IGV TESTLAB

Range of Services

Laboratory & Analytics

CONTENT

ABOUT

IGV GmbH

The Institute for Grain Processing was founded in 1960 as an application-oriented research institute for the milling, baking and food industries. As a result of an MBO in 1994, it was transferred into a limited liability company (GmbH). Our three departments, **TESTLAB**, **FOODTECH** and **PLANTTECH**, are now focused on the production of food and industrial development services.

Business fields

› Innovative technologies for new protein products

› Efficient, resource-effective production processes

› Innovative recipes based on functional ingredients

› Product manufacturing from algae and plants

› Food safety methodologies on behalf of industry and retail

Our accredited test laboratory, our training and further education courses, our counselling services for project management and technology and the related transfer of knowledge into companies complete our profile.

CONTACT

Head of IGV TESTLAB	Dipl.-Ing. Ulrike Bauermann	Tel. +49 33200 89-207
Expert opinions for marketability of food with control and verification of labelling claims	State certified food chemist Svenja Weiß State certified food chemist Cornelia Weise	Tel. +49 33200 89-144 Tel. +49 33200 89-349
Investigation and examination of foodstuff, animal feed content substances, nutrients and heavy metals	State certified food chemist Svenja Weiß M. Sc. Luise Kowalski	Tel. +49 33200 89-144 Tel. +49 33200 89-136
Analysis of contaminants, residues and undesirable substances	Dr. rer. nat. Linda Uhr Dipl. troph. Kristin Gödeke	Tel. +49 33200 89-266 Tel. +49 33200 89-279
Specific proteins (proteomics) Allergens, technical enzymes	M. Sc. Josephine Bönick Dr. rer. nat. Linda Uhr	Tel. +49 33200 89-263 Tel. +49 33200 89-266
Molecular biological and microbiological investigations and examinations	Dr. rer. nat. Marion Mägdefrau Dipl. Biologist Michael Kliefoth	Tel. +49 33200 89-347 Tel. +49 33200 89-259
Investigation and examination of medical and aromatic plants and essential oils	Dipl.-Ing. Ulrike Bauermann	Tel. +49 33200 89-207
Special grain analysis and investigation of mill products	B. Sc. (FH) Besim Latifovic Dipl. troph. Kristin Gödeke	Tel. +49 33200 89-425 Tel. +49 33200 89-279

IGV TESTLAB
Laboratory & Analytics

We support you in securing
your product quality!

ANALYSIS OF FOOD AND FEED

CERTIFICATION OF
PRODUCT MARKETABILITY

VERIFICATION OF FOOD LABELLING

MICROBIOLOGICAL INVESTIGATIONS

EXPERT OPINIONS

TESTLAB

The IGV TESTLAB department is an **accredited test laboratory** a in the field of food, feed and drug testing and carries out R&D projects regarding raw material quality, active substance behaviour, food safety and food technology.

We offer a wide range of physicochemical investigations of foods, animal feed and plant raw materials as well as of their processed products. The state of the art in technical equipment resources, the expertise of the staff and the **DAkkS accreditation** in accordance with DIN EN ISO 17025 secure the basis for our high-quality services.

Range of services

INVESTIGATION
of food and feed ingredients

Proteins, amino acids, fat, fatty acids, fat characteristic values, digestible and indigestible carbohydrates *(Fibre in accordance with AOAC/§64 of the German Food and Feed Code /ICC, ß-glucans, pentosans, inulin, low-molecular fibre substances-NDO)*, **water, mineral substances, common salt, preservatives, vitamins, ß-glucan, sugars** (*mono-, di- and polysaccharides)*

SPECIAL GRAIN ANALYSIS
Falling number, wet gluten, hectolitre weight, amylogram, viscogram, farinogram, extensogram, dough simulation curve (Mixolab)**, botanical impurities**

