

Improved detection of genetically modified organisms (GMO) Eurofins Scientific launches GMO PLATINUM ASSAY®

Higher sensitivity and specificity of GMO analyse

EUROFINS SCIENTIFIC offers in all countries a significantly improved assay to detect "Biotechnology Food" and "Biotechnology Feed". The new validated system, called GMO PLATINUM ASSAY®, has passed rigorous tests during the past months. It allows a more reliable conclusion as to whether food products and raw materials (maize, soya, starch, lecithin, rape-seed, etc.) contain genetically altered material. The new test program is

based on the development of improved primer/probe systems with a new chemistry to detect genetically modified DNA. The new systems are more specific and more sensitive than any previously developed system. The advantage of this assay is that samples with very low GMO DNA content can be detected, because the assay is sensitive enough to find single DNA copy numbers. In addition, the new method reduces occurrence of false-positive results due to the improved specificity. "I anticipate that our GMO PLATINUM ASSAY® will set new standards in the industry. Trade and food producers will receive the best and most reliable results with this method." comments Dr. Gilles G. Martin, CEO of the EUROFINS SCIENTIFIC Group.

Lower risk of false positive results

The DNA analysis of genetically modified organisms is currently conducted in only a few specialized labs. Since some conventional plants contain genetic sequences similar to those of modified sequences, false-positive results occur occasionally with traditional assays (i.e. the result wrongly implies that the sample has

been genetically modified). This causes delays and additional costs (e.g. increased costs for importers as a result of longer storage times or rejection by customers). The application of the new technology will significantly reduce the risk of false-positives and offers economic advantages through improved reliability and specificity.

"The whole food and feed industry will benefit from our new service, because we obtain excellent results even in samples, with partially destroyed DNA which are difficult to analyse." says Dr. Gilles Martin, "GMO PLATINUM ASSAY® will enable our clients to comply with existing and future GMO labelling regulations in the best possible way."

EUROFINS SCIENTIFIC maintains an internal proficiency testing programme between its three GMO testing sites in Des Moines (USA), Hamburg (Germany) and Nantes (France) to ensure highest quality standards and comparability of results between all EUROFINS SCIENTIFIC laboratories.

In an environment where inaccurate analysis can lead to the rejection of a product and substantial financial losses, it is important to provide cutting edge analysis and constantly improve methods. And the GMO PLATINUM ASSAY® is just another step to do this ●

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Food Packaging: EUROFINS SCIENTIFIC offers superior methods to detect migration of chemicals

Most food products need to be protected by means of suitable packaging. During storage, the packaging must provide protection against reactive gasses, microorganisms and chemical components in the environment. The effect of this protection is demonstrated by permeation tests.

On the other hand it is also essential that the packaging material itself does not contaminate the food products. Any migration of chemical components from the packaging material is detected by migration testing. However, the normally used standardised tests do not always adequately demonstrate the suitability of the packaging material and may therefore lead to false conclusions.

A current example is testing of food packaging laminates for the migration of primary amines (PAA) formed from isocyanates in the adhesive. The internationally accepted method is based on spectrometry. Even though this method is used



by food producers, it does not always lead to specific and unambiguous conclusions.

Our experience shows that such techniques have two major drawbacks, i.e. the lack of specificity and the risk of interference from other components. Consequently, such techniques are not recommendable for the full evaluation of risks in relation to consumer safety. They are good screening methods and they are recommended to be used as a preli-

minary analytical tool to evaluate the safety of a packaging. Results obtained with spectrometric methods however should not be the sole basis of a decision, not even in routine testing of laminates.

Aromatic isocyanates in adhesives for laminates are sometimes substituted by aliphatic isocyanates. Such substitution calls for superior techniques based on chromatography coupled with mass spectrometry (GC/MS or LC/MS). Reliable test methods that can identify, quantify, and suppress interfering chemical components exist today and are generally recommended. These methods have been developed by MILJØ-KEMI, Danish Environmental Centre, member of EUROFINS SCIENTIFIC Group and represents state of the art knowledge. The methods can be taken as reference by the authorities and by the packaging and food industries ●

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Dioxins and PCBs in Feed and Food products and in the environment



Dioxins (polychlorinated dibenzo-p-dioxins) and furans (polychlorinated dibenzofurans) collectively known as "dioxins" are environmental contaminants produced in small amounts during combustion and as by-products in the manufacture of certain chemicals. Dioxins have been shown to be toxic to certain animals and some of them are known as carcinogenic in humans. Dioxins have also been implicated in disrupting the endocrine (hormone) systems in humans and wildlife. PCBs (Polychlorinated Biphenyls) are a group of closely related chemicals and some individual PCBs, named dioxin-like PCBs exhibit toxicity similar to those of toxic dioxins. Unlike dioxins, PCBs were purposely produced but by now their use should have been phased out.

