

TITLE: PHENOTYPIC AND GENOTYPIC DETECTION OF EXTENDED-SPECTRUM ENZYMES OF ISOLATED BACTERIA OF MECHANICAL VENTILATION TUBES OF PATIENTS WITH MECHANICAL VENTILATION IN INTENSIVE THERAPY UNIT.

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ABSTRACT

Invasive procedures such as mechanical ventilation may result in the development of nosocomial infections, especially in immunocompromised patients. The indiscriminate use of antimicrobial agents is directly related to the appearance of Extended Spectrum Beta-lactamase Enzymes (ESBL) producing bacteria. Routine laboratories currently use phenotypic tests, but these can give false negative results, thus highlighting the genotypic tests due to diagnostic accuracy. The objective of this study was to investigate by phenotypic and genotypic methods the presence of ESBL, produced by bacteria isolated from mechanical ventilation tubes in the Intensive Therapy Unit (ITU). A total of 22 bacterial strains were identified, identified through the 16S rRNA gene sequencing, at the Biotechnology Center of UFRGS (Federal University of Rio Grande do Sul, Porto Alegre, Brazil). The confirmatory phenotypic tests for the production of ESBL and AmpC were performed according to CLSI and for the genotypic examination the following genes were tested: TEM, SHV, CTX-M, OXA-10 and AmpC. Eight of the bacteria studied were positive for the phenotypic test: *Bacillus aerius*, *Klebsiela sp.*, *Micrococcus luteus*, *Enterobacter cloacae*, *Serratia mercenscens*, *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Staphylococcus pasteurii*. Among these three were positive for the genotypic test: *Enterobacter cloacae* (OXA-10), *Staphylococcus aureus* (TEM) and *Staphylococcus pasteurii* (TEM e AmpC). Of the sixteen bacteria negative for the phenotype test four were positive for the genotypic test: *Klebsiela pneumoniae* (TEM), *Pseudomonas aeruginosa* (OXA-10), *Enterobacter aerogenes* (TEM) and *Klebsiela varriicola* (AmpC e OXA-10). All bacteria tested were negative for the SHV and CTX-M genes. These results demonstrate that phenotypic tests can be used in laboratories, which can be included in the routine, but the possible false negative results should be considered, which may make it difficult to treat and eradicate the infection.

Keywords: Bacteria resistant; Mechanical ventilation tubes; Beta-lactamases Enzymes.

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