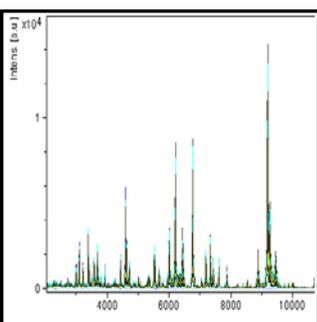


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MALDI-TOF mass spectrometry for plant pest diagnostics: the case of the accurate identification of *Acidovorax citrulli* isolates, including their grouping

Matrix-assisted laser desorption/ionization and time-of-flight mass-spectrometry (MALDI-TOF MS) is an emerging technology exhibiting promising results for the identification of bacterial plant pathogens. In clinical microbiology, this technology is already successfully used. The limited use of MALDI-TOF MS for the identification of plant pathogenic bacteria has been mainly attributed to the lack of comprehensive and commercially available databases on reference microorganisms. However, creation of in-house databases supplementing the commercial databases has been proven to be highly adequate for the identification of various plant pests which are currently under-represented in the commercially available databases.



Using *Acidovorax citrulli* as a model, the Euphresco project DIP-ACIT aims to demonstrate the potential of MALDI-TOF MS for an accurate and rapid identification, including grouping, of *A. citrulli* isolates.

There is a well documented distinction of virulence among isolates of *A. citrulli*. Based on genetic and pathogenic assessment, *A. citrulli* is divided into 2 groups. While group I isolates are moderately aggressive on a range of cucurbit hosts including watermelon, group II isolates are highly aggressive on watermelon but moderately aggressive on non-watermelon hosts.

In order to cope with the lack of a commercially available database, an in-house database supplementing the commercial database and covering the known genetic diversity inside this bacterial species was developed and evaluated. Six reference isolates of *A. citrulli*, one of *Acidovorax cattleya* and one of *Acidovorax konjaci* were selected and the protein mass fingerprints of each reference isolate were used to generate Mass Spectral Profiles (MSPs) by identifying their mass peaks. For each reference isolate, a MSP was generated through the accumulation of 8 technical replicates of the same spectrum and each MSP was checked for specificity before entry into the in-house database.