Dioxins and PCBs do not degrade easily. Because they are so persistent they have become very widespread in the natural environment, and can also be found at very low concentrations in many foods, particularly fatty foods. The nature of dioxins and PCBs means that they tend to become more concentrated along the food chain and to meet strict limits, control is needed in the environment, in foods and in animal feeds. Meeting strict control limits routinely requires measurement as low as parts per trillion.

EUROFINS SCIENTIFIC is able to offer these most demanding of chemical analyses through GfA becoming part of the EUROFINS SCIENTIFIC Group. Based in

Münster, Germany, GfA was founded in 1985, and is today one of Europe's leading institutes for workplace, environmental and food analysis as well as for emission and ambient air measurements, accidental release and emergency analyses. GfA is in the top 5 laboratories world wide with more than 5,500 dioxin analyses performed during the year 2000.

The GfA group totals 95 staff and the GfA laboratory is accredited for more than 220 tests to the international ISO IEC 17025 standard. The main focus of GfA services is on the analysis of dioxins and dioxin-like ultra trace components in a wide range of matrices, e.g. ambient air, emissions, food, feeding stuff, soil, residues, biological samples, and water.

Together with GfA's recent establishment of AERIA (founded in 2000 in Orléans, France) the GfA group supports industrial customers, authorities as well as scientific institutes.

This widens the overall portfolio of EUROFINS SCIENTIFIC in food analyses and along with MILJØ-KEMI in Denmark strengthens the entire environmental portfolio, especially air measurements ●



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Authentication of dairy products: Detecting geographic origin and cattle diet of milk and cheese products

Within a European research project, EUROFINS SCIENTIFIC has investigated the possibility of determining the origin of dairy products using isotopic techniques. The analyses focus on the isotopic measurement of $^{13}\text{C}/^{12}\text{C}$ and $^{18}\text{O}/^{16}\text{O}$ ratios in several milk and cheese components. These values depend on the geo-



graphical origin of the product, on the climate and on cattle diet.

The $^{18}\text{O}/^{16}\text{O}$ ratio in milk water is directly related to the $^{18}\text{O}/^{16}\text{O}$ ratio of feed water, which in turn is linked to geographical origin. In addition, it exhibits seasonal variations due to evapotranspiration phenomena leading to an enrichment in ^{18}O during the summer. This measurement thus provides relevant information on the geographical origin of the milk or the season of production. The cattle's diet has an influence on the ^{13}C content of the milk components: a cheese made from milk produced by animals fed exclusively on C3 plants (grass, hay...) contains lower levels of ^{13}C than a cheese from cattle whose feeding regime includes maize silage (C4 plants). Changes from winter

to summer feeding can also be picked up from the variation of the ^{13}C content throughout the year.

Our new analyses provide isotopic fingerprints of the dairy products, which by comparison with authentic samples, can be used to detect certain fraudulent practices and to authenticate the geographical origin. They can also provide an efficient means of enforcing the restricted rules associated with PDO labelled products. The detection of maize silage in the cattle diet using the ^{13}C analysis of milk or cheese is now available in our laboratories. The feeding of grass versus maize may be an important differentiator in consumer perception of dairy products ●

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EUROFINS SCIENTIFIC opens a new high-tech pesticide laboratory in Hamburg

Two leading labs combined in a state-of-the-art site

EUROFINS SCIENTIFIC has consolidated its worldwide leading market position as a supplier of laboratory support services by expanding its position in the field of analysis of chemical residues in food, e.g. the analysis of pesticides. Dr. Specht & Partner GmbH, who developed the internationally renowned "Specht-Method", the basis of Germany's official method for pesticide analysis, has moved to a new location in Hamburg-Harburg, Großmoorbogen 25, jointly with the pesticide group of Wiertz-Eggert-Jörissen GmbH (W.E.J.). The biology department of W.E.J. has also moved to the same location with its competence centre for Molecular Biology. The site performs high volume tests to screen and quantify genetically modified organisms (GMO) as well as developing new GMO detection methods.

