**Innovative approaches for the authentication of raw ingredients in organic/sustainable production**

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The impact of fraudulent activity on organic and sustainable food authenticity has generated enormous public and political concern. As a consequence, assurance of authentic organic and sustainable produced food from adulterated and/or contaminated food is often central to consumer acceptability, recognition of product quality and safety. Therefore, analytical validation and track and trace methodologies for certifications allows legitimate producers preferential market protection. In retrospect, organic certification by means of clear regional identification of origin, verification of prohibited methods of production and additives will be enforced on products that are traded between and sold within Europe and the USA from June 1st 2012.

Extensive literature exists on the detection and characterisation of authentic foods by analytical instrumentation, for botanical origin, method of production, additive and ingredient composition. However characterising and distinguishing sustainable and or organic produced foods on the basis of multiple product attributes using chemical finger printing is difficult especially due to the limitation still existing in reliable instruments for accurate and high-throughput measurements. Therefore the need to characterise organic and sustainable foods and their ingredients using complementary instrumental techniques is required. Emerging real-time measures of volatile compounds coupled with the analysis of the non-volatile constitutes from foods is showing promising opportunities for characterising organic production, which will improve on-site and inline track and traceability.

This proposed oral presentation will address the following main themes that will be explained using different organic and sustainable food examples:

1) The general approach to rapid volatile fingerprinting and non-volatile analysis to characterise food authenticity the advantages and disadvantages

2) Examples and applications for developing rapid figure printing techniques for organic foods (i.e. eggs, coffee, fish, vegetables) and sustainable ingredients (i.e. palm oil, vegetables, wheat, maize)

3) Future prospects of this technology and applications proposed for industry.

This presentation will provide a comprehensive overview of emerging techniques for rapid chemical finger printing that can help protect and fight food related fraud within the sustainable and organic food industry. Results presented in this research was partly funded by the AuthenticFood Project (FP7 ERA-Net project no. 249667, CORE Organic II).