Eurofins is key player in global testing of infant formula for China

By Linda Tilman, Eurofins Food Testing Netherlands

Since the death of infants in China in 2008 from melamine poisoning and other subsequent issues with milk based products, Chinese consumers have demanded improved confidence that infant and child formula are safe. As a result, Chinese consumers have turned to important dairy producing countries such as New-Zealand and the Netherlands for the supply of such products and imports have increased.

On May 1st 2013, China’s General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) introduced new legislation for the import of dairy products requiring that all imported dairy products comply with the same food-safety standards (so called GB’s) that apply in China (announcement 53.2013). This has resulted in the number of different tests required for exporting infant formula to China increasing from 10 to 66.

For infant formulae destined for the Chinese market, complete nutrient information including fat composition, minerals, vitamins and specific carbohydrates now has to be provided as described in GB10765. It is also compulsory to test for contaminants such as melamine, lead, nitrate, nitrite, mycotoxins and several microorganisms.

Eurofins is a market leader for checking the food safety and quality of such high value products. Many producers of leading food brands have recognised Eurofins as a reliable partner with many years of expertise in the dairy industry. When the Chinese government increased regulation, Eurofins took immediate action; the laboratories in China and a team of technical experts worked on a business solution for clients that export infant formula and dairy products to China. Eurofins can now offer the complete range of GB methods in China and will shortly be able to offer these methods also in Europe. The laboratories have invested in additional capacity and optimised logistics to deliver testing results within short turnaround times. Thus, access to the Chinese market is facilitated for the customers.

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Eurofins’ developed technology plays key role in world’s largest allergen study

Over the past three years Eurofins has developed and validated innovative allergen detection methods based on liquid chromatography coupled with mass spectrometry (LC-MS/MS). This technology has been shown to be superior in the analysis of processed matrices, especially when egg and milk allergens have to be detected. It also has the added value of being able to detect several allergens in a single analysis.

Based on this development, Eurofins was invited to participate in the world’s largest study on food allergens. The project is funded by the European Commission under the 7th framework program which runs until 2017. It will perform several allergenicity studies, develop challenge materials for allergic patients and perform analyses using the Eurofins’ developed technology.

This will lead to a correlation of allergen trigger levels with detection and quantification of the challenge material using LC-MS/MS technology. It will enable industry to make more precise risk management decisions based on allergen analysis using Eurofins’ developed method and ultimately allowing better protection of allergenic consumers. In this project, Eurofins and Unilever represent industry parties.

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Gluten – New AOAC guidance will improve the reliability of gluten-free claims

Coeliac disease, food intolerance to gluten from wheat, rye and barley, affects a great number of people. Figures vary from country to country but latest estimations indicate that in general it affects around 1% of the population, although it is thought to be underreported. Due to the lack of effective treatment, the avoidance of gluten is the only coeliac management practice, and patients have to rely on the accurate labelling of gluten-free products.

Whilst it is thought that ELISA (an enzyme assay used to determine proteins) analysis of gluten by using commonly available kits give accurate results, data published recently suggests otherwise. This may result in inaccurate labelling, with consequential product recalls, loss of brand image and associated costs. Hence, food producers that make gluten-free claims take a high risk when relying on these tests.

How can this be avoided? Gluten analysis requires expert knowledge and analysis of large numbers of samples and matrices, as well as knowledge of the strengths and weaknesses of ELISA methods. Important questions such as “Is this kit suitable for this food type?”, “Does the method detect oat material?”, “Does the kit overestimate the gluten content if rye is present?” need to be addressed. This can present a difficulty for laboratories.

Eurofins experts are involved in numerous projects and activities with respect to gluten. This gives them access to information on all aspects of allergen and gluten analysis and allows further developments. It improves their understanding and helps with the alignment of ELISA results between kits.

One of the latest developments in this area is the AOAC Guidance Document for the Validation of Gluten ELISA tests. Eurofins experts played a key role in its development, jointly with the European Commission, Health Canada and Nestle. This article has been published in the Sept/Oct issue of the Journal of the AOAC International. This guidance for ELISA kit manufacturers, used with sound laboratory analysis, will ultimately lead to a reduced risk for food manufacturers making gluten-free claims.

