

Authenticity of food flavours and ingredients

Flavour and aroma are important aspects of consumer acceptance criteria and here, too, authenticity issues can arise. Professor Armin Mosandl, J. W. Goethe University, Frankfurt, reviewed some of the most sophisticated methods for flavour and essential oil authentication, including a range of online coupled techniques from capillary-GC isotope ratio mass spectrometry (cGC-IRMS), enantioselective capillary GC (enantio-cGC) to the advanced enantio-MDGC-IRMS. The latter provides the most comprehensive authenticity evaluation and has been applied to the authentication of products such as bergamot oil.

One of the main interests of the flavour industry is to be able to differentiate between natural and synthetic or semi-synthetic sources. In the case of vanilla, for example, its considerable commercial importance to the food industry coupled with a shortage of supply of the natural substance has led to the development of a number of alternative sources. Vanillin can be obtained from natural vanilla beans, synthesised from guaiacol and lignin and recently, it has also been produced by biotechnology, using ferulic acid, from bran or sugar-beet pulp, or eugenol, from clove oil, as the starting products. Two speakers gave complementary insights into this important topic. Dr Nicholas Walton from the Institute of Food Research in Norwich concentrated on the different biosynthetic pathways associated with the production of vanillin.

Dr Karine Wietzerbin of Eurofins Scientific presented the latest results obtained using quantitative deuterium NMR (SNIF-NMR®) and ¹³C IRMS in order to differentiate these new origins.

Professor Peter Horn from the University of Munich also recommends isotopic signatures to provide information on product origin. In his talk he described the added benefit of including heavy isotope content - strontium, lead, neodymium - to build up a picture not only of naturally-occurring elements, but also of those which are anthropogenic in origin. Dr Eric Jamin of Eurofins Scientific showed the use of a multi-component, multi-element and multi-site approach, in which an isotopic profile is built up for different food matrices in order to address authenticity issues.

Interpreting analytical data

With increasingly powerful analytical techniques available, care needs to be taken in how we interpret the data produced, as Dr Peter Farnell, LGC in Teddington, UK warned. With the introduction of the QUID Directive (97/4/EC), all characterising ingredients must be quantitatively declared on the label. But as Dr Farnell pointed out using the example of meat content, the amount of an ingredient often has to be measured indirectly, in this case from nitrogen and fat measurements. Natural variations, differences due to processing and national habits across the European Union,



Dr Claude Guillou, Joint Research Centre of the European Commission Ispra, Italy, chairman of the authenticity session

can lead to some surprising discrepancies in the final output. LGC is currently coordinating a European-funded Thematic Network to help ensure that the problems of interpreting test measurements are clearly defined and to take into account different perspectives in the interpretation that may arise in different EU countries.

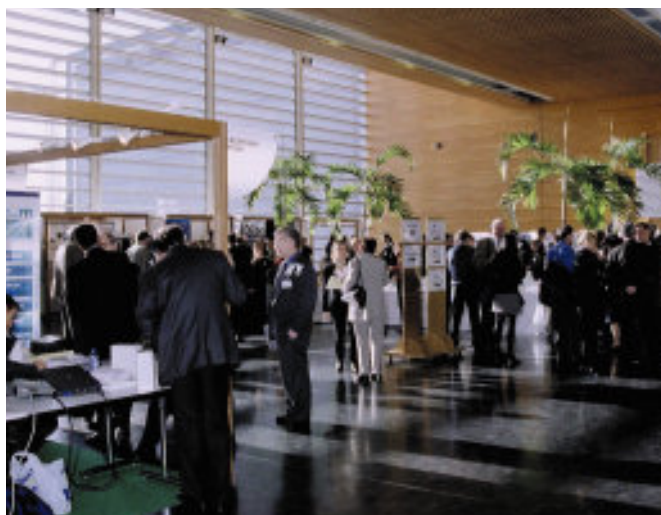
Posters

High quality posters provided a wealth of information

41 posters were on show during the coffee and lunch breaks covering a wide range of topics on food authenticity and food safety.

These included biomolecular techniques to identify fish and animal species and even the genetic origins of cocoa beans and chocolate, isotopic techniques to determine the geographical provenance of asparagus, an example of NIRS to authenticate traditional Iberian pig sausage, and the potential of fluorescence spectroscopy as a rapid screening method of bacteria such as *E. coli* in food products.

A full list of posters and their authors is available on www.fasis.com



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