

Dairy Product Specialist

By Jesper Bagge Pedersen, Eurofins Steins Laboratorium, Denmark

Eurofins Steins Laboratorium has specialised in the analysis of milk, cheese, and other dairy products for more than a hundred years. The company, originally founded in 1857, has throughout the years focused on the analysis of agricultural and food products - with a special emphasis on dairy products. The laboratory is now a very important business partner of the Scandinavian and Polish dairy industry.

The laboratory performs more than 5.5 million analyses of raw milk annually. These completely impartial analyses help to ensure that 5,500 farmers in Denmark and some 8,000 farmers in Sweden are paid correctly for milk delivered to the dairy industry - based on the composition and the microbiological standard of the milk.

Denmark markets some well-known dairy products all over the world - e.g. the famous butter Danish Lurpak and the cheeses Esrom and Danablu. Eurofins Steins performs sensory analyses and tests in order to document the continuing high quality of these products - and to assure the customers of both their authenticity and their Danish origin.

Another key competence is the Dairy Herd Improvement analysis - with around 60 million analyses per year. The milk from each cow in Denmark and Sweden is analysed on a regular basis in order to help the farmer to optimise his production. The results from these tests supply the farmer with detailed information on how to feed each of his cows, which animals to breed, etc.

Furthermore, the laboratory produces calibration samples and offers proficiency tests - with a large number of different samples all relating to dairy products and

to the analyses performed in dairy production laboratories. Through calibration samples the production plants ensure that the production runs as close to set standards as possible - an important economical parameter for all dairy production plants.

Eurofins Steins Laboratorium, celebrating its 150 year's jubilee this year, is now adding its well-established expertise to that of the other specialists in dairy product analysis within the Eurofins Group. These include Eurofins Wolverhampton (UK), Eurofins Analytico (The Netherlands), Eurofins Cervac Sud (France) and Eurofins ofi (Austria), all of which have already proved to be ideal partners for the European dairy industry and they will collaborate closely with Eurofins Steins.

Contact : jbp@eurofins.dk



DNA-fingerprinting of Basmati rice - importance and limitations

By Werner Nader, Eurofins WEJ Germany



The German Association of the Grain and Rice Industry (Getreidenährmittelverband) and Eurofins have released a joint paper on the authenticity testing of Basmati rice by DNA-fingerprinting.

Authenticity control of Basmati rice is based on the Code of Practice for Basmati Rice (CoP), which has been agreed by the Rice Association, British Rice Millers Association and the British Retail Consortium

in consultation with the government authorities and Association of Public Analysts (including Eurofins UK Laboratories public analysts). For authenticity testing the CoP refers to a DNA-fingerprinting method which was developed by the British Food Standard Agency (FSA) and which identifies the 15 rice varieties approved as genuine Basmati by the Indian and Pakistani authorities. The commission regulation 972/2006 also requires DNA-testing to verify the authenticity of 9 Bas-

mati varieties which are exempted from import tax into the EU. Eleven European and Indian laboratories apply the DNA-fingerprinting as developed by the FSA. So far the FDA has performed two proficiency tests to determine the performance of these laboratories and Eurofins Medigenomix participated successfully in both. The last proficiency test revealed an analytical uncertainty of the method of 6%. Accordingly an analytical value of 13% of non-Basmati admixture could be interpreted as still being within the scope of the CoP, which sets the limit at 7%.

Particularly important are systematic authenticity control systems. During collaboration between Eurofins and a renowned European rice mill, critical points within the supply chain of Basmati rice from the Indian and Pakistani mandis (farmers' markets) were controlled by DNA-fingerprinting. With such an approach, excellent product qualities can be achieved, all within the scope of the CoP.

Contact: wernernader@eurofins.de

Managing the Quality of Raw Materials from a Brazilian Source

By Pablo Molloy, Eurofins Brazil

Eurofins expands its analytical presence into an important agricultural region.

Brazilian development during the 20th century has transformed farming from simple agriculture into a much more complex and extensive agro-industry. Such development benefited from the large availability of land, water, animals and the adaptation of vegetable varieties. This development has helped Brazil to become one of the most important exporters of agro-goods worldwide and Brazil is now an important EU supplier.

However, adapted varieties in intensive agronomic systems require a combination of crop-protection products and veterinary medicines which ultimately led to the presence

of residues in the exported products. Having a batch refused due to non-conformity after the product has already crossed the Atlantic causes serious logistic problems. Corrective actions have financial implications, cost time and lead to commercial risks.

Eurofins can now help to reduce such risks by undertaking local testing in Brazil. Aware of the needs on both sides of the Atlantic, Eurofins has operated a GMO testing laboratory in Sao Paulo since 2002. The operators benefit from the advantages of reducing their risks by reliable testing carried out at an early stage, which optimizes both time and logistics. Segregating GM Soy and Maize by preserving its identity from the source matrix is manda-

tory in securing Non-GM status for many EU high value brands.

