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científica, s.l.

Your partner in ...
food
... analytics



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Demeditec Diagnostics GmbH is a privately owned company located in northern Germany. Since the foundation in 1987 Demeditec has rapidly grown to become a successful and reliable manufacturer and supplier of Enzyme-linked Immunosorbent Assays (ELISAs).

Our customers are located worldwide and include private laboratories, hospitals, universities as well as other research institutions and pharmaceutical companies.

To ensure the quality of our products, services and support, Demeditec has been certified according to EN ISO 9001 and EN ISO 13485 since 2003 and according to the GMP standard since 2011.

These certifications, along with qualified and creative personnel, enable the development of innovative test kits in our R&D department.

We welcome you to be a part of our network and hope to convince you of the quality of our products and support.



Dr. Arndt Stüber
General Manager



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■ Introduction

Dear partner,

today's lifestyle requires a very accurate analysis of food and feeding products. More than ever, it is important to have reliable and fast tests which can be easily performed by food industry laboratories or regulatory agencies. Considering this Demeditec offers various competitive and sandwich ELISAs which allow a high-sensitive detection of residues, constituents and microbiological contaminants in food and feed.

With this brochure we'd like to introduce our various Food Analytic products to you!

Food Safety & Quality



Demeditec products for **food safety** focus on detecting undesired substances in food products that are harmful or even toxic including antibiotics which are often used in livestock breeding. In contrast, other undesired substances such as mycotoxins are secondary metabolites of different molds. Commodities stored in inappropriate storage conditions can allow mycotoxins to exponentially increase potentially reaching levels that would render those commodities unusable.

Another important aspect of food safety is that food products may be contaminated by allergens. Allergens frequently occur due to the automated high throughput processes of the modern food industry that uses the same processing line for multiple products during manufacturing and packaging. Contaminations of food products by allergens are known to pose a serious risk to allergy-sensitive individuals since even small amounts

of such allergens may cause severe illness or even an anaphylactic shock. Both, the European Union as well as the Food and Drug Administration, now require the food industry to label their products if certain allergens are present in their products – even if the allergens occur only in trace amounts.

By using the Demeditec ELISA products for food safety it is possible to determine concentrations of various undesired substances including allergens in different food matrices.

The **quality of a food product** for human consumption can to some extent already be assessed by its general appearance, freshness and taste. However, quantifying the content of nutritive substances in food products, for example vitamins, is difficult and often requires expensive and time consuming analytical procedures. Because vitamins are essential for humans, food products are frequently enriched or fortified with certain vitamins and other additives for supporting a balanced and healthy diet of the consumer. For manufactures and certified laboratories it is therefore important to have tools available for a precise and cost effective determination of the actual vitamin content in food products and dietary supplements. Demeditec offers various food analytic products for performing such measurements.

Mycotoxins

Mycotoxins are secondary metabolites produced by certain molds that colonize crops and other commodities, thus potentially entering the food chain. Whenever growth conditions are right, molds proliferate into colonies and mycotoxin levels rise. Amongst the different mycotoxins, Aflatoxin B1 is the most toxic and also a potent carcinogen which has been correlated to severe illnesses like liver cancer in many animal species and humans. As a result of this, many countries have statutory limits for mycotoxin levels in food and animal feed, which in turn requires reliable and cost effective methods for the detection and quantification of such mycotoxins being available to the market.

Aflatoxins are the most common mycotoxins present in food and feed with Aflatoxin B1 being the most potent genotoxic and carcinogenic type. Aflatoxin M1 is a major metabolite of Aflatoxin B1 in humans and animals and is therefore present in milk from animals fed with contaminated feed. In addition to aflatoxins, mainly produced by *Aspergillus flavus* and *Aspergillus parasiticus*, other common mycotoxins include Ochratoxin A and Deoxynivalenol, Zearalenone and T2 Toxin which are produced from certain species of *Fusarium*.

It is beyond dispute that controlling mycotoxin levels in human food as well as animal feed requires reliable

Product range of **Mycotoxin ELISAs**

| | |
|-----------------|--------------|
| Aflatoxin B1 | Fumonisin |
| Aflatoxin M1 | Ochratoxin A |
| Aflatoxin Total | Zearalenone |
| Deoxynivalenol | T2 Toxin |

and cost effective detection and quantification measures to prevent unsuitable commodities from entering the food chain.

