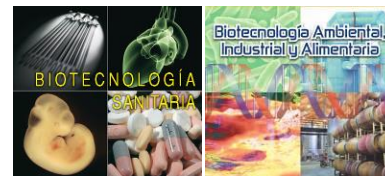


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Poster

## "In vitro" activity of pentamidine alone and in combination against clinical isolates of carbapenemase-producing and colistin-resistant Enterobacteriaceae.



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### ABSTRACT

**Motivation:** The increase in antimicrobial resistance rates and the difficulty to treat patients with infections caused by these kind of pathogens may urgent the search of alternative treatments. The objective of this project was to study the in vitro activity of pentamidine (PEN) alone and in combination against these kinds of pathogens.

**Methods:** Fifteen different clinical isolates: 9 Enterobacter spp., 5 Klebsiella pneumoniae and 1 Escherichia coli. MICs were determined by microdilution in Mueller-Hinton broth at 24 and 48 hours. The assignment of clinical categories was made by the EUCAST criteria. MBCs were measured following the standard protocols. Bactericidal and synergistic activity of PEN alone and in combination was measured by time-kill curves at concentrations of 1xMIC in different time point. The in vitro prevention of the development of resistance was analyzed in time-kill studies.

**Results:** PEN MIC range was from 200-800 mg/L. All Enterobacter strains were susceptible to doripenem (DOR), meropenem, amikacin (AMK) and rifampicin (RIF); also were susceptible to gentamicin (GEN) and tobramycin (TOB), except E. cloacae 32 and 297. All Enterobacter spp. were resistant to colistin (COL). Fifty percent of the strains were resistant to tigecycline (TIG). K. pneumoniae OXA-48/CTX-M-15 was resistant only to fosfomicin (FOS). K. pneumoniae KPC-3 was susceptible only to GEN. E. coli NDM-1 and K. pneumoniae NDM-1 were susceptible to COL and TIG. K. pneumoniae VIM-1 was resistant to GEN and TOB and K. pneumoniae VIM-1/DHA-1 was resistant to TOB, DOR and COL. All strains were resistant to FOS except E. cloacae 190.

PEN alone and in combination with GEN, AMK, TIG, TOB, RIF and DOR showed bactericidal activity after four hours against K. pneumoniae NDM-1, K. pneumoniae NDM-1/DHA-1 and K. pneumoniae OXA-48/CTX-M-15. PEN together with the tested antimicrobials but TIG showed bactericidal and synergistic activity at 24 hours against E. cloacae 32. In addition, PEN prevented the appearance of mutants resistant to aminoglycosides and TIG in the carbapenemase-producing strains, and TOB-resistant mutants in the E. cloacae 32 strain.

**Conclusions:** The association of pentamidine with the antimicrobials studied confirms a good in vitro activity of these combinations against carbapenemase-producing and colistin-resistant Enterobacteriaceae, suggesting that they could be a new alternative for the treatment of infections caused by these kinds of pathogens.

### REFERENCES

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