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Mass Spectrometric Identification of *Propionibacterium* Isolates Requires Database Enrichment

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ABSTRACT

Propionibacterium species are mostly environmental bacteria, some being commensal of mammals including humans, and sometimes pathogenic. These bacteria are poorly identified using routine laboratory methods. Recently, Matrix Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry (MALDI-TOF-MS) has emerged as a rapid and efficient method to identify bacterial species. We evaluated the use of MALDI-TOF-MS for identification of all validated *Propionibacterium* species. Only four of the 15 tested reference strains (26.7%) were correctly identified at the species level, and *P. acnes*, the most common human pathogenic species was not identified. When applying MALDI-TOF-MS to 48 *P. acnes* strains, only 18.7% were correctly identified, suggesting an intraspecific variability of proteic profiles among *Propionibacterium* strains. However, by enriching the Bruker database with spectra from five of these strains and re-testing the other 43 strains against this new database, 93.0% were correctly identified. Our study demonstrates that MALDI-TOF-MS may be used for the identification of *Propionibacterium* isolates but requires a database enrichment in spectra from additional isolates.

KEYWORDS

Propionibacterium; *Propionibacterium acnes*; MALDI-TOF; Mass Spectrometry

Cite this paper

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