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Food Testing News

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Pesticide analysis on samples from the farm before harvest

Innovative control measures allow shipment of fresh and tested produce

By Silke Heimbecher, Eurofins Global Control, Germany and Dr. Ansgar Ferner, Eurofins ofi-Lebensmittelanalytik, Austria

In the EU maximum pesticides residue limits in food are strictly regulated by Regulation (EC) No. 396/2005. Additionally, consumer concern about pesticides has increased and has lead to stricter control measures, particularly for fruit and vegetables. To provide consumers with products of the highest freshness, produce should be tested at an early stage of the supply chain and ideally, results of analyses should be available prior to their arrival at destination.

In 2009, testing of crops directly from the farm was successfully achieved by Eurofins ofi-Lebensmittelanalytik in Vienna, together with Eurofins Global Control in Hamburg for an Austrian retail customer. In cooperation with our Austrian clients, the importers, suppliers and farmers in Turkey and in Italy, Eurofins Global Control took samples of grapes and pears from representative points in over 100 fields after recording the GPS coordinates. Fruits were combined to form duplicate sealed samples (A and B) and these were analysed by Eurofins ofi-Lebensmittelanalytik, in Austria, the only laboratory approved for pesticide analysis by Qualität und Sicherheit (www.q-s.de), the worlds' largest control system for fresh food in five days. Depending on the results of the first sample, the appropriate fields were approved for harvest. Any samples exceeding the limits were verified immediately by analysing a second (B) sample.

Similarly, pre-shipment controls were carried out on harvested fresh fruits in Italy. Suppliers prepared lots from selected fields, which were sampled representatively by Eurofins inspectors before storage or shipment. Analyses were performed before the release of each lot.

As a result, unnecessary transportation, disposal and multiple testing costs for failed samples can be reduced. Due to these procedures fresher produce can be delivered to the consumer by avoiding the interim storage time. The produce is traceable to each individual farm or field, and pesticides can be controlled more efficiently as container lots are frequently combined from different fields or farms.

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Eurofins Conference and Training Centre

Creating Customer Value through Knowledge Sharing

By Bert Pöpping & Carmen Diaz, Eurofins CTC, Germany

Eurofins has over the past decades organised many scientific conferences. It became evident that stakeholders involved in the food chain have a need for knowledge and information. This applies even more so in a rapidly changing world where food regulations sometimes appear to change faster than new compliant labels can be printed. Businesses in the food chain need to be up-to-date with increasing information from different sources and at the same time perform their actual business activities.

As a natural succession to its previous activities, in June 2009 Eurofins founded a new company with the aim of creating customer value through knowledge sharing. This company brings together the overwhelming wealth of information from the legislative, regulatory and consumer sides in a comprehensive, yet easy to understand, manner to allow customers to be more effective in their businesses in a very competitive world.

Eurofins CTC, led by two experts in the field, Dr. Bert Pöpping and Dr. Carmen Diaz-Amigo, is involved in the scientific and organisational part of a number of national and international conferences which include RAFA (Prague, Czech Republic), RME (Noordweijk, Netherlands), AOAC International (Gaithersburg, USA), the European Commission initiated Global GMO Conference (Ispra, Italy).

From its experience and networking, Eurofins CTC is able to create a unique customer experience bringing together speakers from industry, government, research and consumer organisations to highlight different perspectives of topics relevant to industries in the food sector. It also provides confidential in-house training to customers tailored to their specific needs.

To illustrate this with an example, the first official Eurofins CTC event, the international conference in Indaiatuba, Brazil brought together speakers from leading food industry companies, US-FDA and the Brazilian Ministry of Agriculture, which presented their views on microbiology and veterinary drug residues. The conference was extremely well received judged by the enthusiasm and interaction of participants and speakers as well as the overall evaluation.

Eurofins CTC is also involved in the forthcoming “Eurofins Food Safety Solution” conference in Paris, to be held on 21./22. April this year.

