

TITLE: FIRST REPORT OF *bla*_{GES} IN *Proteus mirabilis* CLINICAL ISOLATES FROM RECIFE-PE, BRAZIL.

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ABSTRACT:

Proteus mirabilis is a pathogen often overlooked and neglected associated with Urinary Tract Infections (UTI), especially in patients on long-term urinary catheter use. *Proteus mirabilis* has intrinsic resistance to polymyxins, nitrofurantoin and tigecycline, and the acquisition of genes encoding carbapenemases by this pathogen is increasingly frequent, decreasing the spectrum of action of existing antimicrobials. The present study aimed to investigate the presence of the *bla*_{GES} gene in clinical isolate of *P. mirabilis* from a public hospital in Recife-PE, Brazil in 2017. The biochemical identification and susceptibility to different classes of antimicrobials was performed by automated system. The interpretation was performed according to BRCast technical specifications. The presence of *bla*_{GES} was determined by PCR, followed by amplicons sequencing. Nucleotide sequences were analyzed by the BLAST, Clustal W and Bioedit v7 platforms. To our knowledge, we report the first worldwide description of a *P. mirabilis* isolate containing *bla*_{GES-1}. *P. mirabilis* P5-A2 was isolated from the urine sample of a female patient in the surgical clinic. As expected, the isolate presented potential ESBL production, being a characteristic of the *bla*_{GES-1} variant. Resistance to several antimicrobials, including aminoglycosides (gentamicin), quinolones (ciprofloxacin and levofloxacin), cephalosporins (ceftazidime, cephalothin, ceftriaxone, cefepime and cefuroxime) and aztreonam, with the exception of carbapenems. To reduce therapeutic failures, it is important to periodically monitor Healthcare-Associated Infections (HAIs) related microorganisms and their respective resistance patterns. The acquisition of resistance genes appeared to be a rare event in *Proteus*, since there are few reports of carbapenemases in this species when compared to other species of the family Enterobacteriaceae, however the emergence of ESBL in *Proteus* is more frequent. Circulation of *P. mirabilis* strains carrying *bla*_{GES-1} is a new concept and should be a global health epidemiological alert.

Keywords: Enterobacteriaceae; *Proteus mirabilis*; *bla*_{GES}

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