

PHENOTYPIC RESEARCH OF *KLEBSIELLA PNEUMONIAE* CARBAPENEMASE (KPC) IN ENTEROBACTERIACEAE RECOVERED FROM CLINICAL SAMPLES AND A WASTEWATER TREATMENT STATION, BELO HORIZONTE - MG.

Leonel, A.C.¹, Barros, C.M.¹, Souza, J. de Paula.¹, Sousa, C.D.F.¹, Nardi, R.M.D.², Paiva, M.C.^{1,2}

¹UFSJ - Universidade Federal de São João Del Rei (Rua Sebastião Gonçalves Coelho, 400 - Chanadour, Divinópolis - MG, 35501-296)

²UFMG - Universidade Federal de Minas Gerais (Avenida Presidente Antônio Carlos, 6627 - Pampulha, Belo Horizonte - MG, 31270-901).

The Enterobacteriaceae are important human pathogens and the emergence of multidrug-resistant strains has been a concern in healthcare Institutions. Carbapenems are included in the beta-lactam class of antibiotics and are considered an option for the treatment of severe infections caused by these microorganisms. However, it has been reported the emergence resistance bacterial strains to these compounds is becoming a threat worldwide. The *bla_{kpc}* gene encoding the KPC enzyme are usually flanked by transposon-related sequences that have been identified on transferable plasmids, giving these genes the potential to disseminate to other genera and species. The environment has been considered a reservoir of resistant genes and the interspecies transfer capability may compromise the therapeutic options for the treatment of these microorganisms. In this study, 89 samples of *Escherichia coli* recovered from women with urinary tract infection in the community and 42 samples of Enterobacteriaceae recovered from a Wastewater Treatment Station of Belo Horizonte - MG (*E. coli*, *Proteus mirabilis*, *P. vulgaris*, *Morganella morganii*, *Shigella sp*, *Citrobacter freundii* and *Providencia alcalifaciens*) were submitted to disk diffusion testing of carbapenems, meropenem and ertapenem and modified Hodge test to detect the production of KPC enzyme, both according to the Clinical Laboratory Standards Institute (CLSI, 2014). All species of Enterobacteriaceae were sensitive to carbapenems tested. There was no KPC production in clinical samples of *E. coli* and in 88% (37) of the environmental Enterobacteriaceae. It was observed that Hodge test was inconclusive in 12% (5) of environmental the Enterobacteria. Despite increasing reports of KPC-producing Enterobacteriaceae, the resistance to carbapenems outside the hospital context is still low. The modified Hodge test has satisfactory sensitivity and specificity levels in detecting KPC enzyme, despite the possibility of obtaining inconclusive results, constitutes an important tool especially for laboratories without molecular diagnostic resources, as is common in Brazilian hospitals. The determination of the current situation of carbapenem resistance in microorganisms collected from patients and environment may assist in adopting control measures and preventing spread of these highly resistant pathogens, avoiding the commitment of the therapeutic use of this antimicrobial class.

Key work: Enterobacteriaceae, KPC, modified Hodge test

Suporte Financeiro: CNPQ/ Fapemig