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Food Testing News

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Esters of MCPD found in fats, oils and foods

By Katrin Hoenicke, Eurofins Wiertz-Eggert-Jörissen, Germany

Recently, the German official food control and animal health laboratory in Stuttgart reported significant amounts of "bound" MCPD in the form of fatty acid esters in numerous refined edible oils and fats as well as in food containing refined fats and oils such as frozen and convenience food, infant and follow-up formula, nut-nougat crèmes and biscuit fillings.

3-Monochloropropane-1,2-diol (3-MCPD), also referred to as "free" MCPD, has long been recognized as a potential contaminant in numerous heated foods, for example bread crusts and soy sauces.

Whereas native edible oils and fats contain little or no levels of "bound" MCPD, the amount of esters found in refined edible oils and fats ranges from 0.5 to 10 mg/kg. MCPD fatty acid esters are formed during the deodorisation step of the oil refining process. During this step, undesirable aromatic compounds present in the crude oil are removed by a water steam distillation under low pressure at 250 °C.

MCPD has been reported to be genotoxic in vitro, with reproductive toxicity and carcinogenicity in rats. Until now it has not been clear whether "bound" MCPD has the same toxic properties as the "free" compound, as no data were available on the amount of MCPD potentially released from the fatty acid esters during the digestive processes. However, the German Federal Institute for Risk Assessment (BfR) has assessed the detected levels from a health perspective and recommended that concerted action be taken to lower the levels of MCPD esters, especially in infant and follow-up formula.

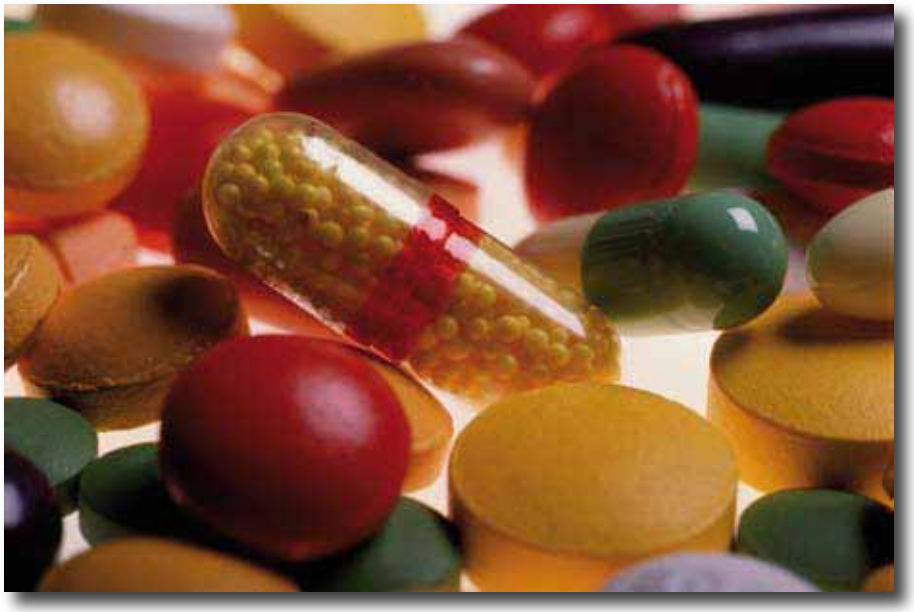
A tolerable daily intake (TDI) of 2 µg/kg per kg body weight and a maximum level of 20 µg/kg for soy sauce and hydrolysed vegetable protein have been set by the European Commission for "free" MCPD (Commission Regulation (EC) No. 1881/2006). An analytical working group, coordinated by the German BfR, has been formed in order to develop a validated standard method for the analysis of MCPD esters. The "bound" MCPD is released by transesterification and analysed by GC-MS after derivatisation.

Eurofins is member of the working group and is a participant in the validation study. It offers the analysis of "free" and "bound" MCPD in all food types, based on the original method developed by the government laboratory in Stuttgart.

Contact: katrinhoenicke@eurofins.de

New cGMPs covering dietary supplements

By Lulu Kurman, Eurofins US



Rules have been considerably changed in the US and producers now have to demonstrate their Good Manufacturing Practices.

On June 25, 2007, US FDA published "Current Good Manufacturing Practice (cGMP) in Manufacturing, Packaging, Labeling, or Holding Operations for Dietary Supplements; Final Rule". The regulation outlines the minimum requirements for ensuring the quality of dietary supplements sold in the US. Starting from June 25, 2008 this regulation will apply to businesses with 500 or more employees manufacturing or handling finished supplements (1 or 2 years later for smaller operations). Ingredient suppliers are not concerned.

