



International Conference

1st IMEKOFOODS
Metrology Promoting Objective and Measurable
Food Quality and Safety

October, 12nd - 15nd 2014
Rome (Italy)



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ABSTRACT BOOK
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Tracing coffee origin by PTR-ToF-MS

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Coffee aroma is strongly affected by the bean variety and their geographical origin. Determination of geographic origin of coffee is highly demanded for product traceability, authentication and marketing. In this study, the aromatic profiles of six roasted *C. arabica* coffees (Brazil, Ethiopia, Guatemala, Costa Rica, Colombia, India) were analyzed by Proton-Transfer-Reaction-Time of Flight-Mass Spectrometry (PTR-ToF-MS) to characterize aromatic profiles of coffee powders and brews.

Commercially available medium roasted coffees were brewed by steam pressure coffee extraction in a stove-top coffee maker known as “moka” in Italy. The headspace measurements of coffee powder and brews were performed by a commercial PTR-ToF-MS 8000 instrument in switchable reagent ion mode and H₃O⁺, NO⁺ and O₂⁺ were used as ionization agents. Multivariate data analysis techniques were applied in order to visualize data and classify the coffees according to their origin.

The results showed that the volatile compositions of coffees were highly influenced by the geographic origin of the coffee beans. Significant differences were found among volatile concentrations of coffee powders and brews. Multivariate data analysis techniques allowed separation of coffees according to origin both for powder and brew in 3 ionization modes. Tentative identification of mass peaks aided the characterization of aroma fractions useful for aroma fingerprints and origin discrimination.