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### Determination of the specialty status of different types of coffees by proton transfer reaction-mass spectrometry

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Consumer demands are increasing for consumables either produced in an organic way, obtained via fair-trade systems or specialty produced. Especially in the case of coffee these factors seem to have established a permanent role in the choice of consumers for certain types of coffee. In conjunction with higher levels of organic or fair-trade certification and uniqueness of the coffee, trading prices increase inevitably. The (standard) high-end Kopi Luwak coffee can reach up prices to USD 600 per kilo or USD 275 per lbs. As a direct consequence of increased pricing, coffees may be subjected to economically motivated adulteration, e.g. (part of) the coffee is replaced by cheaper counterparts, while package statements may mislead consumers. As a possible solution specialty coffees can be investigated chemically, however no base-line information on how to discriminate these coffees was available. Therefore, 110 market coffees with either a specialty or regular production process were characterized on the basis of their volatile intrinsic markers by high sensitivity proton transfer reaction mass spectrometry (HS PTR-MS). Espresso coffees, Kopi Luwak coffee and organic coffees, could be distinguished by their profiles of volatile compounds with the help of chemometrics. A PLS-DA classification model was used to classify the organic and regular coffees by their HS PTR-MS mass spectra. Extensive cross validation showed correct prediction of 42 out of the 43 (98%) organic coffee samples and 63 out of the 67 (95%) regular coffee samples. It was concluded that the usage of direct headspace analysis techniques like HS PTR-MS is a promising approach to rapid organic and specialty coffee authentication.

#### Biography

Yannick Weesepeol finished his PhD in Phytonutrient chemistry with Jean-Paul Vincken and Harry Gruppen in September 2014 at the Laboratory of Food Chemistry at Wageningen UR, The Netherlands. In June 2014, he continued his career as a Scientist in Food Authenticity with the group of Saskia van Ruth at RIKILT, Institute for food safety at Wageningen UR. His specialization lies within mass spectrometry and small molecules, chemometrics and portable equipment for food fraud deterrence applications.

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