

TITLE: FLUOROQUINOLONE RESISTANCE IN *Campylobacter jejuni* and *Campylobacter coli*.

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ABSTRACT:

Campylobacter jejuni and *C. coli* are common agents of gastroenteritis and in some cases may trigger off Guillain-Barré Syndrome. Poultry are *Campylobacter* reservoirs and poultry meat products are considered the main source of human campylobacteriosis. Fluoroquinolones are among the most common antibiotics used in intensive poultry production and fluoroquinolone resistance in *Campylobacter* is currently a public health problem since fluoroquinolones are broad-spectrum antimicrobials that are used to treat a multitude of human infections including undiagnosed cases of diarrhea. Point mutations in *gyrA* gene are considered the major mechanism related to fluoroquinolone resistance in *Campylobacter* and the efflux pump *CmeABC* is described as an auxiliary mechanism. The aim of this study was to determine the minimal inhibitory concentration (MIC) to ciprofloxacin and enrofloxacin and characterize the molecular mechanisms involved in resistance of 85 strains of *C. jejuni* and 44 of *C. coli*. These strains were obtained from intestinal contents of slaughtered poultry from six slaughterhouses located in Rio de Janeiro from 2013 to 2016. The phenotypic detection of resistance was performed by dilution in agar to determine Minimum Inhibitory Concentration (MIC). Amplification and sequencing of *gyrA* gene was performed to detect point mutation in the resistant strains. Additionally, the presence of *CmeABC* efflux system genes (*CmeA*, *CmeB*, *CmeC*) were investigated by PCR. In this study, 100% of *Campylobacter* strains were resistant to ciprofloxacin and enrofloxacin and MIC ranged from 0.5 to 64 µg/mL. All strains had mutations in *gyrA* gene and the three genes for the *CmeABC* efflux system occurred in 98.45% (127/129) of these strains. In one *C. coli* strain all three genes were absent and one strain had only the *CmeA* gene. In this study was observed a high prevalence of fluoroquinolone resistance in *Campylobacter* strains isolated from Rio de Janeiro state and the presence of *CmeABC* efflux system in almost all strains suggests its participation in fluoroquinolone resistance.

Keywords: fluoroquinolone, resistance, efflux pump, *gyrA* mutation.

Development Agency: Coordination of Superior Level Staff Improvement