INVESTIGATION
of medical and aromatic plants and essential oils

Essential oil according to Ph. Eur and GMP, LFGB (German Food and Feed Code)**, individual and main component analysis of essential oils** (GC-FID, GC-MS), **testing of active substances according to Ph. Eur.** *(thymol, carvacrol, fenchon, estragol, valerenic acid, rosmarinic acid, hypericin, apigenin-7-glucoside, etc.),* **Contaminant analytics**

ANALYSIS OF UNDESIRABLE SUBSTANCES
Heavy metals *(Pb, Cd, Hg, etc.)*, **plant protection active substances** *(fungicides, herbicides, insecticides)*, **stalk shortening agents** (*ethephon, chlormequat, mepiquat)*, **mycotoxins** *(ergot alkaloids, aflatoxins, ochratoxin A, fumonisins, zearalenone, DON, T-2-/HT-2-toxins, fusarium toxins)*, **acrylamid, 3-MCPD fatty acid esters, PAH, plasticisers, allergens**

MOLECULAR BIOLOGICAL AND MICROBIOLOGICAL INVESTIGATIONS
GMO proof, allergens, microbiological status *(approval according to § 44 of the German Law on the Prevention of Infectious Diseases in Humans for working with pathogens)*, **process hygiene checks, preservative burden test, inhibition tests, cell biological examinations**

Key tasks

MARKETABILITY CERTIFICATES OF FOOD, FEED AND HARVESTED CROPS

Product marketability assessment, verification of food labelling, nutritional value analyses, sensory evaluation
Svenja Weiß » svenja.weiss@igv-gmbh.de
Cornelia Weise » cornelia.weise@igv-gmbh.de

Molecular biological and microbiological investigations
Dr. Marion Mägdefrau » marion.maegdefrau@igv-gmbh.de
Michael Kliefoth » michael.kliefoth@igv-gmbh.de

Investigation of residues and contaminants
Dr. Linda Uhr » linda.uhr@igv-gmbh.de
Kristin Gödeke » kristin.goedeke@igv-gmbh.de

GRAIN AND FLOUR ANALYSIS ACC. TO EU REGULATIONS AND ICC STANDARDS

Besim Latifovic » besim.latifovic@igv-gmbh.de

INVESTIGATION AND EXAMINATION OF MEDICAL AND AROMATIC PLANTS ACC. TO PH. EUR., GMP AND THE GERMAN FOODS, CONSUMER GOODS AND FEEDSTUFFS CODE (LFGB)

Ulrike Bauermann » ulrike.bauermann@igv-gmbh.de

INVESTIGATION AND EXAMINATION OF FATS, OILS AND OILSEEDS FOR COSMETICS AND FOOD SUPPLEMENTS

Luise Kowalski » luise.kowalski@igv-gmbh.de

We will gladly advise and provide you with an offer tailored to your raw materials, products or product group.

All analytical investigations and examinations are carried out in accordance with internationally recognized methods. If desired, the examination reports are provided with updated limit values and are assessed in accordance with the statutory regulations of Germany and the EU.

Exceeded limiting values or deviations from target and warning values are immediately communicated to the client by phone or electronically.

Discretion and confidentiality are fundamental elements of our business policy.

In addition, IGV GmbH awards a certification mark based on a product-related examination plan combined with an inspection of the production facilities and a staff training in the latest state of food legislation and food labelling controls.

As a result, we attest the analytical control of your raw materials and products along the value chain.

Sample management

7 am – 4.30 pm (Mon. – Fri.)
+49 33200 89-222

The laboratory is GMP-certified and holds QA certification for monitoring of feed materials.

Approvals

Certification mark: Continuously tested product quality and production hygiene

The testing laboratory certifies a holistic inspection from the raw materials to the product within the scope of its certification. We implement the legal requirements for monitoring the quality along the value chain and confirm our customers a continuously tested product quality and production hygiene with our seal of approval.

