

Ensuring authenticity and safety of meat

By Dr. Bert Popping, Eurofins Germany

The presence of horsemeat in beef products has hit the headlines again. This has occurred almost exactly 10 years after the British Food Standards Agency conducted its first survey for undeclared meats in salami. At that time, Eurofins had developed specific DNA tests that could show the presence of horse and donkey in beef and pork meats.

Now, the admixture of substantial quantities of horsemeat into other types of meats has been discovered by the Irish Food Standards Agency. Again, the advanced DNA testing systems of Eurofins have been employed. After the initial discovery in products sampled in Ireland, horsemeat was also found in numerous other European countries. In addition to the fact that the products were incorrectly labelled, the Food Standards Agency also in some of the samples found traces of phenylbutazone, an anti-inflammatory veterinary drug which is not permitted to be used on horses destined for the food chain.

Eurofins offers several types of testing that support meat authenticity and safety:

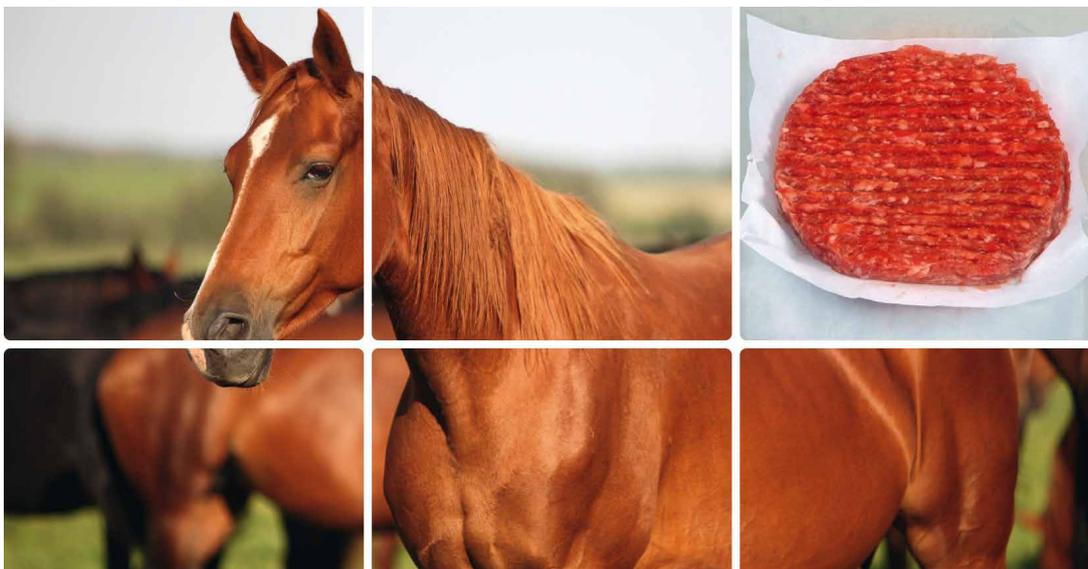
- For meat speciation, customers can choose between sequencing, real-time PCR and ELISA. PCR tests allow multiple species detection, including beef, pork, goat, horse, donkey, turkey, and chicken, with the option of adding species on request. A certain

format of this assay also allows semi-quantitation. Similar tests can also be performed for fish species.

- For veterinary drug residue testing, Eurofins offers a single detection method for phenylbutazone as well as a comprehensive screening method for non-steroidal anti-inflammatory drugs (NSAID) that encompasses phenylbutazone.
- Eurofins was the first laboratory to release a DNA test enabling the traceability of individual cow meat across the supply chain, in 2001. The system Eurofins-TAG™ allows the monitoring of individual animals throughout the food chain and thus the validation of the theoretical traceability implemented by each stakeholder. It is based on the fact that each animal has a unique genetic fingerprint that can be used as a tracer of the processed products originating from its carcass.

With this comprehensive offer, Eurofins further documents its unparalleled analytical and technological capabilities to support its customers' efforts in ensuring the authenticity, accuracy and safety of their products. This includes adapting these capabilities to deliver continuous high quality results with very short turnaround times despite large sample loads.

