

## GM Soy – New upcoming modified soybeans require new test strategies

By Ulf Rathjens, Eurofins GeneScan GmbH, Germany

**New genetically modified (GM) soybeans are being approved and commercialised. To detect these varieties new tests and strategies have to be used in the analysis of soy containing products.**

The main GM crops that are being commercially cultivated are soy, cotton, corn and canola. The global planting of GM soy reached a total of 77%<sup>1</sup> of the total area worldwide under soy cultivation in 2009. In the USA and Argentina the percentage of GM soy planting is above 90% and the average in Brazil has increased to over 70%.

Several different GM lines have been commercialised for the crops cotton, corn and canola, which is a different situation for soy where Roundup Ready™ soy had been the only GM soybean commercialised over past years. The development and commercialisation of new GM soybeans is increasing (see table).

The new modified soybeans that are being developed often do not contain the general screening elements that have been applied in the past, e.g. 35S Promoter and NOS Terminator. A general screening or a specific analysis for Roundup Ready™ soy is no longer

sufficient and needs to be complemented by further screening elements or specific analysis.

Eurofins updates the analysis packages SoyScreen and SoyScreen<sup>Plus</sup> continuously to cover the commercialised and / or approved varieties. This ensures the detection of the important varieties, including those that do not contain the common screening elements.

Eurofins offers a complete portfolio of qualitative and quantitative methods for the detection of GM soybeans. In complex sample types, e.g. mixed feed, the analytical strategies can be adapted to cover the requirements of the customer and to adhere to specific regulations, e.g. EU GM regulations, import regulations of Turkey.

<sup>1</sup> Please contact us for more information about the global planting area in 2010.

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Trade Name	OECD Identifier	Trait	Ap. for commercialisation <sup>2</sup>
Roundup Ready™	MON-Ø4Ø32-6	HT	Yes
Genuity™ Roundup Ready 2 Yield®	MON-89788-1	HT	Yes
LibertyLink™	ACS-GMØØ5-3	HT	Yes
LibertyLink™	ACS-GMØØ6-4	HT	Yes
unknown	DD-Ø26ØØ5-3	AQ	Yes
Optimum™ GAT™	DP-356Ø43-5	HT	Yes
TREUS™	DP-3Ø5423-1	HT, AQ	Yes
Cultivance™	BPS-CV127-9	HT	Yes
unknown	MON-877Ø1-2	IR	pending
unknown	MON-87769-7	AQ	pending
Vistive® Gold, Vistive III™	MON-87754-1	AQ	pending
unknown	MON-877Ø5-6	HT, AQ	pending
unknown	MST-FGØ72-3	HT	pending
unknown	DAS-68416-4	HT	pending
unknown	MON-877Ø8-9	HT	upcoming



HT = herbicide tolerance, AQ = oil composition, IR = insect resistant  
<sup>2</sup> Approved for commercialisation in at least one country.

# Tracing the origin of chemical compounds from natural sources using stable isotope ratio analysis

## A need for fair and ethical trade of these high value ingredients

By Eric Jamin, Eurofins Scientific Analytics, France

For traditional, ethical, or economic reasons, a given source of natural products of animal or vegetal origin can be preferred to another, and can therefore have a different price. European consumers favour the use of squalane and squalene (used especially in cosmetics) from vegetal sources such as olive oil, versus that from deep sea shark because the latter, although cheaper, is not a sustainable resource. In a different culture, the Japanese market favours the use of marine sources (mostly shark) against terrestrial ones such as pork or beef for the preparation of dietary supplements such as chondroitin sulphate (for treatment of osteoarthritis). Many other natural compounds can be added to this list, for example glycerol and heparin. In most cases there are no legislative requirements regarding the natural source to be used however, they can be mentioned in the labelling or in marketing claims, and mislabelling such

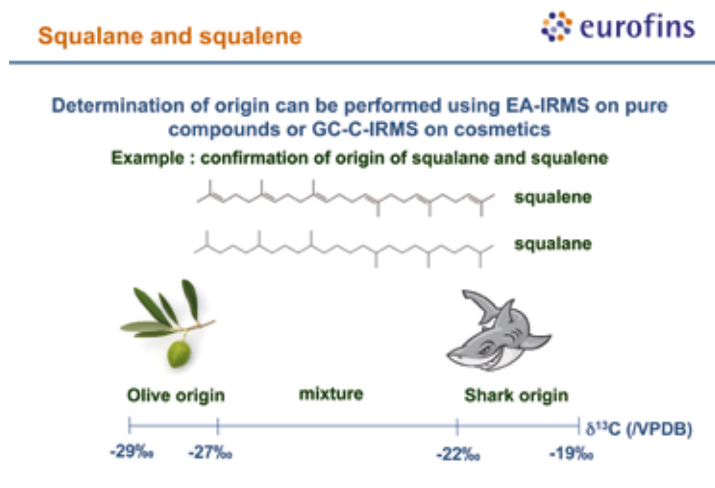
products can be regarded as fraud. In order to maintain traceability and fair trade in the market, there is a need for analytical methods that can confirm a claimed origin.

ratio analysis is the only efficient means to differentiate chemically identical molecules having different origins. The stable isotope ratios of the organic matter are a fingerprint of the conditions that prevailed at the time of the biosynthesis of the product, and allow traceability to the origin.

