

6th International Conference and Exhibition on
Analytical & Bioanalytical Techniques
September 01-03, 2015 Valencia, Spain

An NMR-based metabolomic approach to seek reliable markers for different botanical origins of mono-floral Italian honey

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A number of tools and methods can be used to ensure that a given honey belongs to a botanical variety that complies with the label. Traditionally, the determination of the floral origin of honey is made from palynological analysis, which is based on the identification of pollen by microscopic inspection. However, melisso-palynological analysis needs expertise. Further, it is not a reliable technique. NMR-based metabolomics is a fast, convenient, and effective tool for origin discrimination and biomarker discovery in food analysis. ¹H-NMR has the potential to detect and identify a large number of compounds and as such, it is emerging as a leading technique in the area of metabolomic studies. Honey fraud involves adding either industrial sugar syrups or mixing several floral origins, and selling the product under a false name. The EU Commission is encouraging the development of harmonized analytical methods to permit the verification of compliance with the quality specifications for the different honeys. Theoretically, a mono-floral honey can be produced from any blossoming plant. However, in practice, mono-floral honeys are not so easy to produce. Thus, their price is, in most cases, higher than multi-floral ones, especially for certain specific types of mono-floral honeys. Therefore, the need to develop a method to find reliable marker compounds to discriminate between mono-floral honeys is obvious. This work discusses a preliminary chemometric analysis of chloroform extracts of mono-floral honeys belonging to new botanical origins which were never analyzed before with an NMR-based metabolomic approach.

Biography

Jalal Uddin has completed his BSc in Chemistry in 2005, and MSc in Organic Chemistry in 2007 from University of Karachi, Karachi, Pakistan. He worked as an intern at H E J Research Institute of Chemistry, University of Karachi, Karachi, Pakistan during 2009-2010. He is currently a PhD student in the field of molecular sciences, with two major projects entitled "NMR based metabolomic approach to identify the botanical and geographical origin of Italian honey" and "Metabolite profiling of rat urine after treatment with antioxidants in nutraceutical products by NMR and Mass spectrometry". He is an Erasmus Mundus Fellowship holder funded by European commission.

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