

Evidence Proforma
Food Authenticity Centres of Expertise

Eurofins

What is your organisations particular area(s) of expertise in food authenticity testing?

Eurofins' specific expertise is the use of isotopic techniques and in particular the Site Specific Natural Isotope Fractionation Studied by Nuclear Magnetic Resonance (SNIF-NMR[®]) method of authentication. This is one of the most powerful techniques for detecting the adulteration of natural products. Isotope Ratio Mass Spectrometry is also used as a complementary technique.

Eurofins also carries out molecular biology techniques and a large number of classic physical, chemical and biological methods: liquid or gas chromatography, spectroscopy (atomic absorption, ultraviolet) and has a very wide range of analytical tools to control product authenticity.

- **fruit juice and derived products:** detection of addition of sugar, water, colourings, aromas or other undeclared additives, determination of fruit content; geographical origin check
- **wines, ciders:** detection of chaptalisation, sugaring, dilution or addition of glycerol, checking the process used in sparkling products, conformity to the isotopic profile; geographical origin check
- **spirits, beers:** control of the botanical origin of the alcohol, detection of addition of water, sugars or flavours (according to current regulations and/or product specifications);
- **[honey](#), maple syrup, agave syrup:** detection of addition of sugar or other undeclared additives, mislabelling, geographical origin check
- **flavours:** checking whether a flavour is natural from X (vanilla, aniseed, bitter almond, cinnamon, linalool, etc.), natural, or synthetic;
- **Coffee, tea, Spices and herbal extracts:** Differentiation Arabica vs Robusta, Coffee vs chicory, etc.; checking for natural or synthetic sources in tea, coffee or guarana-containing drinks; geographical origin check
- **meat products:** [confirmation of animal species](#);
- **fish:** [confirmation of species](#) and of origin (wild farmed);
- **dairy products:** confirmation of the main feed used (grass or maize silage), detection of reconstitution, check flavourings (e.g. fruit, vanilla); geographical origin check
- **cereals:** confirmation of variety; geographical origin check
- **basmati rice:** quantification of the amount of basmati present in rice

Please highlight your organisations key skills and capabilities in this area and provide a justification as to why you feel it should be regarded as a Centre of Expertise? In particular you should focus on highlighting your key analytical skills and capabilities and any accreditation and how you ensure fitness for purpose testing. (250 words max)

Eurofins Scientific was founded in 1987 with 10 employees to market the SNIF-NMR[®] technology, a patented analytical method used to verify the origin and purity of several types of food and beverages and identify sophisticated fraud not detectable by other methods. Today the Eurofins Group is a leading provider of analytical services with:

- an international network of around 200 laboratories across 38 countries in Europe, North and South America and Asia-Pacific
- over 17,000 staff
- a portfolio of over 130,000 reliable and validated analytical methods
- more than 100 million assays performed each year to establish the safety, identity, composition, authenticity, origin, traceability, and purity of biological substances and products.

The SNIF-NMR[®] method, pioneered by Professor G.J. Martin of the University of Nantes and further developed by Eurofins, makes up part of this stable isotope tool box. Using ²H NMR spectroscopy, this technique is able to measure non-statistical distribution of deuterium in different sites of a given molecule.

The SNIF-NMR[®] Concept was developed using the know-how built up over more than 20 years of involvement in ²H NMR spectroscopy of the chemical components of beverages and flavours. In addition to practical experience, Eurofins have built up a database of over 20,000 isotopic data for wine, fruit juice, natural flavours and other products.

Each module of the SNIF-NMR[®] Concept meets the requirements of EN ISO 17025. The systems enable full traceability of the SNIF-NMR[®] analyses, from the sample to the interpretation of results. It includes integrated control charts to ensure high quality measurements.

Eurofins is recognised in the UK, Europe and the rest of the world as a leading expert

in food authenticity testing and has applied this testing on behalf of many stakeholders in the UK for more than twenty years.

Briefly highlight your experience in method validation, data interpretation and evaluation and the reporting of analytical results? (150 words max)

Eurofins Scientific is an international life sciences company which provides a unique range of analytical testing services to clients across multiple industries. The Group is the world leader in food and pharmaceutical products testing. It is also number one in the world in the field of environmental laboratory services and one of the global market leaders in agrosience, genomics, discovery pharmacology and central laboratory services.

All laboratories are accredited to ISO 17025 calibration and testing, which lays down requirements for the validation of analytical methods and to a certain extent, data interpretation and reporting. Methods used are fit for purpose. Complex data interpretation is carried out by experts in a particular technique, normally qualified to PhD level, and use is made of multi-component analysis software. Results of analysis are reported to a wide variety of people including for the purposes of a food manufacturer or seller's due diligence and for enforcement purposes, e.g. a public analyst's Food Safety Act Certificate. Results have also been reported in peer-reviewed scientific journals.

Please provide brief details where possible, of your experience in dealing with complex technical authenticity challenges and evidence of your ability to provide solutions. (150 words max)

Our authenticity analyses are "tailor-made" for each product and include basic methods and specific tests, selected to check for likely adulteration practices.

Examples include:

- A test developed for Aberdeen Angus meat (on behalf of the Aberdeen Angus Society) using microsatellite DNA analysis
- SNIF-NMR analysis of freshly squeezed orange juice for the presence of extraneous water in association with the AIJN (European Fruit Juice Association)
- Stable isotope ratio analysis for Devon beef in collaboration with Devon County Council Trading Standards.

Eurofins is also able to provide rapid method development, validation and capacity,

particularly in times of crisis. A recent example of this is the horse meat scandal in 2013 where Eurofins DNA Competence Centre was one of the few labs able to offer an accredited semi-quantitative DNA test for horse when the scandal broke. In response to the increased need for testing, capacity was ramped up from 20 to 800 samples per day with a three day turnaround.

Are you willing to provide advice on your areas of expertise and assist others through partnership working and sharing of information? Outline briefly your experience in collaborative working and how you could contribute to enhancing the UKs standing in the field of authenticity testing. (150 words max)

Yes, Eurofins has a long track record of working on projects with food producers, manufacturers, retailers and food safety enforcement bodies including the Food Standards Agency. Eurofins is one of the main partners of the EU Food Integrity Network.

Eurofins has recently made a commitment to restricted sharing of proprietary method information with food law enforcement bodies in order to promote understanding of the analytical techniques used to solve authenticity problems and to facilitate enforcement action. Although much of the current authenticity testing takes place in France and Germany, the company is keen to expand this into the UK and has the resource and expertise to be able to collate authenticity data in areas specific to the UK, e.g. British meat, English honey etc.

Please prove a brief statement of your capabilities to be included on the virtual food authenticity network portal (50 words max)

Eurofins is the world leader in food and feed authenticity testing. We pioneered DNA-based analytical technologies for food testing using innovative protocols to improve the safety and authenticity of our clients' food products. We have patented the [SNIF-NMR](#)[®] technology and related authenticity testing methods.

