



Quality and Safety of Fish in the Spotlight

Residues and Contaminants in Fish and Aquaculture

With a new record per capita consumption of 20 kg p.a., fish and seafood are increasingly popular (FAO, 2016).

Due to their high-quality and easily digestible protein, essential fatty acids, vitamins and trace elements such as iodine, fish and seafood are a healthy and integral part of our daily diet.

Fish and seafood are easily susceptible to microbiological and chemical contaminations, which lead to continuously emerging EU-Rapid Alerts (RASFF). The latter and the constantly growing market result in an increased demand of analytical services in this industrial field.

Lab expertise in fish

The Eurofins experts from the Competence Centre of fish and aquaculture have long-term experience with the analysis and assessment of such products. Eurofins offers you the analyses of residues and contaminants, hygiene and microbiology, the absence of prohibited treatments, determination of animal species and sensory testing as well as general food analysis.

Heavy Metals

Fish and seafood are prone to absorb and accumulate heavy metals from geogenic or anthropogenic sources within marine ecosystems. The contamination of sea fish with mercury is regarded as severest health hazard.

The experts for inorganic contaminants offer you a range of methods based on either atomic absorption spectroscopy (AAS) or inductively coupled plasma (ICP) and even extremely sensitive methods using high-resolution ICP-MS down to 1 µg/kg.

Veterinary Drugs

Fish and seafood especially from aquaculture suffering from certain diseases need to be treated with veterinary drugs. However, the number of substances approved for their use in fish and seafood is rather limited.

Occasionally nitrofurans, chloramphenicol, quinolones and antiparasitic agents such as malachite green and crystal violet are detected.

Our experts for veterinary drug residues have developed sensitive and selective LC-MS/MS methods allowing the determination of up to 250 substances.

A new and innovative screening technique using high-resolution LC-MS offers our customers now a unique service portfolio and improved cost efficiency in the complex field of veterinary drug testing.

Dioxins and PCB

Dioxins and furans are chloroorganic compounds, of which particularly 17 out of 201 congeners are extremely toxic. They originate as unwanted byproducts of incomplete combustion.

From the group of polychlorinated biphenyls (PCBs) 12 out of 209 congeners show molecular structure and biological effects comparable to dioxins, the so called dioxin-like PCBs. Six marker substances are considered relevant for the occurrence of non-dioxin-like PCBs.

The Eurofins Competence Centre for Dioxins and further Persistent Organic Pollutants (POPs) is using gas chromatography with high-resolution mass spectrometry as well as GC-MS/MS methods.

PAH

Polycyclic aromatic hydrocarbons (PAH) are a group of partly carcinogenic, partly genotoxic compounds. They occur naturally in coal and crude oil and are formed as part of incomplete combustion of organic materials. Maximum levels in food are currently established for benzo[a]pyrene and the group of the so called PAH4 (sum of benzo[a]pyrene, benz[a]anthracene, benzo[b]fluoranthene and chrysene). The EFSA (European Food Safety Authority) regards these four PAH substances as a more realistic representation of the contamination of food items with PAHs.

Our Competence Centre for Organic Contaminants offers you different scopes of PAH analyses from just benzo[a]pyrene as a single marker to different ranges of substances according to your needs. All methods are based on GC-MS. A new online-SPE-GC-MS method allows short turn-around times.

Pesticides

Contaminants from feed or substances used as feed additives such as veterinary drugs or the antioxidant ethoxyquin may show up in fish products originating from aquaculture. In case of ethoxyquin its metabolite ethoxyquin dimer may even be detected in larger quantities. Maximum residues levels for ethoxyquin have not been established yet.

