultry transport box and employee feces. Of these isolates (n=1.128), 731 (64.8%) were resistant to at least one of the antimicrobials and 275 (24.4%) were MDR. The highest percentages of RAM obtained were for SUT (43.3%), TET (35.5%), AMO (29.2%) and CLO (16.8%) and the lowest percentage was detected for CTF (8.3%) and CIP (10.8%). Isolates of human origin showed greater resistance to AMO and SUT, similar results with the other samples of poultry carcasses, water from the chiller and scalding and transport box. The high resistance to SUT can be explained by the use of this drug during the poultry rearing stage, identifying that the use of antimicrobials favors the development of AMR. Some resistance mechanisms, such as horizontal gene transfer, can favor the spread and exchange of genetic factors between microorganisms, contributing to increased resistance. So, it is essential to reduce the use of antimicrobials, as well as the establishment of effective control plans.

Keywords: Dilution in agar; antimicrobials; poultry

Development Agency: Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) pela bolsa concedida; Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) pelo financiamento do projeto.