It is thus possible for example to determine whether glycerol or squalane / squalene is from animal or vegetal origin, whether chondroitine sulphate was obtained from a marine or terrestrial animal, and whether heparin is from beef or sheep. This analytical procedure is routinely available from our authenticity competence centre based in Nantes (France) and tailor-made studies can be designed by

our experts to apply the procedure to other similar market needs.

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When compounds are highly purified it becomes impossible to use DNA or protein tests to identify an animal or vegetal species, and trace impurities are not always present or significant. In such case the use of stable isotope

# Detection of atropine and scopolamine as contaminants of food

By Vincent Cirimele, ChemTox, France

**Datura plants containing toxic alkaloids such as atropine and scopolamine, are potential contaminants of food and feedingstuffs when they grow near to crops.**

Datura (*datura innoxia*) is a herbaceous plant with white flowers, very common as a weed and a robust invasive plant that spreads in all warm regions of the globe. It is found in urban parks, vacant lots and fields.

There is a risk of contamination by datura toxins during the harvest. The alkaloids can therefore be present in various raw and processed products such as cereals, buckwheat, wine, feedingstuffs, flour and bakery products.

Intoxication by such alkaloids causes psychotropic effects. Atropine and

scopolamine also have the short term and long term toxic effects of being powerful sedatives, hallucinogenic, and provoking cardiac acceleration or relaxation of muscles, and reduction of secretions (salivary, lachrymal, bronchial, digestive). High doses can lead to possible fatal intoxication or deep coma.

As a result of this ChemTox, a member of the Eurofins Group, has developed an HPLC-MS/MS analysis which combines high sensitivity and high specificity for the detection and quantification

of atropine and scopolamine in food products.

The analysis has a 10 day routine turnaround time (TAT). ChemTox also offers a 5 day TAT or 24 hour TAT in very urgent cases, or for suspected contaminated batches of food.

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# Hydrocarbon contaminants in seafoods post-spill

By John Reuter, Eurofins Central Analytical Laboratories, USA

Following the BP Deepwater Horizon oil spill in the Gulf of Mexico (April 2010) concerns arose about the potential risk for contamination of seafood stemming from polynuclear aromatic hydrocarbons (PAHs) and aliphatic hydrocarbons present in the oil. This perception continues in the US marketplace even though all testing performed so far has demonstrated the absence of any issue. It is anticipated that monitoring of Gulf seafood by private and regulatory laboratories will continue throughout 2011.

PAH testing as indicated by US federal and state food regulatory agencies includes 16 important PAH compounds. Included in these quantitative requirements are the alkyl homologues of phenanthrene, naphthalene, fluorene and others, which are thought to be the predominant PAH species in the Deepwater Horizon crude oil source.



The analytical chemistry community has responded to the need for a more efficient testing method. AOAC International is sponsoring a collaborative study of a Czech method, to which Eurofins is participating, for the determination of PAHs using ethyl acetate extraction, solid phase

extraction column cleanup, and a GC-“Time of Flight/MS” (GC-TOF/MS) instrumental method for the rapid analysis of seafood samples. The method has shown excellent sensitivity and expectations are high for improved analytical performance because of the reduced preparation steps compared to the current regulatory reference method.

Eurofins is in the forefront of high quality food safety testing and in response to this situation has offered rapid and precise testing for PAHs and aliphatic hydrocarbon residues in water, various types of seafood (e.g. crab, fish, oyster, shrimp, and fish by-products such as fish oils) for government agencies and commercial buyers of US seafood.

For further information, please contact [johnreuther@eurofinsus.com](mailto:johnreuther@eurofinsus.com) or your local Eurofins contact person.

## Seven at once

### Eurofins Analytik in Hamburg introduces a multi-allergen screening method by mass spectrometry

By Dr. Sandra Kerbach, Eurofins Analytik GmbH, Labor Wiertz-Eggert-Jörissen, Germany

Food allergens are of major concern for consumers and the food industry. Up to 5% of the population is affected by food allergies. For people at risk, even very low concentrations of the allergenic food can lead to severe allergic reactions. Eurofins has offered a wide range of allergen testing methods and experience in analysis and customer service for many years. Now, Eurofins Wiertz-Eggert-Jörissen has developed a multi-screening method for simultaneous detection of seven allergens using the advanced technique of mass spectrometry:

- Milk
- Egg
- Soya
- Peanut
- Hazelnut
- Walnut
- Almond

These foodstuffs have been reported as some of the most common food allergens and must be declared if present in the food in accordance with the allergen labelling legislations in most countries, e.g. USA, Europe, and Australia.

