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Mass spectrometry as a powerful spectroscopic tool for the structural identification of natural phenolic compounds and their reaction products

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Polyphenols are natural products which are recognized as one of the largest and most widespread class of plant constituents occurring throughout the plant kingdom. They are responsible for major organoleptic characteristics of plant-derived foods and beverages, particularly color and taste properties. Polyphenols have aroused considerable interest because of their potential beneficial biochemical and antioxidant effects on human health. Polyphenols show a great diversity of structures, ranging from simple molecules to polymers. They are also highly unstable compounds and can rapidly be transformed into various adducts when the plant cells are damaged, thus adding to the complexity of dietary polyphenol composition. Due to their great variety, their structural complexity and their high reactivity, the analysis of phenolic compounds is very challenging. Among the methods used for their analysis, mass spectrometry remains one of the important tools for their structural exploration. Its high sensitivity and the possibility of coupling liquid chromatography with mass spectrometry detection make of it a technique of choice for the investigation of complex mixtures like raw natural extracts containing polyphenols. With the development of soft ionization techniques, mass spectrometry has become a powerful analytical tool of polyphenols, polar, non-volatile, and thermally labile classes of compounds. In this presentation, application of mass spectrometry for the structural elucidation of natural polyphenols or their reaction products will be given. In particular analysis of flavonoids, oligomeric and polymeric procyanidins using electropsray (ESI), matrix-assisted laser desorption ionization (MALDI), and tandem (MS-MS) mass spectrometry will be also reported.

Biography

Nour-Eddine ES-SAFI completed his PhD in organic chemistry in 1997 from Mohammed V University of Rabat, Morocco and postdoctoral studies at the French National Institute for Agricultural Research. He leads the Team of Organic Chemistry and the Physico-Chemical Studies at the Ecole Normale Supérieure, Mohammed V University of Rabat, Morocco where he is currently working as deputy director and a full professor. His research focuses on natural products, especially polyphenols, their structural elucidation, their antioxidant activity and their role in food technology and human health. He has published many research papers and he is reviewer for various international scientific journals. He is Editorial Board Member of various scientific journals and is Editor in Chief of the *Green and Sustainable Chemistry journal*.

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