The regulation emphasizes use of documentation to establish that supplements have been manufactured and handled in a manner that ensures quality. Highlights include requirements for: qualified QC personnel; a documented production and in-process control system; evidence of compliance with the system; identity testing of each dietary ingredient before every production run; specifications for all components, significant in-process activities and potency verification of finished supplements; use of validated and appropriate analytical methods to demonstrate specifications are met. Dietary supplements can be deemed "adulterated" under the Federal Food, Drug, and Cosmetic Act if a manufacturer cannot demonstrate they were made under cGMP.

Explanation of the regulation and insights from regulators can be found in the Final Rule and FDA website www.fda.gov (under "Dietary Supplements"). The website provides resources for industry, including a link to the Rule and a taped broadcast of FDA discussing the Rule and guidance for implementation.

Eurofins US can assist manufacturers of dietary supplements with advice on how to meet the new requirements as well as provide the required analytical support.

Contact : lulukurman@eurofinsus.com

Customized development of DNA-based methods and kits

By Andreas Wurz, Eurofins | Genescan, Germany

Expert in the field of DNA based testing methods, Eurofins | GeneScan provides a method and kit development service designed to meet individual customers' needs.

The detection of nucleic acids by Polymerase Chain Reaction (PCR) is a general method to indicate the presence of GMOs and allergens. In addition, the method can also be applied to all kind of products for the identification of

- animal and plant species
- residual DNA from microbial productions strains
- pathogens or other microorganisms (e.g. as a process control)

With over 15 years experience in this area of work, Eurofins Gene Scan has expert staff to develop testing methods based on individual customer requirements. Professional project management and close collaboration with the customer ensure that the final product meets the needs of the customer and includes controls and comprehensive documentation.

Eurofins | GeneScan has specific expertise in all types of DNA extraction methods. This is a crucial prerequisite for high sensitivity, robustness and reliability of the developed test methodologies.

For client site testing, rapid test kits can be designed and produced according to ISO 9001 standards ensuring reliable performance every day.

Contact: a.wurz@genescan.com

Veterinary drugs still in the EU Rapid Alerts for animal products

By Marion Mandix, Eurofins Wiertz-Eggert-Jörissen, Germany

Veterinary drugs are used in conventional and - to a smaller extent - also in ecological animal breeding to maintain the health of cattle, poultry, fish, shrimps and bees.

The compounds are applied to prevent or treat diseases or to promote growth. Depending on the specific compound and its application, the use of veterinary drugs is regulated by international and national legislation and such drugs are either subject to zero-tolerance or permitted only up to specific concentration levels in the final food product.

Abuse of veterinary drugs and their consequent concentration in food have become an increasing problem due to economic pressure on farmers and changes in breeding practices. Public perception and the growing awareness of this issue have caused regulators to check for such residues. As an example, shrimp and fish are most frequently reported in the rapid alert system of the EU, the RASFF.

Seafood is likely to contain chloramphenicol and nitrofurans, also quinolones (e.g. oxolinic acid, enrofloxacin, ciprofloxacin) and antiparasitics such as malachite green and crystal violet. A huge variety of antibiotics has been found in honey including sulfonamides, tetracyclines, streptomycin, chloramphenicol, nitrofurans, quinolones and macrolides (e.g. tylosin and erythromycin). Although forbidden these drugs are used in bee-keeping against the American Foulbrood, caused by *Paenibacillus larvae*. In addition honey may contain amitraz or apitol, drugs used against mites such as *Varroa jacobsoni*. Egg powder is traded worldwide as a food ingredient and this may contain nitrofurans, quinolones, coccidiostats, nitroimidazoles (dimetridazole, ronidazole) and nicotine.

Eurofins has developed a broad range of analytical methods based on immunological methods (ELISA, RIA and Biacore surface plasmon resonance technology), GC-MS and LC-MS/MS. These tests are grouped into analytical packages, which are specific for certain product groups, such as sea food, fish from aquaculture, egg products and honey.

All analysis is performed in accordance with national and international standards using accredited methods.

Contact: MarionMandix@eurofins.de

Early prevention for reduced phytosanitary treatments

By Frédéric Merelle, Eurofins | Lara, France

An increasing number of publications have highlighted the risks associated with the regular ingestion of phytosanitary residues even at very low doses.

Eurofins | Lara, has designed a unique and complete monitoring programme, combining analyses and expert advice, for reducing phytosanitary treatments. Based on several years' experience all over the world, the concept ensures that trees and vineyards reach an optimal physiological balance. A healthy plant needs less nitrogen and nutrients and therefore is less likely to be infested with parasites or diseases, and will also produce more homogeneous fruits of improved taste.

Production control program

Before planting, the physical, biological and nutritional fertilities of the soil are checked for more than 50 parameters[1]. This allows for the provision of recommendations covering all countries and climates. A good mineral / nutritional balance will be the basis for more than 15 years of production.