DAkkS accredited in accordance with ISO 17025 – D-PL-14024-01

Monitoring traffic of medicinal products, EU-GMP certification

QA recognition in the field of feed monitoring

Private experts for chemical and chemical-physical testing and assessment of officially collected samples in the sense of § 42 of the Foodstuffs and Commodities Act

Tests as part of the central DLG tests

Authorization as drinking water investigation body acc. to §15 para. 4 of the German drinking water ordinance 2001 (microbiology)

Testing laboratory for product tests by IGV GmbH

Mass spectrometry expertise

GC-MSD • GC-MS/MS • LC-MS/MS • MALDI-TOF/MS • TripleTOF/MS

Research direction

Applied research for analysis

In cooperation with the University of Potsdam, the Institute of Nutritional Sciences and the Beuth University of Berlin, scientific research is supported in the areas of residue analysis, microbiology and molecular biology for plant raw materials and foodstuffs.

Development of innovative measuring methods for protein analysis (Proteomics), e.g. detection methods for allergens and enzymes in plant raw materials, proof of authenticity

Special harvest tests on the formation/influence of secondary plant ingredients (Metabolomics)

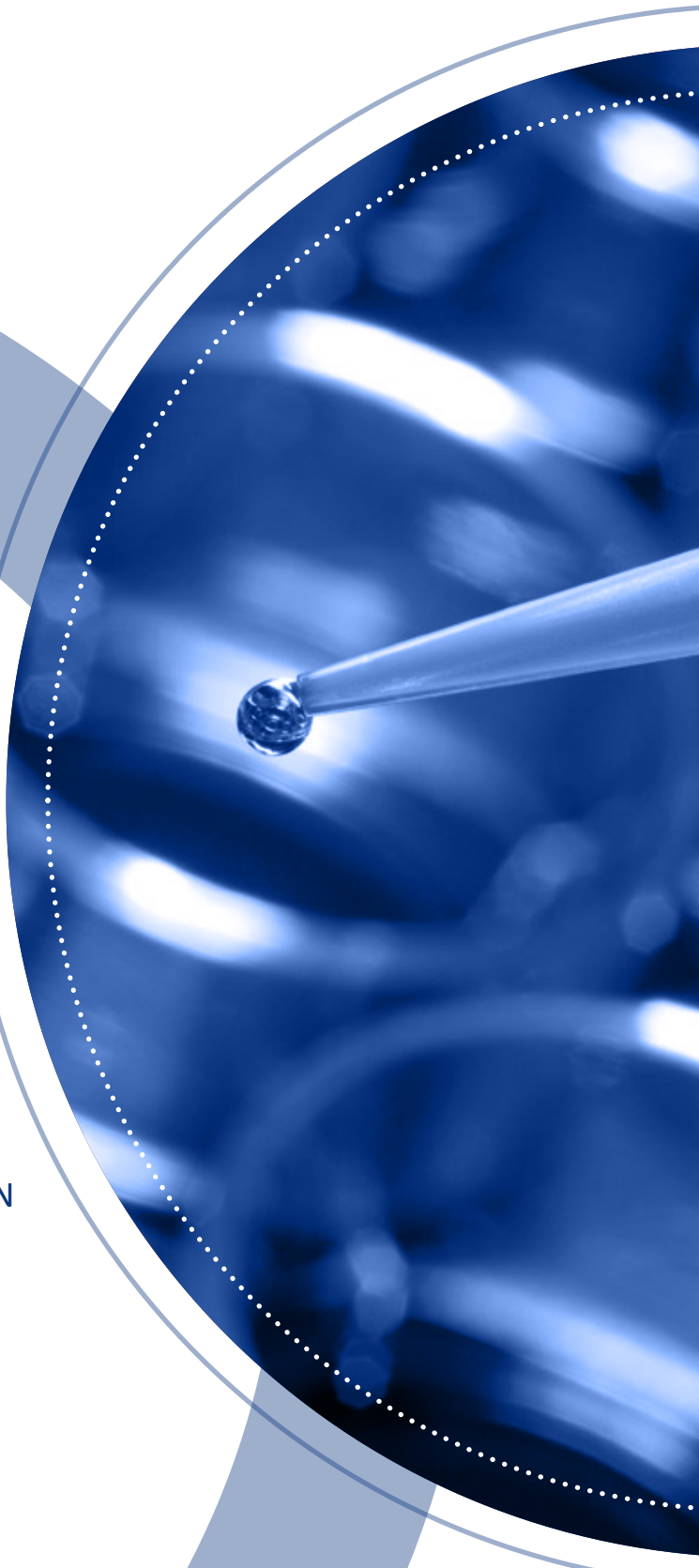
Backgrounds for mycotoxin formation in plants