The range of Mycotoxin ELISAs covers the most abundant mycotoxins present in food and feed and provide for a highly sensitive quantification method to be used with a steadily growing base of validated matrices as new applications and regulations arise. The ELISAs provide a fast and yet sensitive method for quantifying mycotoxin levels in the most prevalent commodities that require realtime results, for example for batch release purposes. Overall process times were geared to requirements as defined by the USDA GIPSA test performance specifications.



Allergens & Spike Solutions

Product range of Allergen ELISAs

| | |
|---------------------------|------------------------|
| Almond | Lysozyme |
| Beta-Lactoglobulin | Macadamia nut |
| Brazil nut | Milk |
| Casein | Molluscs (Tropomyosin) |
| Cashew | Mustard |
| Coconut | Ovalbumin |
| Crustaceans (Tropomyosin) | Peanut |
| Egg White | Pecan nut |
| Fish (Parvalbumin) | Pistachio |
| Gliadin / Gluten | Sesame |
| Hazelnut | Soja (Soy) |
| Lupine | Walnut |

Food allergens are substances in food that can trigger allergic, sometimes life-threatening reactions in predisposed individuals. According to scientific reports, approximately 2-3% of adults and 6-8% of children are affected by food allergies today. Food allergens may be present as an ingredient but also inadvertently via cross contamination when sharing food processing machines. Due to their potential harmful nature, the presence of certain allergens in food is regulated in EC directive 1169/2011, with annex II listing those allergens that are required for notification by the manufacturer.

Demeditec currently features ELISA test kits for the detection and quantification of 24 food allergens that are required for notification. This is one of the biggest product ranges on the market of Allergen ELISAs. Wherever applicable, common sample extraction procedures were established for multiple allergen detections out of one sample extract. Due to the common ELISA processing scheme individual allergen ELISA strips can be combined in one frame and processed in parallel.




Allergens & Spike Solutions

Histamine

Product range of **Histamine ELISA**

Histamine Food

A close-up photograph of laboratory glassware, including a glass vial and a beaker, with a glass dropper positioned above them, ready to add liquid. The background is a soft, out-of-focus light blue.

Spike solutions supplement allergen ELISAs and help establish routine test schemes in a laboratory or facilitate the validation of new sample types. They are made from the same reference material as used for the calibrators of the corresponding ELISA test kit, but come in higher concentration. Since no international or even industry wide reference materials are available for food allergens, spike solutions provide for convenient to use reference samples that fit into test scheme.

Histamine is a biogenic amine which is formed by enzymatical decarboxylation from the amino acid histidine for example caused by the growth of certain bacteria in seafood. It can also reach the human organism via food consumption and trigger numerous intolerance related symptoms. Furthermore, toxic reactions are possible after uptake of high histamine concentrations. For example, fish meal from materials which has been allowed to degrade prior to being processed can contain high levels of histamine and can be toxic. Histamine testing in fresh fish is a possible control strategy that can be used by seafood processors in their HACCP program to address the hazard of scombotoxin formation.



Vitamins



Product range of **Vitamin ELISAs**

Folic Acid

Vitamin H (Biotin)

Vitamin B12

Vitamins are alimentary organic compounds that are needed to develop and maintain essential functions in any higher organism. The biochemical functions of vitamins are as diverse as their chemical structures but a common feature of vitamins is that they need to be ingested on a regular basis because the organism cannot synthesize them in sufficient amount. Today, vitamin supplements are very popular although a positive health effect in otherwise healthy people is not demonstrated and in contrast certain vitamins can be toxic when taken in excess. To this end governmental regulations for dosage limits are in place for example in the European Community.

Folic acid plays an important role in the biosynthesis of nucleic acids and particular amino acids and attracts interest due to its antioxidative properties. A folate deficiency can result in numerous health problems, most of them affecting the nervous system,

but also have the susceptibility to develop certain forms of cancer. As a result, folic acid is used in fortified foods and supplements as in some countries governmental fortification programs are mandatory for manufacturers of certain types of food.

