TITLE: COMPARISON OF MATRIX-ASSISTED LASER DESORPTION IONIZATION-TIME OF FLIGHT (MALDI-TOF) AND POLYMERASE CHAIN REACTION (PCR) FOR IDENTIFICATION OF *BURKHOLDERIA CENOCEPACIA*.

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ABSTRACT:
The *Burkholderia cepacia* complex (BCC) is a group of closely related species which, are associated with different levels of virulence and patient-to-patient transmissibility among Cystic Fibrosis (CF) patients. Although all species of the complex are associated with a poor prognosis, *B. cenocepacia* genomovar III is frequently related to a drastic reduction in lung function and decrease in survival. Moreover, this specie is responsible for the "cepacia syndrome", a necrotizing pulmonary infection with high mortality rate in CF patients. Differentiation of Bcc species by biochemical tests or even by conventional automated systems is cumbersome, if possible at all. Although molecular diagnostic based on PCR is considered a very sensitive and specific method to identify *Bcc* species (and genomovars), it is costly and needs long turnaround times. MALDI-TOF is considered an accurate and rapid technology for bacteria identification but it may not be a reliable method to distinguish the species of *Bcc*. The aim of this preliminary study was to compare the MALDI-TOF with a well-established nested-PCR for *B. cenocepacia* identification. A total of 10 *B. cenocepacia* III-B previously identified by nested-PCR were submitted in duplicate to identification on MALDI-TOF (Bruker Microflex®) using a conventional protocol (extraction by formic acid directly on the MALDI-TOF plate). The MALDI-TOF identified 8 isolates as *B. cenocepacia* with good probability (scores above 2.0). Two isolates were identified as "*Burkholderia cepacia* complex" (scores 1.96 and 1.98). These two isolates were re-evaluated after an extraction in tube with formic acid and acetonitrile and one isolate was identified as *B. cenocepacia* (score 2.27) and the other was confirmed as "*Burkholderia cepacia* complex" (score 2.16). In conclusion, MALDI-TOF proved to be a useful tool for identification of *B. cenocepacia* using an optimized extraction, however, negative results of *B. cenocepacia* need to be confirmed by molecular technique.We will further evaluate the MALDI-TOF method using other isolates of BCC in order to establish the specificity of this procedure.

Keywords: BCC, *Burkholderia cenocepacia*, *Burkholderia cepacia* complex, MALDI-TOF, PCR.

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