Determination of processing properties of flours

Development of methods in the area of trace analysis of residues and contaminants

RANGE OF SERVICES
Excerpt

Issued – August 2018
Subject to changes



FOOD ANALYSIS

FEED ANALYSIS

DRINKING WATER ANALYSIS

COSMETICS ANALYSIS

CELL BIOLOGICAL EXAMINATION

RANGE OF SERVICES (EXCERPT)

Table of Contents

1. Food & feed analysis — Methods

1.1 Product marketability assessment, verification of food labelling

Verification of food labelling acc. to Regulation (EC) No 1169/2011 on the provision of food information to consumers

1.2 Chemical-physical investigations

ALLERGENS	
Cashew	PCR, ELISA; LC-MS/MS (qualitative)
Egg	ELISA; LC-MS/MS
Peanut	PCR; ELISA; LC-MS/MS (qualitative)
Cereals containing gluten; gluten	PCR; ELISA
Hazelnut	PCR; ELISA; LC-MS/MS (quantitative)
Crustacean °	PCR
Lactose	HPAEC-PAD
Lupine	PCR; ELISA; LC-MS/MS
Almond	PCR; ELISA; LC-MS/MS (qualitative)
Milk	ELISA; LC-MS/MS (qualitative)
Celery °	PCR
Mustard	PCR; ELISA
Sesame	PCR; ELISA; LC-MS/MS
Soy	PCR; ELISA; LC-MS/MS

GENERAL PARAMETERS	
a_w- value	Aquaspector AQS-2-TC
Refractive index	Refractometric measurement
Density	Pycnometric measurement
Colour value	Spectrophotometric measurement
Total minerals (raw ash)	Residue on ignition 550 °C, 900 °C
Weight/filling quantity	Weighing
Conductivity	Potentiometric measurement
Particle size (dry) Particle size (dry/wet)	Mechanical sieving Laser diffraction
pH value	Potentiometric measurement
Sand	Hydrochloric acid insoluble ignition residue
Dry mass/drying loss/water	• Drying cabinet, 103 °C, 130 °C, if necessary with sea sand • Karl Fischer titration
Viscosity (Brookfield) Viscosity rotation (cone/plate, plate/plate)	Brookfield viscograph Rotational viscometer

° *Subcontracting*

ANTIBIOTICS	
Azithromycin, ceftiofur, chloramphenicol, clarithromycin, doxycycline, erythromycin, penicillin G, sulfamethoxazole, tetracycline, trimethoprim, tylosine	LC-MS/MS

MEDICINAL & AROMATIC PLANTS	
Essential oil	Ph. Eur. 2.8.12, ASU L 53.00-5
Composition of the essential oil Thymol, carvacrol, anethole, estragole i.a.	Ph. Eur. 2.2.28 GC-FID, GC-MSD
Apigenin-7-glucosid	Ph. Eur. Monograph chamomile
Hypericin	Ph. Eur. Monograph St. John's wort
Piperin	ASU L 53.05-1, DIN 10235
Rosemic acid	Ph. Eur. Monograph melissa
Valerenic acid	Ph. Eur. Monograph valerian
Water	Distillation Ph. Eur. 2.2.13

