

TITLE: DETECTION OF POLYMYXIN B RESISTANCE IN CLINICAL ISOLATES OF EMERGING CLONES (NOT BELONGING TO CLONAL COMPLEXES CC1, CC15 AND CC79) OF *Acinetobacter baumannii* IN DIFFERENT BRAZILIAN INSTITUTIONS

AUTHORS: BARCELLOS, T.A.F.^{1 2}; BUENO, M.S. ^{1 2}; CHIMARA, E.¹; TIBACASAS, M.R.¹; TAKAGI, E.H.¹; CARVALHO, E.³; CAMARGO, C.H.^{1 2}

INSTITUTION: ¹ INSTITUTO ADOLFO LUTZ

² FACULDADE DE MEDICINA DA UNIVERSIDADE DE SÃO PAULO

³ CENTRO DE BIOTECNOLOGIA, INSTITUTO BUTANTAN

ABSTRACT

Prevalent in hospitals, *Acinetobacter baumannii* has generated great apprehension because of its extensive spectrum of antimicrobial resistance. The high rates of resistance to carbapenems, aminoglycosides, tetracyclines and quinolones, and the lack of new therapeutic options, have led to the need of reusing old drugs such as polymyxin B, considered the last therapeutic option due to its side effects. The objective of this study was to detect the resistance to polymyxin B in clinical isolates of emerging *A. baumannii* clones. Among the 136 carbapenem resistant isolates received between 2016 and 2017 from different Brazilian institutions, 34 were identified as emerging clones, not belonging to clonal complexes CC1, CC15 or CC79 by Trilocus Sequence Typing (m3LST) technique. Pulsed-Field Gel Electrophoresis (PFGE) was employed to select strains with different genetic profiles. The strains were tested by broth microdilution method on commercial microplates (Sensititre GNX3F, Thermo Scientific) against the antimicrobials amikacin, gentamicin, tobramycin, doxycycline, minocycline, tigecycline, ciprofloxacin, levofloxacin, sulfamethoxazol+trimethoprim, ampicillin+sulbactam, aztreonam, imipenem, meropenem, doripenem, colistin, polymyxin B, cefepime, ceftazidime, cefotaxime, piperacillin+tazobactam and ticarcillin+clavulanic acid. For reading, the Clinical and Laboratory Standards Institute breakpoints were used. Broth microdilution test with *in house* plates was performed for the confirmation of polymyxin B resistant strains. Out of the 34 isolates, 5 (14.7%) were classified as multi-drug (MDR) and 29 (85.3%) as extensively drug resistance (XDR) as *per* Magiorakos et al., 2012. Ten isolates (29.4%) were identified as resistant to polymyxin B, two belonging to CC25; the others were not typified by the methodology used, confirming the emergence of new clones in our environment. All the ten isolates of polymyxin B-resistant strains was observed among XDR emerging clones of *A. baumannii*, which can impair the adequate therapy for of severe infections.

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Keywords: *Acinetobacter baumannii*, resistance to polymyxin, polymyxin B, hospital infection