The analysis of twigs[1] during the dormant phase in winter, and of the sap[2] during growth season provides information on the reserves and physiological balance of the plant despite varying weather conditions. All imbalances found are taken into account in the expert advice on fruit culture methods. Fruit analysis before harvest is helpful for sorting fruits of similar qualities in order to reduce post-harvest preservation treatments.

Last but not least, to assure the producers and their customers of a healthy product in compliance with the regulations and expectations, Eurofins | Lara offers specific profiles for phytosanitary residue analysis on the fruits.

The services related to this programme are available worldwide for tree fruit crops as well as vineyards.

Contact : frederic.merelle@lara-europe-analyses.com

[1] Eurofins Lara innovation

[2] BioSavital®, EUREKA Agro Environnement label

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Food Testing

in brief

Di-isobutylphthalate (DiBP) found in foods

Plasticizers have consistently been the focus of public interest. The derivatives of phthalic acid, the so called phthalates, have especially been used for a wide range of applications from industrial purposes and household items to toys and food packaging. It has been proved that several of these substances are toxic to reproduction and also have estrogenic potential.

One of these substances, di-isobutylphthalate (DiBP) was found in several foods packed in paper board packaging in concentrations up to 5 mg/kg. Fatty and grain based foods such as flour or rice were particularly concerned. German BfR stated that a risk assessment equivalent to that of di-n-butylphthalate should also be applicable for DiBP. Therefore BfR recommended the establishment of a specific migration limit for DiBP of 1 mg/kg food and 0.5 mg/kg baby food respectively.

Contact: AndreasGrabitz@eurofins.de

Eurofins Analytik GmbH in Germany appointed as GAFTA referee laboratory

The Eurofins laboratory Wiertz-Eggert-Jörissen in Bremen has been nominated as the only German GAFTA referee laboratory under Rule No. 124 as of January 1st 2008. Eurofins | Wiertz-Eggert-Jörissen shares this status with eight laboratories in seven other countries, among these being Eurofins | Steins in Denmark. Since 1878 the Grain and Feed Trade Association (GAFTA) in London has promoted international trade and works to protect the interests of its members including traders of grain, animal feedstuffs, pulses and rice. Products are traded under standardised GAFTA terms and conditions, among them Rule No. 124 covering the quality control of shipments by setting down sampling and analysis requirements. Eurofins WEJ in Bremen is close to the major ports in Hamburg, Bremerhaven, Bremen and Brake which is very convenient for the German importers of grain and feedstuff.

Contact: WernerNader@eurofins.de

Eurofins buys food testing laboratory in Norwich (UK)

In January 2008 Eurofins acquired the Norwich-based food and environmental testing business, Lincolne Sutton & Wood (LSW). This laboratory has provided food testing services to clients for 150 years, and is appointed as statutory Public Analyst for much of East Anglia, testing food, water and other products on behalf of local authorities in Norfolk, Suffolk, Lincolnshire and Rutland. They are also appointed as enforcement analysts for Suffolk Port Health Authority to test imported food consignments.

The range of services and test types that the Eurofins Group can provide, including sophisticated authenticity testing, trace contaminants and genetic speciation, will enable LSW to provide a greatly enhanced service to their clients.

Eurofins welcomes LSW to the team. This acquisition helps the Group to progress with its plans to become the most innovative provider of Public Analyst services in the UK.

Contact: BrianMcLean@eurofins.co.uk

Allergens: monitoring production line cleansing

Eurofins Scientific Analytics now offers a total solution for controlling the efficiency of production line cleansing procedures in order to prevent allergen cross-contamination. The laboratory has optimised its analytical technique for rinse water and selected sampling materials that are specially adapted to its PCR methods for the detection of cereals (wheat), lupine, mustard, celery, soybean, sesame, pistachio, almonds and various nuts. Sampling kits with swabs or wipes are available on request.

Contact: info@eurofins.fr

Qualis has joined Eurofins Group in Italy

Eurofins | Qualis specialises in sensometry and consulting for development of consumer products.

The company also has considerable expertise in HACCP work and offers audits, technical advice and training for retailing, manufacturing, storage and catering.

Contact: segreteria@qualisnet.com

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

Eurofins Scientific Germany
Werner Nader / WernerNader@eurofins.de
Tel. : +49 40 49294 731

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

Eurofins Scientific Netherlands
Linda Tilman / l.tilman@eurofins.nl
Tel. : +31 513 67 22 99

Eurofins Scientific UK
Barry Hilton / info@eurofins.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.it
Tel.: +39 0171 412470

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

Newsletter editorial team:
S. Noster-Vallée, E. Long, S. Heimbecher, M. Champion, M. L. Martin, L. Reimann, Florian Heupel.
Design : P. Vestergaard Soelberg.

For further information please refer to our website www.eurofins.com