The Brazilian Laboratory goes now beyond this, providing multi-residue pesticides testing for fruits and grains, as well as mycotoxin analysis by HPLC. Shortly the laboratory will also commence veterinary drug analysis by LC-MS/MS. In this manner, Eurofins has leveraged its capabilities in South America and by close cooperation between the European and the Brazilian laboratories, the highest standard of quality is ensured. In addition, customers benefit from the expert knowledge of the local team in risk assessment, sampling and testing plans.

Contact: PabloMolloy@eurofins.com.br

Treatment of seafood with carbon monoxide

By Valeria Merlo, Eurofins Chemical Control, Italy



Carbon monoxide treatment preserves only the colour of the fish, not its quality. It is therefore not allowed in the European Union. Despite this prohibition, the European Commission Rapid Alert System for Food and Feed (RASFF) has notified carbon monoxide treatment of fish such as tuna and swordfish several times in 2006 and 2007.

Considering tuna for example, the market value is essentially based on muscle appearance and colour. The muscle tissue of tuna contains a pigment, myoglobin, which absorbs and reacts with oxygen to form oxymyoglobin, responsible for its bright red colour. However, with exposure to oxygen during longer storage and transport, oxymyoglobin converts to metmyoglobin, the colour of which is an unattractive brown (or chocolate, as it is called in the industry). Carbon monoxide treatment can retain the “fresh” red colour for a longer period of time by stabilising it, since CO forms with myoglobin the cherry red carboxymyoglobin. It can even convert the brown colour to the desirable red colour.

Therefore, when seafood has been treated with carbon monoxide, it could be a health hazard because visual or olfactory evidence of spoilage when products have been

stored for too long or under inappropriate conditions are masked. Moreover the risk of food poisoning from biogenic amines cannot be completely ruled out.

Carbon monoxide is also likely to be used as a component of packaging gases in modified atmosphere packaging (MAP) for fresh seafood or meat in order to provide a stable red colour; this application is also prohibited in the European Union because it could mislead the consumer as to the freshness by maintaining the colour of the product.

Eurofins | Chemical Control is able to perform the quantitative analytical determination of carbon monoxide in foods (meat, fish) and the analysis of modified atmosphere using HS/GC-TCD: Headspace Gas Chromatography - Thermal Conductivity Detector.

Contact :
ricerca_sviluppo@chemicalcontrol.albaweb.it

Detection of added vitamin C in fruit products by Stable Isotope Ratio Analysis

By Eric Jamin, Eurofins Scientific Analytics, France

Eurofins Scientific are leading experts in the authenticity testing of fruit products, continuously investing in R&D to improve the analytical tools available for adulteration detection.

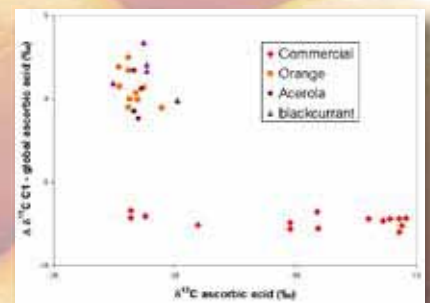
Ascorbic acid is the main component of vitamin C and one of the key components emphasised in nutrition claims to promote the health benefits of fruit products. Marketing claims in fruit juices and dietary supplements often refer to the natural status of this component: “naturally rich in vitamin C”, “contains natural vitamin C”, etc. However ascorbic acid is also available as an additive produced by the chemical industry. There is therefore a need for an analytical tool capable of differentiating fruit ascorbic acid from artificial sources.

Since the natural ranges of ascorbic acid concentrations in fruits are very wide, fairly large additions can go undetected by conventional methods. The isotopic methods present the ultimate solution to discriminate between endogenous and exogenous sources. Industrial ascorbic acid is produced from various plant sugar sources. Recently it was shown that the simultaneous use of the global and positional determination of the $^{13}\text{C}/^{12}\text{C}$ ratio at one specific carbon atom of ascorbic acid enables the detection of all commercial sources regardless of botanical origin.

This new method is based on the chemical cleavage of the ascorbic acid at carbon position 1, followed by direct injection of the CO_2 formed into the mass spectrometer and was developed and peer-tested

in the context of an EU-funded project¹. It is applicable to all types of fruits containing a high concentration of vitamin C (citrus, blackcurrant, acerola, etc.).

This new test provides an optimum control of natural vitamin C in fruit juices, fruit products and dietary supplements.