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Allergen detection by LC-MS/MS – the completion of a portfolio

By Dr. Bert Popping, Eurofins Germany

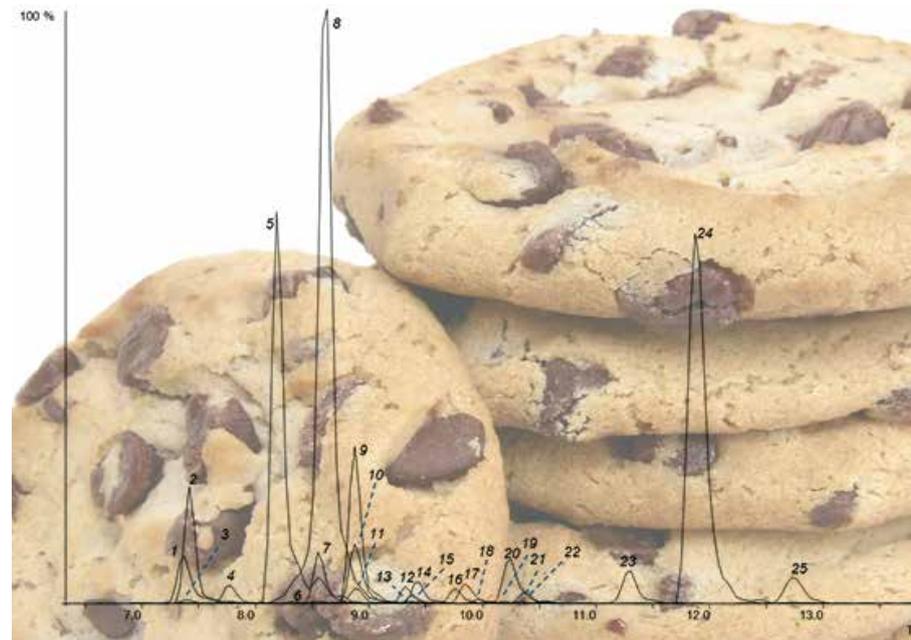
Traditionally, the presence of allergens in food has been determined by the ELISA and PCR techniques. These technologies have been established for many years and are routinely used in most laboratories' and manufacturing facilities' testing for the presence of food allergens. The benefit of these technologies is their wide availability and ease of use. Furthermore, over the years they have been proven to work for a wide range of matrices.

However, scientists at US-FDA as well as other institutes have shown over the past seven years that in some processed materials such as yoghurt based dressing, bakery products, cookies and in one case chocolate, the ELISA technique did not detect the presence of a significant amount of milk and egg. With the newly developed Eurofins' technology of allergen testing by Liquid Chromatography combined with Mass Spectrometric detection (LC-MS/MS) scientists could show that in bakery products, large quantities of egg and milk, which remained undetected by ELISA, were easily

detected by LC-MS/MS. With the three technologies of PCR, ELISA and LC-MS/MS, Eurofins now has a complete portfolio of technologies available, which can handle difficult, processed matrices, consistently providing reliable results. This enables

customers to make better risk management decisions based on analytical data provided, thereby protecting their brands from costly recalls and damage.

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GMO testing to comply with French decree n°2012-128

By Dr. Andreas Pardigol, Eurofins Analytics France

In 2011, EU regulation 619/2011 introduced a maximum 0.1% tolerance threshold applicable for certain GMOs in feedstuffs. The same threshold has also been adopted by French decree n°2012-128, which came into force on 1st of July 2012, defining the requirements for "GMO-free" labelling.

Screening tests can still be considered as useful analytical tools for products with very low GM risk. However, this testing strategy becomes obsolete for products which are frequently tested as positive for the following reasons:

- Some GMOs authorised in the EU contain neither P35S nor TNOS sequences targeted by screening methods. Such screening tests are therefore not adequate, especially for soy, where it is necessary to use additional tests.
- Qualitative or quantitative screening methods cannot

distinguish between GMOs authorised or tolerated at the 0.9% or 0.1% levels.

