MALDI-ToF mass spectrometry: a versatile tool for analyzing biomolecules, polymers and microorganisms

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Résumé

Matrix Assisted Laser Desorption Ionization (MALDI) is a soft ionization method used in mass spectroscopy to analyze sensitive macromolecules prone to fragmentation under other ionization conditions, such as peptides, proteins, oligonucleotides, lipids, or synthetic polymers.
Possible biochemical applications include but are not limited to identity check of synthetic peptides and oligonucleotides, reaction monitoring, controls of amino acid substitutions or post-translational modifications, and protein-ligand complexes studies.

When applied to microbiology, MALDI-ToF (time-of-flight) mass spectrometry can also draw unique proteomic fingerprints of microorganisms, which, by comparison with the MALDI Biotyper® (MBT) database, may allow identification down to the species level within a few minutes. This database currently contains over 4200 species, and may be locally completed with in-house research results.
The PACSI service of the Plateforme de Chimie Biologique Intégrative de Strasbourg (PCBIS – UAR 3286) was entrusted with the MALDI mass spectrometer of the Faculty of Pharmacy of the University of Strasbourg. As a result, this method is now available to the wider scientific community between two practical courses.

Mots-Clés: MALDI mass spectrometry, polymers, oligonucleotides, peptides, proteins, Biotyper, bacteria and yeast identification

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