

P2752 Evaluation of antimicrobial activity of octenidine and chlorhexidine against multidrug-resistant Gram-negative pathogens, including polymyxin-resistant strains

Mathilde Lescat¹, Patrice Nordmann¹, Laurent Poirel*¹

¹ University of Fribourg, Fribourg, Switzerland

Background: Colistin (COL) is a last-resort antibiotic for treating infections caused by multidrug-resistant (MDR) Gram-negatives. However, a recent study showed that *in-vitro* selective adaptation of *K. pneumoniae* clinical isolates to chlorhexidine (CHG) may select cross-resistance to COL. The objective of our study was to evaluate whether a relation between reduced susceptibility to antiseptic molecules and COL may exist (co-lateral effect).

Materials/methods: We performed *in-vitro* selection assays of mutants using isolates of *E. coli*, *K. pneumoniae* and *E. cloacae*, and octenidine (OCT), CHG and COL as selective pressures. MICs of COL, CHG and OCT were compared for the mutants.

Results: Selection of mutants using CHG as selective molecule allowed to recover strains with high MICs for all three species, with a cross-resistance observed for COL, whereas OCT susceptibility remained the same.

Selection of mutants using COL as selective molecule allowed to recover mutants with high MICs of COL for all three species, showing a moderate decreased susceptibility to CHG, whereas OCT susceptibility remained the same.

Selection of mutants using OCT as selective molecule allowed to recover *K. pneumoniae* and *E. cloacae* strains showing only a slight increased MIC of OCT, that did not show any cross-elevated MICs for the two other molecules. No *E. coli* mutant with reduced susceptibility to OCT could be obtained.

Conclusions: Selected mutants with decreased susceptibility to CHG and COL may occur in *E. coli*, *K. pneumoniae* and *E. cloacae* with cross-decreased susceptibility to COL and CHG but without effect on OCT efficacy. It also showed that selected mutants with very limited decreased susceptibility to OCT could be obtained for *K. pneumoniae* and *E. cloacae* only, but with no cross effect of other molecules. In addition, by studying a collection of COL-resistant clinical isolates, no reduced susceptibility to antiseptics was observed except for *E. coli* MCR producers with increased MICs of CHG. Whole genome sequencing of the mutants is ongoing to decipher the molecular basis of adaptation of these isolates under the respective selective pressures.