- Positive screening results need confirmation by specific tests. This generates additional cost and time for reporting of test results.



The new regulatory situation, in combination with the recent authorisation of GMOs undetectable by P35S and/or TNOS screening, has led Eurofins to develop a new testing strategy called "MultID" next to other multiplex identification methods. These

are based on specific multiplex PCR tests which allow for direct and unambiguous detection and identification of corn and soy GMOs, authorised and/or tolerated in Europe at the 0.9% or 0.1% threshold.

The new offers "MultID Corn" and "MultID Soy" can specifically identify several GMOs in a single test, where multiple assays were necessary in the past to obtain the same result. In addition, "DeltaQuant" is a novel economic and reliable tool for direct quantification of Roundup Ready[®] soybean (GTS 40-3-2) and as a follow-up analysis for quantification of a broad range of GM corn..

Apart from the compliance with French decree n°2012-128, this offer can also be used in the framework of other GMO regulations requiring 0.1% or 0.9% threshold labelling. It is available throughout the Eurofins network.

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Food-borne virus detection: a necessary step towards quality and safety

By Nizar Benismail, Eurofins Cœur de France



Food-borne viruses such as norovirus GI/GII and hepatitis A are responsible for 20% of collective food poisoning in Europe today. They mainly cause gastroenteritis, fever and gastric problems.

Being not only highly infectious and contagious, but also very resistant, these viruses are very hard to control. As a result, contamination can quickly spread throughout an entire region

causing crises and having serious economic repercussions such as product withdrawal/recall, judicial proceedings and damage to brand image.

One recent crisis in October 2012 resulted in 11,000 children being contaminated in Germany by strawberries from China. The increased importation of raw materials from countries where hygiene processes are not yet mature, have therefore shown virus detection as a major quality and safety concern. Additionally, regulatory requirements have become stricter, and a new regulation has increased the level of official controls on imports to the EU of frozen strawberries from China (EU 1235/2012), starting on January 1st, 2013.

In order to support its customers facing these emerging risks, Eurofins has opened a new laboratory for virus detection in food, in Moulins, France. The lab has over ten years' experience

in detection and identification of viruses for animal health and regularly participates in ring-tests for validation of its results. Eurofins can now test samples linked to food production such as fruits and vegetables, herbs, spices, molluscs and processed food, as well as water and swabs from work surfaces, for norovirus GI/GII, hepatitis A and other less frequent viruses.

The laboratory's state-of-the art Real Time PCR method, which conforms to the CEN TAG4 standard, provides results in a few hours, so customers can save time and money with increased assurance. Eurofins can also support customers in preventing contamination with advisory services including audits, control plans and training.

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Rapidust® - a new proprietary way of sampling and testing grain lots for mycotoxins

By Mareike Reichel, Dr. Susanne Rathjen, Simone Staiger, Dr. Scarlett Biselli



For analysis of mycotoxins in grains, sampling is the most critical step in the whole analytical process especially for heterogeneously distributed storage mycotoxins. Common sampling procedures are either not representative or - if representative - extremely labour and time-intensive.

With Rapidust® Eurofins will be able to offer its customers an innovative high-throughput and representative dust sampling and screening technology for mycotoxins in grain lots. This proprietary procedure (DE 10 2010 037 425 B4) allows the acquisition of representative samples from large batches even during the handling process (e.g. unloading trucks). Based on the fact that the contamination of the overall sample and its dust particles can be correlated, the system provides reliable results that allow rapid decisions on the acceptance or rejection of the grain lot. It also provides improved process control by means of adjusted scalping, cleaning and flour extraction.

Basic principle

Mycotoxins accumulate on dust particles ubiquitously present in grain lots. Consequently, dusts are often highly contaminated with mycotoxins. Experts identified a dust fraction with a consistently enhanced mycotoxin concentration compared to the overall grain lot. Data models were set up to

determine this factor for relevant mycotoxins in various grains to allow for the calculation of the mycotoxin contamination in the grains based on the contamination in the dust.

