PROGRAM & BOOK OF ABSTRACTS

Assuring the integrity of the food chain: FIGHTING FOOD FRAUD

April 6–7, 2016
Prague, Czech Republic

Jana Pulkrabová, Monika Tomaniová, Jana Hajšlová and Paul Brereton
Editors

UNIVERSITY OF CHEMISTRY AND TECHNOLOGY PRAGUE

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FOODINTEGRITY 2016

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WEDNESDAY - THURSDAY, April 6-7, 2016

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DNA MINI-BARCODES COUPLED TO HIGH RESOLUTION MELTING (HRM) ANALYSIS FOR THE BOTANICAL AUTHENTICATION OF ROSEMARY HONEY

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Honey is a natural product highly consumed for its taste, nutritional value and health benefits. Monofloral honeys are the most appreciated by consumers and frequently attain high market values, thus being prone to fraudulent practices. Therefore, the development of methodologies to assess and authenticate the botanical origin of honey is of utmost importance. For this purpose, traditional methods based on pollen identification by microscopic analysis are still being used, but they are time-consuming and greatly dependent on the experience/skill of trained analysts. As an alternative, the use of DNA markers represents promising approach for the identification of botanical species in honey. Currently, DNA barcoding has been regarded with increasing interest for the taxonomic identification of plants, with two plastidial genes (matK and rbcL) being proposed for their differentiation (Bruni et al., 2012). Thus, the objective of this work was to identify the botanical species in rosemary honey using mini-barcode regions coupled to high resolution melting (HRM) analysis. For this purpose, different plant species (*Lavandula spp.*) and ten mono- and multifloral honeys were used. Three DNA barcoding loci, namely the plastidial coding genes rbcL and matK and the noncoding intergenic trnH-psbA region, were used to design primers targeting Lavandula spp. (GenBank Z37408.1, KJ196360.1 and HQ902822.1). DNA from plants and honeys was extracted with NucleoSpin Plant II kit (method A), according to Soares et al. (2015). The specificity and sensitivity of the designed primers were assayed by qualitative polymerase chain reaction (PCR) and real-time PCR. Prior to the specific amplifications, DNA extracts were positively tested targeting a universal eukaryotic sequence (18S rRNA gene). Results from specific PCR assays were further confirmed by real-time PCR amplification using EvaGreen fluore scence dye. The application of HRM analysis allowed discriminating Lavandula spp. into distinct clusters with high level of confidence. When applying the developed methodology to rosemary honey, samples were classified on the same cluster of Lavandula stoechas (endemic species in Portugal), therefore confirming its botanical origin. To our knowledge, this is the first study using HRM analysis for the rapid discrimination of plant species in honey.

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