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Quality control of honey, milk, and coffee by NMR-profiling

By Dr. Eric Jamin, Eurofins Analytics France

Profiling by High-Resolution - Nuclear Magnetic Resonance is an innovative technique used for testing the authenticity of foodstuffs. With limited sample preparation followed by a single NMR analysis, this fast and high-throughput technique provides a wide range of information, both targeted (quantification of defined compounds) and non-targeted (identification of deviations from typical spectral patterns). As a result of the intensive collaborative research projects carried out in Eurofins laboratories, several new applications are now available, which significantly improve the state-of-the-art of authenticity testing. These include:

Honey authenticity screen
Improves the detection of sugar addition in honey, extending the detection to sugar syrups from C3-plants such as rice or wheat, which cannot be properly detected using the carbon 13 isotope AOAC method (focused on C4 plant sugars such as maize and cane). The combination of these two approaches allows detection of all possible sugar sources, at economic adulteration levels (5-10% and more).

It simultaneously checks the declared botanical origin of the honey and provides an estimated level of the major components in honey, thus reducing the need for additional tests.

Milk and milk powder authenticity screen
Allows the detection of a wide range of potential adulterants such as melamine, dicyandiamide, protein hydrolysates or similar “nitrogen-level enhancers” added to artificially increase the apparent protein level, when used at economic adulteration levels (approx. 0.1% of milk proteins).

The results can be used to check compliance and commercial product labelling in terms of animal species, fat content & sugar profile, thermal treatment, and microbial spoilage indicators (organic acids).

Coffee authenticity screen
Allows fast screening to differentiate between Arabica and Robusta varieties based on markers present in both, green and roasted coffee. Eurofins is continuing research towards extending the scope of NMR profiling to include other coffee authenticity criteria and will in the near future provide additional offerings using this technique.

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Pyrrolizidine alkaloids in the spotlight

By Nadja Flüchter, Dr. Susanne Rathjen, Simone Staiger, Dr. Scarlett Biselli, Eurofins Germany

In July the German Federal Institute for Risk Assessment (BfR) issued a statement (No. 018/2013) regarding pyrrolizidine alkaloids (PAs). In an ongoing and so far non-representative research project, unexpectedly high PA concentrations were found in a couple of herbal infusions and tea samples. However, concentrations can vary considerably due to inhomogeneous distribution of PAs. More data are needed to produce a reliable and comprehensive health risk assessment.

PAs are secondary metabolic products, formed for protection against herbivores by an estimated 6000 plant species - 3% of all blooming plants. More than 500 different PAs and corresponding N-oxides are known, some of them being extremely toxic.

PAs are mainly found in the distantly related angiosperm families of the Boraginaceae (all genera), Asteraceae (tribes Senecioneae and Eupatorieae) and Fabaceae (genus Crotalaria). Common ragwort (Senecio jacobaea L.) belongs to the most relevant plants.

Eurofins offers the analysis for the presence of PAs and N-oxides using high-performance liquid chromatography with tandem-mass spectrometry (LC-MS/MS). The method can be applied to all relevant food and feed matrices, such as honey, tea and herbal infusions, herbs, borage oils and feed. The scope of the method covers all 17 PAs and N-oxides addressed in the BfR study for which reference standards are commercially available.

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Cytoplasmic male sterility (CMS) is a naturally occurring trait, commonly used in hybrid seed production. In some cases the CMS trait is not transferred by traditional breeding techniques but with cytoplasm fusion techniques. According to Commission Directive 2001/18/EC, these CMS hybrids are not considered to be genetically modified organisms (GMOs) if the plant species used can exchange genetic material through traditional breeding methods. Although many organic farming associations oppose CMS hybrids generated with cytoplasm fusion techniques and have in the past months encouraged their members to use CMS-free seed, CMS hybrid vegetables like chicory, broccoli and cauliflower continue to be discovered in numerous organic supermarkets in Germany. Amongst others, the German BNN (National Association of Natural Food and Goods) is demanding the labelling of CMS hybrids bred with the help of cytoplasm fusion techniques. With newly developed PCR testing methods for the radish-derived Ogura sequence and the sunflower-derived PET-1 sequence, Eurofins GeneScan is able to identify various CMS hybrids and their seeds with a fast and reliable turn-around-time.

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Chloramphenicol in enzyme preparations

Several notifications concerning the presence of chloramphenicol in enzyme preparations have appeared in the European Commission’s Rapid Alert System for Food and Feed (RASFF) since July of this year. The use of chloramphenicol in food and feed production is not permitted in the EU; nevertheless it is frequently detected, mainly in imported animal products. Contaminated enzymes were intended for use in feed and food such as bakery products, wine and fruit juices. It is recommended that enzymes and related products are checked for the absence of chloramphenicol.

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