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MALDI-TOF MASS SPECTROMETRY ANALYSIS FOR DETECTION OF THE RIBOSOMAL MARKERS TO IDENTIFY OF *YERSINIA KRISTENSENII* STRAINS

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Y. kristensenii belongs to the group of nonpathogenic *Y. enterocolitica*-like species. Method of the biochemical profiling is not always allowed for adequate phenotypic identification of *Y. enterocolitica*-like species. MALDI-TOF mass spectrometry is an effective tool for bacterial identification, which results are based on simple mass spectral peak-matching with the reference spectra from the taxonomic database, with no peak assignment, so *Y. kristensenii* strains are usually identified incorrectly as *Y. enterocolitica*.

The aim of this study was to analyze at the statistical level the capacity of MALDI-TOF MS to distinguish between *Y. kritensenii* and *Y. enterocolitica* by searching of ribosomal proteins as discriminate markers.

Soluble proteins were extracted from intact cells of five *Y. kristensenii* and five *Y. enterocolitica* well-characterized strains by an EtOH-FA method. From each strain, no less than 20 mass spectra were obtained, which were used to create the main spectra. Digital format (.CSV) data of 10 main spectra were exported to the free statistical software "Mass-Up" for detection of discriminante peaks by use the exact Fisher test. Designation of the potential biomarkers was performed by comparing their molecular weights with the data of *Y. enterocolitica* ribosomal proteins in the database UniProtKB/Swiss-Prot-Expasy with using the TagIdent tool.

The 26 genus-specific peaks was detected in all strains of both species could not be assigned to a protein mass using the available datebases. Among the common peaks, were designated only two: the peak m/z 7265 corresponding to the ribosomal protein L29 (theoretical m/z 7261) and the peak m/z 9998 identified as the 30S ribosomal protein S15. The biomarker peak, differentiating the *Y. enterocolitica* species, m/z 5429 (theoretical mass at m/z 5426) corresponded to the 50S ribosomal protein L34, but all spectra of *Y. kristensenii* strains had a molecular weight shift of this peak to m/z 5443, presumably because of the amino acid exchange in this protein. As well as the unidentified *Y. enterocolitica* differentiating peak m/z 3884, had a shift of molecular mass to m/z 3909 in all spectra of *Y. kristensenii*.

It is suggest that the spectral peaks of a non identify protein m/z 3884 and of the ribosomal protein L34 m/z 5429 are biomarkers of the *Y. kristensenii* species. This results evidence the possibility of using a mass spectrometric method, coupled with the bioinformatic approach to detection of discriminante markers, for differentiation between of strains of *Y. enterocolitica*-like species.