For further information on Eurofins CTC please visit: *www.eurofins-conferences.com*

Stevia sweeteners

By Jules Skamarack, Eurofins Scientific, USA

Stevia rebaudiana is a herb native to Central and South America which has been cultivated for decades for its sweet tasting leaves. In the EU the stevia herb is considered a “novel food” and approval has not yet been granted. Extracts and refined steviol glycosides, derived from the leaves, have been used as zero-calorie sugar substitutes since the early 1970’s. In the US, stevia has been approved for use as a dietary supplement since the mid 1990’s.

One of the major compounds of stevia is rebaudioside A (Reb A). It is 200 – 400 times sweeter than sucrose, heat stable, pH stable, and non-fermentable. Reb A has recently been approved as a food additive in some European countries (France: September 2009) and it is expected that EU approval will follow in 2010 or 2011.

Recently the FDA issued no objection to Reb A’s classification as GRAS (generally regarded as safe) for use as a general-purpose sweetener in foods. This status opens the door for its use in a variety of products including: beverages, candies, yoghurts, ice creams and baked goods. It is estimated that Reb A will grow to 20-25% of the world sugar and sweetener market.

Testing Stevia, Steviosides & Reb A:

The Joint FAO/WHO Expert Committee on Food Additives (JECFA) published specifications for extracts from *stevia rebaudiana*. An assay for the content of individual steviol glycosides by high pressure liquid chromatography is available. The sum of seven steviol glycosides (stevioside, dulcoside A, rebaudioside A, rebaudioside C, rubusoside, steviolbioside, rebaudioside B) can be determined.

Eurofins offers the JECFA and the USP/FCC methods for determining the purity and/or composition of purified stevia components, stevia leaf extracts as well as the stevia content of finished products.

For more information on testing of stevia related products please contact Paul Burns or Jules Skamarack at:
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Carbon 13 SNIF-NMR: New frontier of authenticity testing

By Eric Jamin, Eurofins Scientific Analytics, France

Eurofins is well known for the development of new methods in the field of authenticity testing, in particular for having provided the possibility to distinguish the various origins of sugar and alcohol, thus allowing the detection of adulteration of fruit juices with added sugars or the addition of alcohol of other origins to wine and alcoholic beverages. However, until now the methods available were not able to distinguish between sugars of "CAM" plants (pineapple, agave, dragon fruit) and "C4" sugars (cane or maize) that possibly may have been added.

A new **carbon-13 SNIF-NMR method** has now been developed in collaboration with the University of Nantes, opening new fields for authenticity testing. In **pineapple juices** for example, this new approach enables **optimum detection of added sugar** (see figure 1). In alcohols, a similar approach allows **efficient control of authenticity for Tequila** (100% agave, Tequila "misto" - minimum 51% agave - and Tequila-based cocktails such as Margarita, Tequila Sunrise, etc.).

In the future this method will also be applied for the authenticity testing of more complex molecules of high economic value such as flavour compounds or active pharmaceutical substances. There again the site-specific information brought by Carbon SNIF-NMR will enhance the discrimination power of isotopic methods to identify sources and detect counterfeit products. A tailor-made project can be set up on demand.

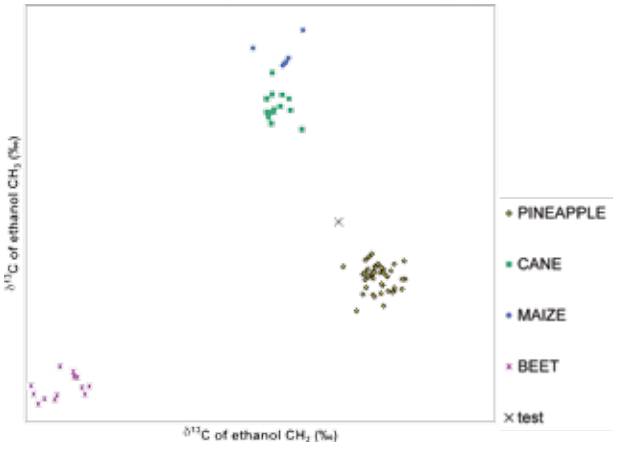

Figure 1: Graphical representation of the site-specific carbon 13 deviations measured by C13 SNIF-NMR in authentic pineapple samples and various sources of sugar

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News about PAH analysis in food

By Dr. Claudia Schulz, Eurofins WEJ Contaminants, Germany

An improved method for the analysis of polycyclic aromatic hydrocarbons (PAH) in food has been successfully developed and is now available.

