VOLATILE MASS SPECTRAL FINGERPRINTING BY SPME MS FOR CLASSIFICATION OF HONEY BOTANICAL SOURCE

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Honey is greatly appreciated by consumers, not only for its nutritive properties and sweet taste, but also for its pleasant aroma which plays a significant role in honey selection by consumer. A number of honeys from different botanical source (unifloral, multifloral and honeydew honeys), holding distinctive organoleptic properties and with different commercial value, are marketed nowadays [1]. As frauds regarding mislabeling of honey botanical source are one of the most common [2], their identification is a subject of great interest not only for consumers but also for regulatory bodies.

In this study, volatile fingerprints by Headspace-Solid-Phase Microextraction followed by Mass Spectrometry (HS-SPME MS) have been evaluated as an alternative approach to the corresponding gas chromatography method (HS-SPME GC-MS) for classification of honey botanical source. The performance of four data sets, considering the use of carboxen/polydimethylsiloxane (C/PDMS) and polyacrylate (PA) SPME fiber coatings per approach, has been compared using different chemometric procedures. Irrespective of the approach, C/PDMS fiber provided better discrimination than PA. Stepwise linear discriminant analysis (S-LDA) of HS-SPME GC-MS data showed a very good classification capability (average classification error < 1.8%), whereas optimal results were provided when HS-SPME MS data were subjected to PLS-LDA (average classification error < 1.1%). Although citrus source was the most accurately classified by any of these two approaches, classification errors < 3% were obtained from MS fingerprints for all the five honey types here considered when the C/PDMS fiber was used. Therefore, HS-SPME MS is shown as an advantageous approach for the fast and accurate classification of samples in studies on honey source authentication.

References
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