



# 7<sup>e</sup> Symposium du CRIPA

## Présentation orale

### Characterization of extended-spectrum cephalosporin- resistant clinical *Escherichia coli* isolated from pigs from 1997 to 2012

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Ceftiofur, a 3<sup>rd</sup> generation extended-spectrum cephalosporin (ESC), has been used therapeutically in food producing animals since the mid-1990s. Thus, the aim of this study was to investigate the evolution with time of ESCr *E. coli* clinical isolates from pigs, from when ceftiofur resistance was first reported to the present, with respect to presence of virulence and antimicrobial resistance genes and integrons, and plasmid replicon types. Eighty-five ceftiofur-resistant *E. coli*, isolated from clinically sick pigs from 1997 to 2012, were obtained from the strain collection of the OIE Reference Laboratory for *Escherichia coli* (Ecl). The most prevalent virulence gene in these isolates was estB (49.4%), followed by paa (48.2%), astA (47%), eltB (44.7%) and faeG (37.6%), as detected by PCR and colony hybridization. Most isolates belonged to Phylogenetic group A (74%), followed by B1 (15%), B2 (4%) and D (7%). Susceptibility testing for 15 antimicrobial agents revealed 32 AMR patterns, all being classified as multi-drug resistant. Class 1-integrons were more frequently observed than class 2-integrons among ESCr *E. coli* isolates. blaCMY-2 (96%) was the most frequently detected  $\beta$ -Lactamase gene in ESCr *E. coli* isolates, followed by blaTEM (48%), and blaSHV (1.1%). Surprisingly, blaCTX-M was detected in 3 enterotoxigenic *E. coli* isolates, and this only in 2011 and 2012. Production of Extended Spectrum  $\beta$ -Lactamases (ESBLs) by these isolates was confirmed. A high frequency of plasmid replicon types was observed among ESCr *E. coli* isolates, the most predominant incompatibility groups being IncFIB (81.2%), IncI1 (57.6%), IncA/C (49.4%) and IncFIC (41.2%). To our knowledge, this is the first study describing characteristics of ESCr *E. coli* isolated over a long period of time. In addition, we believe this to be the first report of blaCTX-M –positive, ESBL-producing pathogenic *E. coli* isolates from pigs in Canada. Our findings underline the importance of monitoring *E. coli* isolates from pigs for the presence of blaCTX-M in the future.