PROTEINS & AMINO ACIDS	
Protein	Kjeldahl
Amino acids: • After hydrolysis Aspartic acid, glutamic acid, serine, histidine, glycine, threonine, arginine, alanine, tyrosine, valine, phenylalanine, isoleucine, leucine, lysine, proline, hydroxyproline, cysteine, methionine, tryptophan • Free amino acids α-Aminobutyric acid, arginine, L-hydroxyproline, alanine, asparagine, aspartic acid, cysteine, δ-aminobutyric acid, glutamine, glutamic acid, glycine, histidine, isoleucine, leucine, lysine, methionine, ornithine, phenylalanine, proline, serine, threonine, tryptophan, tyrosine, valine Cysteine, glutathione (on request)	 Hydrolysis/derivatization HPLC Extraction/derivatization LC-MS/MS

ENZYME ACTIVITIES	
α-amylase, β-amylase °	Photometric measurement
Xylanase °	Photometric measurement
Lipase °	Photometric measurement
Lipoxygenase °	Photometric measurement
Peroxidase °	Photometric measurement

° Subcontracting

ENZYMES (TECHNICAL)	
Screening α-amylase, lipase, xylanase, maltogene amylase, glucoamylase	LC-MS/MS

FATS, FAT COMPONENTS, FAT CHARACTERISTICS	
Total fat	Weibull-Stoldt method
Oil content in oil seeds	Petroleum ether extraction
Fatty acid spectrum (saturated/unsaturated fatty acids)	GC-FID
Trans-fatty acids	GC-FID
Butyric acid (butter or milk fat content)	GC-FID
3-MCPD-Ester, glycidol	GC-MS
Acid number, free fatty acids	Titrimetric methods
Saponification value	Titrimetric methods
Iodine value	Titrimetric methods
Peroxide value	Titrimetric methods
Anisidine number	Photometric measurement
Totox number	Titrimetric and photometric
Unsaponifiable portion	Saponification, gravimetric
Density	Pycnometric measurement
Refractive index	Refractometric measurement
Oxidation stability of oil	Induction time, Rancimat

GENETICALLY MODIFIED ORGANISMS (GMOS)	
Double Screening (35S, NOS) incl. DNA extraction	real-time PCR
Triple Screening (35S, NOS, FMV) incl. DNA extraction	real-time PCR
Quadruple Screening (35S, NOS, FMV, cry1Ab/Ac) incl. DNA extraction	real-time PCR
GMO identification of approved plants	real-time PCR, ASU § 64 LFGB
Quantification of RR soy, RR 2 Yield soy	real-time PCR

CEREALS, FLOUR, DOUGH & BAKERY PRODUCTS	
Sample preparation	Cleaning, drying, crushing
Moisture	DIN EN ISO 712 mod.
Hectolitre weight	EN ISO 7971-3
Thousand grain weight	DIN EN ISO 520
Germination capacity	Germination process/TTC Assay
Grain hardness, protein (wheat)	NIR-measurement
Besatz (grain impurities) Wheat, rye, barley Maize, millet	 DIN EN 15587, ICC 102/1, ICC 103/1 DIN EN 16378
Detection of spelt, wheat and rye fractions in ground cereal products	LC-MS/MS

