Abstract

Colibacillosis is one of the leading causes of disease-related economic loss in the poultry sector. Fluoroquinolones are frequently used antimicrobials for the treatment of APEC infections in Europe and Asia. However, rapid development and selection of resistance to this class of antimicrobial drugs is a significant problem. The objective was to investigate the occurrence of antimicrobial resistance against enrofloxacin in APEC strains in Flanders by determining the minimum inhibitory concentrations (MIC) and the mutant prevention concentrations (MPC) and by characterizing resistance genes through PCR, gel electrophoresis and gene sequencing. 126 APEC strains from broilers with clinical colibacillosis were obtained via Animal Health Care Flanders (DGZ) and Sciensano (November – June 2018). Slide agglutination was used to test for O1, O2 and O78 antigens. The MIC was determined using a commercial gradient strip test (Liofilchem s.r.l., Roseto degli Abruzzi, Italy). The MPC was determined through the agar dilution method on the clinically susceptible (MIC ≤ 0.25 µg/mL) and the clinically intermediate (0.5 µg/mL ≤ MIC ≤ 1 µg/mL) strains. Ninety-six of the 126 strains were serotyped so far and the MIC of these strains was determined. O78 was the most prevalent serotype (17%). The majority of the strains (69%) could not be identified. Forty-three percent of the strains were non-wild type (ECOFF: 0.125 µg/mL), 23% were clinically intermediate and 11% were clinically resistant (MIC > 2 µg/mL). The MPC values of the clinically susceptible strains ranged from 0.25 µg/mL to 2 µg/mL. Some strains with low MIC values (e.g. 0.016 µg/mL) had rather high MPC values (e.g. 16 µg/mL), thus portraying a large mutant selection window (MSW). The MPC values of the clinically intermediate strains ranged from 1 µg/mL to 32 µg/mL. The remainder of the strains (n=30) will be serotyped and MIC and MPC values will be determined. From all the non-wild type strains, the presence of plasmid-associated resistance genes (qnrS, A, B) and the sequence of chromosomal resistance genes (gyrA, parC) will be evaluated as well. These results will be presented at the conference. Acknowledgements: The authors would like to thank Sciensano for the supply of the APEC strains. This research is supported by the Special Research Fund of Ghent University grant number BOF17/STA/014.