Bovine mastitis bacteria resolved by MALDI-TOF mass spectrometry

Matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS) is a fast and reliable method to identify the most common pathogenic bacteria in humans and animals. The goals of this study were to amend a commercial database with additional species, evaluate the amended database for identification of bacterial genera and species causing bovine mastitis, and describe the plethora of species involved. In total, 500 udder pathogenic isolates were subjected to MALDI-TOF MS using bacterial or fungal colony material; 93.5% could be identified to the species level, and 6.5% were identified only to the genus level. Isolates identified to the genus level required further identification to the species level by conventional methods or 16S rDNA sequencing. Mass spectra from verified species were used to expand the MALDI-TOF MS database to improve future identification ability. A total of 24 genera and 61 species were identified in this study. Identified isolates were mainly staphylococci, streptococci, Enterobacteriaceae, and coryneform bacteria. In conclusion, MALDI-TOF MS is a powerful, rapid, and reliable technique to identify the most common microorganisms causing bovine mastitis, and the database can be continuously expanded and improved with additional species.

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