Husking yield • Buckwheat, rice • Oats • Spelt	 • Underrunner disc sheller • Compressed air huller • Impact sheller
Milling tests/flour yield	Milling machine (Bühler, Brabender)
Granularity	Air jet sieving
Sieve analysis	Mechanical
Air jet sieving	Mechanical
Sensory description	Descriptive testing
WAI/WSI	Acc. to Anderson
Water absorption	ICC 115/1
Total minerals	ICC 104/1
Crude protein	ICC 105/2 or 167
Sedimentation value - flour Sedimentation value - cereals	ICC 116/1 ICC 118, 116/1
Wet gluten/gluten index Dry gluten	ICC 155 Drying: plate dryer
Gluten content	ICC 137/1
Swelling capacity	Acc. to Berliner
Starch	ICC 123
Damaged starch	ICC 164
Falling number	ICC 107/1
Ascorbic acid	ASU L 26.04-2 mod.
Detection of ascorbic acid	Tauber's reagents
Maltose	Acc. to Berliner
β-Glucan	ICC 166
Dough-rheological investigations	
Amylogram	ICC 126/1
Swelling curve	Acc. to Drews
Viskogram	ICC 169
Farinogram	ICC 115/1
Extensogram	ICC 114/1
Non-stickiness and machinability of wheat dough	Regulation (EU) 2016/1240, part III
Dough simulation curve (Mixolab)	ICC 173; ISO 17718
Baking tests	
Test baking of wheat flour, box form baking trial, test baking of whole grain, Rapid-Mix-Test	Standard methods of the Association of Cereal Research (AGF), Detmold
Rye baking test Sourdogh test with the single-stage Berlin sourdough leavening process	Standard methods of the Association of Cereal Research (AGF), Detmold
Further dough and bakery products investigations	
Gas retention capacity	Rheofermentometer test acc. to Chopin
Acidity/pH value	Titration ASU L 17.00-2
Volume determination	Rapeseed displacement method
Texture analysis to determine the freshness of bakery products by the storage time	AACC (74-09) Stable Micro Systems Ltd.

CARBOHYDRATES	
Sugar as total sugar (Glc + Fru + Sac + Lac + Mal)	HPAEC-PAD
Sugar, single (Glu, Fru, Sac, Lac, Mal, Gal, Ara, Xyl)	HPAEC-PAD
Inulin/Oligofructose	AOAC 997.08 mod.
Starch in Cereals Foods (> 10 %) Foods (< 10 %) Animal feed	 Polarimetric, ICC 123 Polarimetric, ASU L 17.00-5 Enzymatic (TK r-biopharm) Regulation (EC) No. 152/2009
Damaged starch	Enzymatic, ICC 164
Dietary fibres Total dietary fibre, soluble and insoluble Total dietary fibre incl. ethanol-soluble fibre	 ASU L 00.00-18, ICC 156, misc. AOAC-methods
β-Glucan Cereals Cereal products	 ICC 166 ICC 166 mod., HPAED-PAD
Crude fibre	Acc. to VDLUFA method or Annex III Regulation (EC) No. 152/2009
Pentosanes Total pentosans Soluble and insoluble pentosans	 Photometric (conversion with orcinol) Acidic hydrolysis, HPAEC-PAD

PRESERVATIVES	
Benzoic acid, sorbic acid, PHB methyl ester, PHB ethyl ester, PHB propyl ester, 2-phenoxyethanol	HPLC
Propionic acid °	Distillation, HPLC

NUTRITIONAL VALUES
• Water, total minerals, protein, fat, saturated fatty acids, Total dietary fibre, sodium, total sugar (Glc + Fru + Sac + Lac + Mal) • Calculation of salt, carbohydrates and energy content

OIL SEEDS	
Moisture/dry matter	Drying at 103 °C
Besatz (impurities)	DGF B-I-3
Sensory testing	Descriptive testing
Oil content	DGF B-15(12)
Free fatty acids	Titrimetric
Fatty acid spectrum	GC-FID