Eurofins developed a sampling device which collects the relevant particle size and makes dust samples directly available for rapid analyses and no homogenization step is required. The natural enhancement of the mycotoxin contamination in the dust facilitates on-site analyses of mycotoxins within a few minutes even for low legal limits.

So far suitability of the system has been proven for the determination of field toxins (deoxynivalenol, zearalenon, fumonisines, T2- / HT-2 toxin). Storage toxins (aflatoxins and ochratoxin A) are currently under investigation with other toxins and food commodities to follow. At present, Eurofins is offering this novel technology to interested project partners. In case of further questions or an individual solution, please do not hesitate to contact us.

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in brief

Eurofins UK invests in new facility

The new headquarters of Eurofins UK, including the purpose-built food testing facility at the i54 Business Park, Wolverhampton was officially opened on the 27th of September, 2012 by Jonathan Brenton, British Ambassador to Belgium.

The new laboratory allows Eurofins to offer high quality testing services for pesticides and organic contaminants, heavy metals, nutritional analysis and microbiology within very short, industry-leading turnaround times and at an affordable price, enabling clients to move towards more systematic testing.

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Eurofins ultra low metals portfolio expanded

Global requirements on food safety are continuously increasing. To assist food manufacturers ensure compliance with lower maximum levels or specifications, Eurofins has expanded its test portfolio of ultra-low metal and element testing using high-resolution ICP-MS (HR-ICP-MS).

In addition to the "4 major elements" arsenic, cadmium, lead and mercury, Eurofins can now offer 15 rare earth elements and further metals such as selenium, antimony, chromium and

nickel with quantification limits down to 1 µg/kg.

Rare earth elements may occur in toxicologically relevant quantities in mineral fortified food products. Selenium is an essential micronutrient being present in food products in trace amounts either naturally or from fortification. Antimony migration can play a role in food and drinks packaged in plastic. Chromium and nickel can migrate during industrial processing into food products.

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Free 3-MCPD in glycerol: new legislation and method available

In March 2012, EU Regulation No. 231/2012 on specifications for food additives was published setting a maximum level for 3-monochloropropane-1, 2-diol (3-MCPD) in glycerol of not more than 0.1 mg/kg. Due to its toxicological relevance, the EU and WHO/FAO have set up a tolerable daily intake (TDI) of 2 µg/kg body weight.

Free 3-MCPD is known as process contaminant mainly in soy and seasoning sauces, hydrolysed vegetable proteins, bread and smoked meat products. Traces may also be formed as by-product during the manufacturing process of glycerol. Eurofins newly expanded method for

free 3-MCPD extends our portfolio of testing for the food ingredient glycerol. The limit of quantification of 0.05 mg/kg for the new method will enable manufacturers to monitor EU purity requirements for glycerol.

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Isotopic analysis of vinegar becomes an official CEN method

The acetic acid present in agricultural vinegar must be derived from the fermentation of plant materials (e.g. from wine), the origin of which can be checked by isotopic analysis only. An international collaborative study organised by the Eurofins Authenticity Competence Center in Nantes (France), under the auspices of the Permanent International Vinegar Committee (CPIV, Brussels) was published in *Analytica Chimica Acta* 649 (2009) 98-105. This study resulted in the standards EN 16466 – parts 1, 2 and 3:2012 being adopted by the CEN (European Committee for Standardisation) in respect of "Vinegar — Isotopic analysis of acetic acid and water". Analysis of vinegar using these methods is performed at Eurofins Analytics France and available through your local Eurofins contact.

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COMING EVENTS

EVENT	DATE & PLACE	MORE INFO	CONTACT
Food Safety Congress	23.- 24.04.2013, Berlin, Germany	www.managementforum.com	LuisaMehl@eurofins.de
ESE	23.04.-25.04.2013, Brussels, Belgium	www.euroseafood.com	MarkusZell@eurofins.de
Vitafoods	14.05.2013 - 16.05.2013 Geneva, Switzerland	www.vitafoods.eu.com	LuisaMehl@eurofins.de

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