



# Food Integrity

Reference standards for testing  
food quality, safety and authenticity

reference standards • matrix materials • certified reference materials • proficiency testing • reference standards • matrix materials



Consumer confidence in food relies on the effectiveness of checks to ensure the safety, consistency and authenticity of food products. The focus on the integrity of food has increased globally in recent years and as a consequence, new regulations and higher standards on quality control and testing are either planned or being implemented.

Global trade in food and food products also means that exporters must meet international requirements and demonstrate security of the supply chain. The reliability and accuracy of analytical results is essential to ensuring consistent product quality and safety.

Accurate monitoring of food is supported by the use of reference materials. Participation in suitable proficiency testing schemes provides independent assurance of the competency of staff and the suitability of equipment, methods and procedures.



LGC has over 25 years experience in manufacturing and supplying reference materials for the food and beverage sectors.

## Food quality

LGC produces world leading ISO Guide 34 accredited certified reference materials (CRMs), matrix reference materials and quality control materials (QCs). Together with our network of leading international partners, we supply reference materials for the analysis of proximates, nutritional elements and vitamins in matrices including:

- meat, fish and vegetable matter
- cereals and grains
- milk and dairy products
- food and drink products

Food nutritional and compositional testing can be undertaken to demonstrate compliance with food labelling requirements and to satisfy food chain requirements such as retailer specifications and as a part of due diligence and surveillance programs.

LGC offers an extensive range of reference standards including:

- food constituents and natural products
  - sugars, carotenoids, amino acids and vitamins
- food additives
  - preservatives, antioxidants, sweeteners and colourings.



LGC has played a vital role in assisting authorities in fighting food crime by developing a range of materials used for the detection of adulteration of lamb and beef.

## Speciation, authenticity and GMO

### Meat speciation

In 2013, the horsemeat scandal exposed the presence of various species in both raw and processed meats sold across Europe. Consequently, meat speciation analysis has become increasingly important in tackling food fraud.

### Food authenticity

Isotopic methods are now in routine use for food authenticity testing, based on the measurement of the stable isotope content (deuterium,  $^{13}\text{C}$ ,  $^{18}\text{O}$ , etc.) of food or ingredients. These methods can provide information on the botanical and geographical origin of the food product.

### Genetically modified organisms (GMOs)

The marketing of GMOs and food or feed derived from GMO is controlled in many geographic areas. In the EU, there is a stringent approval procedure used in the authorisation of such products.

LGC offers a range of reference materials for use in method validation, calibration and quality control in meat speciation, food authenticity and GMO testing.

# Food safety

## Allergens

Detecting and identifying allergens effectively is an important part of surveillance, regulatory and commercial control of cross contamination, and food labelling. Quantification of allergens can be challenging as inconsistent results are sometimes observed when using different biochemical test kits from varying sources. Current methods detect either the allergenic protein (ELISA, mass spectroscopy) or allergenic food type DNA (PCR).

To meet the demand for a reliable source of reference for a peanut allergen, LGC have developed and manufactured a quality control material kit for the detection of peanut allergen in food, with a blank material and a matrix material with peanut protein added at 10 ppm ( $\text{mg kg}^{-1}$ ).

## Organic Contaminants

Contamination in food and food products can originate from diverse sources.

The increasing adoption of LC-MSMS has highlighted that 'matrix effects' can have a detrimental impact on measurement. The use of isotopically labelled compounds as internal standards can negate these effects.

LGC offers an extensive range of in-house manufactured organic contaminants standards. The Dr. Ehrenstorfer range includes approximately 8,000 different products, available as individual components (neat and in solution) as well as mixtures.

We also offer a range of organic contaminant standards from other manufacturers enabling us to provide a complete range of reference standards to meet your requirements.

## Pesticides

- Organochlorines
- Organophosphates
- Carbamates
- Pyrethroids
- Neonicotinoids
- Quaternary ammonium pesticides
- Sulfonylurea pesticides



### Veterinary drugs and related compounds

- Antibiotics, anthelmintics and anticoccidials
- Sedatives, NSAIDs and corticosteroids
- Nitrofurans metabolites and beta agonists
- Steroids and hormones
- Other EU unauthorised compounds including chloramphenicol, nitromidazoles, stilbenes, thyreostatic drugs and zeranol.

### Dyes

- Industrial dyes including sudan I, II, III and IV, rhodamine B, toluidine red and orange II
- Fungicides including malachite and leucomalachite green, crystal violet and leucocrystal violet
- Food colours including sunset yellow (E110) and tartrazine (E102).

### Naturally occurring toxins

Some foods (fruits, vegetables and flowers) naturally contain potentially harmful toxins. Fungal mycotoxins can contaminate food directly through contamination of crops, or indirectly through the food chain from contaminated animal feed. A comprehensive range of mycotoxin standards and reference materials is available, including native and isotopically labelled standards, solutions and complex food matrices.

LGC looks to its network of international experts such as Laboratorio Cifga in the area of marine biotoxins. Working together, we offer a broad range of reference standards for cyanotoxins, algal neurotoxins and paralytic shellfish poisons, including domoic acid, okadaic acid, saxitoxin and mycrocystins.

### Inorganic reference materials

Elemental analysis is undertaken in food products as part of nutritional / compositional testing to support labelling claims and for the detection of possible inorganic contaminants such as heavy metals.

LGC offers an extensive range of inorganic standards for AA, ICP and IC methodology under the VHG brand, manufactured in our ISO Guide 34 accredited facility in the USA.



LGC can satisfy all your laboratory quality needs, including proficiency testing, analytical services and training.

#### Proficiency Testing schemes include:

- QMAS - Meat and Fish Analysis
- QDCS - Dairy Chemistry
- QFCS - Food Chemistry
- QCS - Chocolate
- QMS - Food Microbiology
- AFPS - Animal Feed
- QGS - Gelatine

**For further information, or if you require substances or materials not currently listed please contact one of our local sales offices.**

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