Vitamin B12, also called cobalamin, is a water soluble vitamin which plays a pivotal role in nervous system development and the formation of red blood cells. Vitamin B12 is naturally found in food of animal origin, like fish, meat, poultry, eggs and milk, but not in plant foods, hence fortified foods like cereals are an important source of vitamin B12 for example for vegetarians.

Biotin, also called vitamin H, is a water soluble B-vitamin involved in basic metabolic processes. Although biotin deficiency in humans is rare and the effect of artificial biotin uptake on hair and nail strength is questionable, biotin is often recommended as a dietary supplement.

Antibiotics

Antibiotics are substances used in the treatment and prevention of bacterial infection. While the first antibiotics like Penicillin were naturally occurring metabolites released from molds, modern antibiotics are often produced by chemical synthesis in industrial scale. The availability of appropriate antibiotics revolutionized medicine but also live-stock farming, by entering the food chain. Due to adverse health effects of antibiotics when ingested apart from medical indication, the presence of antibiotics in food stuff is regulated or even prohibited.

Chloramphenicol is a broad spectrum antibiotic applied in the production of milk, meat and eggs due to its outstanding antibacterial properties. If ingested by humans, it may lead to hematotoxic effects, as for instance in aplastic anemia. Since there is no dosage-effect relationship established yet, the use of chloramphenicol is prohibited as an antibiotic for animals that are intended for food production.

Penicillin was the first antibiotic identified and is of high significance for human health care worldwide. It is used for the treatment of both, humans and industrial livestock. For some individuals even little amounts of penicillin in food can result in severe allergic symptoms therefore regulations exist for food manufacturers to ensure that the concentration

Product range of Antibiotic ELISAs

| | |
|-----------------|--------------|
| Chloramphenicol | Streptomycin |
| Penicillin | Tetracycline |
| Quinolones | |

of penicillin does not exceed a given maximum concentration.

Streptomycin is an antibiotic frequently applied in the veterinary area for the treatment of mastitis. Through improper use, elevated streptomycin concentrations may be found in the liver, kidney, muscle and milk of medicated animals. High concentrations of streptomycin can cause damage to the equilibrium sense and auditory nerves and show nephrotoxic effects in humans. Furthermore, constant exposure of humans to low concentrations of streptomycin in food may cause allergies, impair the intestinal flora and promote resistance of pathogenic microorganisms. Streptomycin concentrations in meat and milk products are therefore strictly regulated in many countries.

Tetracycline is an antibiotic binding to prokaryotic ribosomes, thereby inhibiting bacterial protein expression. Even though the application of tetracycline for animal breeding is accepted in most countries, maximum residual contents of tetracycline in food products for human consumptions are regulated, for instance by EU regulation 37/2010.

Overview of products

Allergen ELISAs

| | |
|---------------------------|------------------------|
| Almond | Lysozyme |
| Beta-Lactoglobulin | Macadamia nut |
| Brazil nut | Milk |
| Casein | Molluscs (Tropomyosin) |
| Cashew | Mustard |
| Coconut | Ovalbumin |
| Crustaceans (Tropomyosin) | Peanut |
| Egg White | Pecan nut |
| Fish (Parvalbumin) | Pistachio |
| Gliadin / Gluten | Sesame |
| Hazelnut | Soja (Soy) |
| Lupine | Walnut |

Histamine ELISA

Histamine Food

Mycotoxin ELISAs

| | |
|-----------------|--------------|
| Aflatoxin B1 | Fumonisin |
| Aflatoxin M1 | Ochratoxin A |
| Aflatoxin Total | Zearalenone |
| Deoxynivalenol | T2 Toxin |

Vitamin ELISAs

| | |
|-------------|--------------------|
| Folic Acid | Vitamin H (Biotin) |
| Vitamin B12 | |

Antibiotic ELISAs

| | |
|-----------------|--------------|
| Chloramphenicol | Streptomycin |
| Penicillin | Tetracycline |
| Quinolones | |

Who we are!



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This edition succeeds all former product lists, which are no longer valid.
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