"We will concentrate even more on the requirements and needs of our clients. The two pre-existing labs fit ideally to form one laboratory, pooling competence to provide a resource unparalleled in Europe. The fusion of these two labs gives us the critical mass to speed up R&D, automation and IT modernisation and to develop the outstanding know-how within the group." com-

ments Dr. Andreas Gahl, Managing Director of EUROFINS SCIENTIFIC in Germany.

The new complex employs 70 highly skilled specialists in 2500 m² of custom-built lab space. This change will combine resources and create new capacity which is expected to consolidate a leading position for the group in this exciting area of analytical services. The introduction of leading competence centres is part of the scale-up programme of the EUROFINS SCIENTIFIC Group, geared to offer its clients analytical capabilities that represent the gold standard on a global basis.

"A new key-account management system is going to be established to offer focussed high level advice to our clients in both, Germany and across the rest of Europe with the competencies of both laboratory groups being used more efficiently in R & D." comments Dr. Gahl.

Dr. Specht & Partner develops new quantitative and qualitative methods to detect chemicals used in agriculture. The company has an international reputation for improving detection limits and setting the standards for the industry. This allows customers to assure the highest possible safety standards for their products. The laboratory



has a unique database and experience of all the chemicals routinely applied to vegetable and crop plants around the world. With the globalisation of trade, quality control and the analysis of food residues, e.g. pesticides, in food products is gaining increasing importance for ensuring consumer protection ●

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Largest cattle DNA traceability study ever conducted has been completed



"These carcasses look all the same EUROFINS-TAG® shows that they are all different and unique".

Last December 7th, The French Région Pays de la Loire announced the results of its DNA traceability project in the West of France on a total of 14,000 cows. The study was particularly justified in light of the crises that have shaken the food industry over the last few years, not only BSE, but also dioxin contamination and listeriosis. This has led to stronger consumer awareness in two main areas:

- an increased need for safer food products
- a demand for more information about the sources of food as well as the production process, especially for beef products.

This genotyping project, jointly conducted by Pays de la Loire, Bovi Loire and EUROFINS SCIENTIFIC started in March 2001. In a first stage the concept of EUROFINS-TAG® was validated, including dedicated logistics for sample collection, bar code identification, analysis of DNA fingerprints and database administration. The samples were sent to the Nantes biotech lab of EUROFINS SCIENTIFIC and subsequently analysed to trace back their identity and origin. The

concept proved to be feasible and applicable on a large scale. In the second phase EUROFINS-TAG® was applied to a large number of cows in various sites in the region.

Xavier Charlot, President of Bovi Loire explained: "The experiment demonstrated the use of genotyping as a control tool and its perfect complementarity to the current procedures. These are based on an organisational and paper traceability system that identifies all French cows from birth."

The result of this project was that all DNA tests were able to identify genetically the animal of origin. EUROFINS-TAG® demonstrated an excellent correlation between DNA traceability and the paper traceability of abattoirs.

"In my view we have set new standards not only in France, but across Europe. This has been driven by consumers' expectations of transparency in existing traceability systems" remarked François Fillon, Président of the Pays de la Loire Regional Council.

For Dr. Gilles Martin, CEO of EUROFINS SCIENTIFIC: "I believe this is the largest pilot project ever conducted to collect DNA fingerprints of cattle in Continental Europe. I am proud that our company has proven that we are able to process such a massive number of samples and to contribute to highlighting the meat industry's quality and transparency efforts" ●

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Sixth International FASIS Symposium Food Authenticity and Safety

More than 300 participants from 25 different countries in Europe, America and Asia, attended the last FASIS conference organised by EUROFINS SCIENTIFIC in Nantes (France), on the 28, 29 and 30 November, 2001.

Representatives from the food industry, the retail sector, and also from government bodies, research institutes and consumer associations, were there confirming the importance of the topics dealt with - origin, traceability, authenticity and safety - for all actors involved in the food business.

Over 3 days, 34 speakers and 41 posters presented some of the latest developments in food analysis, taking into account consumers' expectations regarding food authenticity and safety.

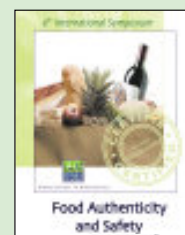
For more information on this event, a special issue of the EUROFINS SCIENTIFIC Newsletter has been totally dedicated to the sixth International FASIS symposium.

Dates to note in your diary – 7th FASIS will be held on the 15, 16 and 17 October, 2003 ! ●

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