Minimal inhibitory and mutant prevention concentrations of enrofloxacin for Rabbit Entero-Pathogenic *Escherichia coli* (REPEC)

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Statement of the Problem: Minimum Inhibitory Concentration (MIC) defines the drug efficacy against bacteria. A novel approach to minimize the risk of resistance selection is based on Mutant Prevention Concentration (MPC) which neutralizes potential mutants. Few data about these topics concerning pathogens of some food-producing species such as rabbit are available. Moreover, the limited number of registered drugs for rabbit farms increases the risk of a frequent use of available molecules, such as enrofloxacin. The aim of this study was to test the sensitivity to enrofloxacin of Entero-Pathogenic *Escherichia Coli* from rabbit's dead by colibacillosis and to investigate the genetic bases of their resistance.

Methodology & Theoretical Orientation: MIC and MPC values were measured by methods previously described with minor modifications. Moreover, the sequences of *gyrA* (DNA gyrase) and *parC* (topoisomerase IV) genes were analysed according to previous studies on colonies before and after MPC evaluation.

Findings: Six sensible strains (33 %) were found while 3 (17 %) and 9 (50%) resulted intermediate sensitive and resistant, respectively. MIC range was 0.008-64 µg/ml. MIC50 and MIC90 were 1 and 64 µg/ml, respectively. MPC values in sensitive and intermediate sensitive ranged from 0.5 µg/ml to 4 µg/ml ($P<0.001$), exceeding the clinical sensitivity breakpoint (0.25 µg/ml).

One additional mutation was found in 7 strains after MPC. The double mutation in *girA* gene (Ser83Leu+Asp87Asn) was not associated to relevant changes in MPC/MIC values, while a single aminoacid substitution (girA: Ser83Leu) were found related to high MPC. The combinations of gyrA (Ser83Leu) + parC (Ser80Iso/Gly78Asp/His77Pro) aminoacid substitutions was associated to to MPC=4xMIC.

Conclusion & Significance: These results highlight the relevance of a correct use of antibiotics to reduce the risk of development of drug resistant bacteria. Moreover, a therapeutic dosage revision is suggested to minimize the selection of antibiotic resistance reducing the reservoir of resistant mutants.

Biography

Antonella Schiavone is graduated in Veterinary Medicine at the University of Bari, where she carries out her activity at the Avian Pathology Unit of the Department of Veterinary Medicine. Her field of expertise includes infectious diseases of rabbits, poultry and wild animals, and her interests also point to many biological and medical features of the poultry red mite *Dermanyssus gallinae*, such as its vectorial role in transmission of infectious diseases, the population dynamics and its epidemiology, its susceptibility to natural and synthetic acaricides. She also carries out studies about the problem of antibiotic resistance. Additionally, she is experienced in the field of web communication, with interest towards animal health and behavior.

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