¹PURE JUICE, a shared-cost RTD project funded under the Fifth Framework Programme of the European Community, Contract N° : G6RD-CT-2002-00760.
Contact : EricJamin@eurofins.com

in brief

Eurofins Steins present in Poland

Steins Laboratorium Sp. z.o.o. in Malbork (Poland) is an independent and accredited laboratory which performs complex determinations of raw milk and dairy products as well as of other food products.

The laboratory has Prime Veterinary Doctor's approval to perform quality tests on food (i.e. raw milk and milk products) for National Veterinary Inspection. The analytical methods applied are accredited by DANAK (Danish accreditation body).

Eurofins Steins Laboratorium cooperates with food research institutions in Poland and abroad and, in collaboration with Eurofins Steins Denmark, is the only distributor of control-calibration samples and proficiency tests (microbiological and chemical) for the Polish market.

The laboratory also offers consultancy services in the area of agriculture, food production, food processing, food preservation and other related sectors.

Another advantage is that the full spectrum of analysis offered by the Eurofins Group is available for the Polish market with support from local food experts.

Contact: info@steins.pl
Phone : +48 55/272 04 73

SNIF-NMR application to vanillin becomes an AOAC official method

Natural vanillin is more expensive than chemically produced vanillin by a factor of 100. It is therefore important to be able to distinguish the source of this aroma. To this purpose, the SNIF-NMR method has been developed by Eurofins.

After a successful collaborative study organised by Eurofins and involving nine reputable laboratories from the EU Joint Research Center, Czech Republic, France, Germany, Spain and the United States, the determination of the site-specific $^2\text{H}/^1\text{H}$ ratios of vanillin by SNIF-NMR was adopted as an official method by AOAC (number 2006.05). Details of this study have been published in the January/February 2007 issue of JAOAC International.

The SNIF-NMR method is based on ^2H -NMR determinations at each hydrogen position of the vanilla molecule, which provides an optimum discrimination between the sources of vanillin (natural or artificial), as well as improved detection limits for mixtures. This method is mainly applicable to concentrated sources such as vanilla extracts and aromas. This method, when combined with carbon 13 Isotope Ratio Mass Spectrometry, is also applicable to the characterisation of biotechnological vanillins derived from ferulic acid, eugenol / isoeugenol, or curcumin.

Contact : EurofinsFr@eurofins.com
Phone +33 (0)2 51 83 21 00

New Eurofins site in Austria: Eurofins | ofi

Since the beginning of 2007, Eurofins has a presence in Austria. This new member of the Group, Eurofins | ofi, runs a modern and well-equipped laboratory in Vienna with about 40 employees.

Eurofins | ofi offers a complete spectrum of microbiological and chemical testing and sensorial evaluation of food products. The laboratory has long-established expertise in the analysis of dairy products and conformity checks for foods in general.

Over the last few years, Eurofins|ofi has developed specific competence in the field of international labeling checks and translations and has built up a network of partners in various countries. They can therefore offer consultancy for validation of product labeling and specifications according to local requirements.

The laboratory has a wide ranging customer base, important among which are leading supermarket chains, retail and wholesale traders, as well as industrial producers who all require testing of various types of products including meat, dairy and organic products.

Contact: Ingeborg.ZEHETNER@ofi.co.at
Tel: + 43 1 7981601 671

Eurofins Scientific Scandinavia

Sv. Aage Linde / sal@eurofins.dk
Tel. : +45 70 22 42 66

Eurofins Scientific Germany

Thomas Herrmann / ThomasHerrmann@eurofins.de
Tel. : +49 40 49294 700

Eurofins Scientific France

François Vigneau / FrancoisVigneau@eurofins.com
Tel. : +33 2 51 83 21 00

Eurofins Scientific Netherlands

Mercedes Prinsen / m.prinsen@analytico.com
Tel. : +31 513 67 22 99

Eurofins Scientific UK

Barry Hilton / BarryHilton@eurofins.co.uk
Tel.: +44 151 647 9175

Eurofins Scientific US

Lars Reimann / LarsReimann@eurofinsUS.com
Tel. : +1 901 507 3959

Eurofins Scientific Switzerland

Klaus Fuchs / KlausFuchs@eurofins.com
Tel. : +41 62 858 71 06

Eurofins Scientific Italy

Valeria Merlo / ricerca_sviluppo@chemicalcontrol.albaweb.it
Tel.: +39 0171 412470

Others countries

info@eurofins.com
Tel. : +32 2 766 16 20

Newsletter editorial team:

S. Noster-Vallée, E. Long, F. Vigneau, M. Champion, M. L. Martin, L. Reimann, Florian Heupel.

Design : P. Vestergaard Soelberg.

© Published by Eurofins Scientific.
All rights reserved. The greatest care has been taken to ensure accuracy but the publishers cannot accept any legal responsibility or liability for errors or omissions that may be made.