TITLE: GRAM-NEGATIVE BACTERIA RESISTANT TO MEROPENEM AND THE CARRIERS IN THE BLAKPC-6 GENE FROM MANGROVE SEDIMENTS

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ABSTRACT:
Mangroves are environments that have fast cycles associated with high concentration of bacterial decomposers. These are impacted by anthropogenic pollution due to contamination of bacterial species carrying resistance genes. Once the population has direct contact with areas that may contain microorganisms carriers of antibiotic resistance genes, contamination is made possible by leveraging a public health problema. This study aims to evaluate the metabolic profile of the microbiota in mangrove sediments of the Anil River in São Luís Island-MA, and verify the presence of Gram-negative bacteria resistant to meropenem. About 6 sediment samples were obtained from two distant locations along the Anil river. Samples were seeded in medium supplemented with the antibiotic meropenem in increasing concentrations (2-32 µg/ml). The DNA was analyzed by multiplex PCR for detecting resistance genes for β-lactam antibiotics. The bacteria were identified by Matrix-assisted laser desorption ionization–time of flight mass spectrometry (MALDI-TOF MS). The genes were sequenced by ABI PRISM 3100 also analyzed by MEGA 6.0 program platform, and the sequence identity was assessed by GenBank using the BLAST algorithm. Ecoplate® the kit was used to determine the metabolic profile of the microbiota. Equity, substrate richness and Shannon index were calculated. The result of the count of Gram-negative bacteria resistant to meropenem was 7,150 CFU/g sediment. The six bacterial isolates presented the blaKPC-6 gene and were identified as Stenotrophomonas maltophilia and Pseudomonas putida. This study showed a greater diversity Shannon index at the sampling containing a rich substrate consumption and high equity. There was a metabolic wealth as the carbon consumption profiles, being a factor of adaptation of pathogenic bacteria carrying antibiotic resistance genes.

Keywords: Resistance profile. Mangroves, meropenem, *bla*$_{\text{KPC-6}}$, Bacterial isolates.

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