

Rapid identification of species of Listeria by FT-IR spectroscopy and artificial neural networks

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Rapid and accurate identification of *Listeria* at the species level is an essential task in food and clinical microbiology since these organisms have emerged as one of the leading causes of foodborne illness which is of major public health concern worldwide.

We have shown that FTIR macrospectroscopic (1-3) and microspectroscopic (4) reference databases can be used successfully for the identification of unknown microorganisms. Now we have created a FT-IR spectral reference database from 174 different and well-characterized strains belonging to *Listeria monocytogenes*, *L. ivanovii*, *L. innocua*, *L. seeligeri* and *L. welshimeri*. Based on this database, an average correct identification of 95% of unknown *Listeria* isolates was achieved. However, the use of artificial neuronal networks for evaluation of FT-IR spectra should lead to an improved identification procedure, making use of more subtle spectral differences between strains. First results on the training of artificial neural networks leading to a high identification rate of *Listeria* strains so far unidentified by FT-IR spectroscopy will be presented.

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