

TITLE: PHENOTYPIC DETECTION OF POLYMYXIN RESISTANCE AMONG *Klebsiella pneumoniae* ISOLATED IN A UNIVERSITY HOSPITAL

AUTHORS: FERNANDES, D. G. G.¹, PINHEIRO, M. P.¹, FERREIRA, D. G.², REBELLO, N. A. C. C.², CHAGAS, T. P. G.¹, MENDONÇA-SOUZA, C. R. V.¹

INSTITUTIONS: 1. DEPARTAMENTO DE PATOLOGIA, UNIVERSIDADE FEDERAL FLUMINENSE, NITERÓI, RJ (R. MARQUÊS DO PARANÁ 303, 4º ANDAR, SL 03, CEP 24033-900, NITERÓI – RJ, BRAZIL). 2. LABORATÓRIO DE MICROBIOLOGIA, HOSPITAL UNIVERSITÁRIO ANTÔNIO PEDRO, NITERÓI, RJ (R. MARQUÊS DO PARANÁ 303, 4º ANDAR, SL 06, CEP 24033-900, NITERÓI – RJ, BRAZIL)

ABSTRACT:

Klebsiella pneumoniae is a gram-negative bacillus that is among the main pathogens causing health care-associated infections. Due to the increasing number of multidrug-resistant isolates leading to the difficulty and limitation of options for the treatment of these infections, polymyxins started to be considered one of the last available therapeutic options. However, consequently to the increase in the use of polymyxins, resistance to these drugs has emerged in the world in recent years, particularly among *K. pneumoniae*. The reference method for checking this resistance is broth microdilution, however this method is time-consuming and laborious and therefore not very suitable for laboratory routines. The objective of this work was to compare the performance of the Policimbac® commercial system, in relation to the broth microdilution method, for the detection of polymyxin resistance. Seventeen *K. pneumoniae* isolates (14, resistant and 03, susceptible), previously characterized in terms of their sensitivity profiles against polymyxin B, by the broth microdilution method, and obtained from different clinical materials of patients admitted to a University Hospital, from May 2018 to June 2019, were included. The identification of the isolates was carried out by MALDI-TOF MS. All isolates were submitted to the commercial Policimbac® system. Comparing the results of Policimbac® with those of the broth microdilution method, 88% of category agreement and rates of major errors and very major errors of 6% were verified (n = 1, for each type of error). Good sensitivity (92%) was observed, but low specificity (66.7%), which may be due to the ability of polymyxin to adhere to the polystyrene wall of the microdilution plate, causing false-resistant results. The Policimbac® system is easy to execute and read, but the results obtained did not show a good correlation with the reference method; studies with a larger number of isolates are necessary for a better evaluation of the performance of this method. The use of less laborious and reliable methods to detect pathogens resistant to polymyxins is important for controlling the dissemination of these bacteria, as well as for the best therapeutic approach. **Cláudia Rezende Vieira de Mendonça Souza: claudia_souza@id.uff.br.**

Keywords: *Klebsiella pneumoniae*, Polymyxin resistance, Phenotypic detection.

Development Agency: without funding.