Polycyclic aromatic hydrocarbons (PAH) constitute a large group of more than several hundred chemical compounds, many of them known to be carcinogenic and genotoxic. PAH may occur in food either by uptake from the environment or by generation during food processing such as barbecuing or frying.

In 2008, the European Food Safety Authority (EFSA) published an opinion on suitable indicators for the occurrence and toxicity of PAH in food. The EFSA´s CONTAM Panel concluded that benzo(a)pyrene is not a suitable indicator for the occurrence of carcinogenic PAH in food. Instead the sum of four or eight PAH are proposed in order to better protect consumer health. Benzo(a)pyrene is the only PAH presently regulated in food in the EU. In 2010, an amendment of the European Regulation is anticipated towards the four PAH benzo(a)pyrene, chrysene, benzo(b)fluoranthene and benz(a) anthracene.

Eurofins WEJ Contaminants already uses a new selective gas chromatography phase with a unique ability for an optimal separation of the Environmental Protection Agency (EPA) and EU PAH. Also critical pairs such as chrysene/ triphenylene and the three benzo(b/j/k)fluoranthenes are separated, which will be very important once the EU Regulation is amended.

Furthermore, a new sample clean up method has been developed for the determination of PAH in food. The sample clean up so far applied has been replaced by an automated online solid phase extraction (SPE), which allows a direct gas chromatography – mass spectrometry (GC-MS) measurement after completed sample preparation. By implementing the new online SPE method a considerable reduction of the turn around time has been achieved.

Eurofins WEJ Contaminants offers the new method for the determination of PAH in food with different PAH scopes.

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in brief

Superfruits: are they authentic?

The quest for innovation and the marketing potential of health claims in the fruit juice industry has led to an increased use of so-called “superfruits”. Thanks to new juice technology these exotic fruits from local markets are now available for worldwide consumption. Fruits such as acerola, açaï, goji, mangosteen, dragon fruit are becoming more popular due to their high content of phenolic compounds, vitamins, or other components that bring reported health benefits. Until now no published authenticity criteria have been available which could be used to monitor these new raw materials.

With the help of the Eurofins global network of laboratories, our authenticity competence center based in Nantes (France) has collected genuine fruit from around the world and is currently enhancing its database of authenticity parameters for these “new” fruits. Typical analytical figures for the key parameters usually used as authenticity criteria in the Code of Practice of the AIJN (European Fruit Juice Association) have been recently published in the “Fruit Processing” journal*.

The authenticity ASM team can help you to define the appropriate range of tests to check whether juices and other products (drinks, dietary supplements, etc) are genuine superfruits.

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New rapid preparation method for salmonella detection by PCR

With the start of 2010, Eurofins has a new system for the detection of Salmonella in food samples. The new system, (the Pathatrix®) can handle the analysis of a large number of samples at one time and process them in around 30 minutes, with final results obtained in approximately 21 hours. The system integrates well with other technologies and provides a high-quality and practical asset for the detection of Salmonella in food samples.

The system

The Pathatrix® is a microbial isolation system based upon small magnetic particles that are coated with antibodies specific to the pathogen to be detected in the product. For now Eurofins has validated the Pathatrix for Salmonella according to AOAC standards but the system can also detect other pathogens. Following the capture phase, the sample can be analysed using a PCR. The system can also be configured to save time by using a pooling method to analyze five samples for pathogens simultaneously. This method saves time and money.

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