The new method has been recently developed by scientists of Eurofins<sup>1</sup>. As an example, the lowest detectable allergen concentration found in real food commodities, such as bakery products or bread mixes, can be as low as 10 mg/kg for milk proteins. The range of food matrices to which it can be applied will be continuously expanded in response to customers' requirements.

This method provides the advantage of detecting multiple allergens in the same test with high reliability, alleviating the need for costly individual analyses

of the same sample for individual allergens.

Unlike any commonly used technique this method directly detects allergenic protein compounds with high sensitivity and specificity. With the Eurofins qualitative multi screening offer based on mass spectrometry the need for risk-based analysis requests for individual allergens is a time of the past.

<sup>1</sup> Heick, Fischer, Popping, J Chromatogr A (2011), 1218 (2011), pp. 938-943

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## *in brief*

### **Eurofins International Seminar 2011**

**Brussels, Belgium, May 10-11, 2011**

The Eurofins International Seminar is being held in the heart of Brussels at the Crowne Plaza - Le Palace Hotel. This year it offers a flexible programme with two main themes - Food Safety Solutions and Biotech Developments - running at the same time.

A dedicated plenary session to Biotech Developments will provide an update on the worldwide situation of genetically-modified crops and a focus on international and European regulation, with specific reference to the Black Sea countries. The latest tools for GM detection and monitoring will be reviewed both in the plenary session and in an interactive breakout session.

The Food Safety Solutions theme will cover the latest hot topics, with a look at the global challenges facing the food industry, rapidly evolving legislation and cutting-edge analytical tools for detecting food contaminants. The breakout sessions will provide the opportunity to keep abreast of concerns arising from migration from food packaging, and a chance to debate with the specialists

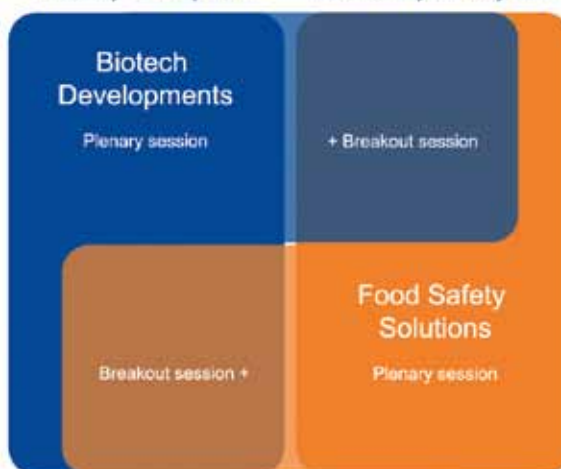
on what makes a cost-effective food safety monitoring programme.

Further details are available on the EIS website:

<http://eis.eurofins.com>.

### **eurofins international seminar 2011**

Tuesday 10 May 2011      Wednesday 11 May 2011



### **New Eurofins Service Centre in Turkey**

Eurofins has opened a new office in Izmir (Smyrna). Izmir is the third largest city of Turkey with an excellent infrastructure and direct access to the large harbour.

The numerous high plateaus and valleys are ideal for growing various grains, teas, herbs, seasonings, hazel nuts, cotton, citrus and other fruits.

Therefore, client requirements concerning Turkish products can be dealt with promptly and samples can be processed without long shipping periods.

In the course of the opening of the new Eurofins Service Centre in Turkey, the existing sampling on-site service for nuts and dried fruits will be expanded to a wider range of agricultural products. The necessary training and infrastructure for this should be completed by the middle of 2011.

Eurofins is able to offer the complete analytical test portfolio and support service in Turkey. Of course, customer dialogue can be conducted in Turkish and all payment transactions can be executed locally.

For further information, please refer to [www.eurofins.com.tr](http://www.eurofins.com.tr) or ask your analytical service manager.

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### **COMING EVENTS**

EVENT	DATE & PLACE	MORE INFO	CONTACT
EIS	10-11/05/2011, Bruxelles, Belgique	<a href="http://eis.eurofins.com">http://eis.eurofins.com</a>	<a href="mailto:eis@eurofins.com">eis@eurofins.com</a>
World Ploughing Championship	13-14/05/2011, Lindevad, Sweden	<a href="http://www.worldploughing.com">http://www.worldploughing.com</a>	<a href="mailto:tovebjornbergkallay@eurofins.se">tovebjornbergkallay@eurofins.se</a>

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