° *Subcontracting*

RESIDUES, UNDESIRABLE SUBSTANCES	
Pesticides	
Pesticide residues multimethod	ASU L 00.00-115 QuEChERS
Polar pesticide residues Chlormequat, mepiquat, ethephon, glyphosate	ASU L 00.00-76 mod. LC-MS/MS
Dioxins °	DIN EN 16215
Dithiocarbamate °	nach DFG S15, Ph. Eur. 2.8.13
Methyl bromide °	DFG S18, Ph. Eur. 2.8.13
Undesirable substances	
Plasticizers; referred to the list of the German BfR (Federal Institute of Risk Assessment)	GC-MS/MS
PAH	GC-MS/MS
3-MCPD esters, glycidol	DGF-C-III-18 (09)
Hydrocarbons (mineral oils) MOSH, MOAH	GC-FID method of the German BfR institute
Acrylamide	LC-MS/MS
Tropane alkaloids (atropine, scopolamine)	LC-MS/MS
Pyrrolizidine alkaloids	LC-MS/MS method of the German BfR institute
Shellfish toxins (domoic acid, kainic acid)	LC-MS/MS
Mycotoxins	
Aflatoxins B_1, G_1, B_2, G_2	LC-MS/MS
Aflatoxin M_1 °	
Alternaria mycotoxins (AOH, TEA, TEN, AME) *ON REQUEST*	LC-MS/MS
Ochratoxin A	LC-MS/MS
Fumonisin B_1, B_2, B_3	HPLC
Deoxynivalenol (DON)	LC-MS/MS
Zearalenone	LC-MS/MS
T-2-/HT-2-Toxin	LC-MS/MS
Trichothecenes incl. DON, DON-3-Glc, 3-Ac-DON, 15-Ac-DON, NIV, T-2, HT-2, DAS, FUS-X, ZEA	LC-MS/MS
Ergot alkaloids	LC-MS/MS
Patulin	LC-MS/MS

SPECIAL INGREDIENTS	
Acetic acid	Enzymatic, § 64 (LFGB) L 17.00-16
Cannabinoids (THC, CBD, CBG etc.)	LC-MS/MS
Carotenoids	HPLC
Cholesterol	GC-FID
Caffeine	HPLC
Ethanol	Enzymatic
Lactic acid	Enzymatic, § 64 (LFGB) L 17.00-16
Opiate (morphine, codeine, thebaine)	LC-MS/MS
Theobromine	HPLC
Thymoquinone	HPLC
Total chlorophyll Chlorophyll a and b	Photometric measurement HPLC-DAD
Total carotenoids (carotenes, xanthophylls)	Photometric measurement
Total polyphenols	Potentiometric measurements

° Subcontracting

TRACE ELEMENTS/HEAVY METALS	
Pressure digestion with conc. nitric acid	
Arsenic °	Graphite furnace AAS
Lead	Graphite furnace AAS
Cadmium	Graphite furnace AAS
Calcium	Flame AAS
Iron	Flame AAS
Potassium	Flame AAS
Copper	Flame AAS
Magnesium	Flame AAS
Sodium	Flame AAS
Phosphorus	Photometric after digestion
Mercury	Cold vapour and hydride generation (AAS) after amalgamation
Zinc	Flame AAS

SWEETENERS
ON REQUEST

ANIMAL SPECIES IDENTIFICATION	
Horse (other on request)	Real-time PCR

VITAMINS	
Fat-soluble vitamins	
Retinol (Vitamin A) °	HPLC
β-Carotene (Provitamin A) °	HPLC
Total vitamin A (Retinol, β-Carotene) °	HPLC
Total vitamin E (α-β-γ-δ-Tocopherol) °	HPLC
Vitamin D_2 (Ergocalciferol) °	HPLC
Vitamin D_3 (Cholecalciferol) °	HPLC
Vitamin K_1 (Phylloquinone) °	HPLC
Vitamin K_2 (Menaquinone) °	HPLC
Water-soluble vitamins	
Vitamin B_1 (Thiamine) °	Microbiological
Vitamin B_2 (Riboflavin)	LC-MS/MS
Vitamin B_3 (Niacin)	LC-MS/MS
Vitamin B_5 (Pantothenic acid) °	HPLC or microbiological
Vitamin B_6 (Pyridoxine)	LC-MS/MS
Vitamin B_7 (Biotin) °	Microbiological
Vitamin B_9 (Folic acid)	LC-MS/MS
Vitamin B_{12} (Cyanocobal-, Hydroxocobal-, Methylcobal-, Adenosylcobalamin)	LC-MS/MS
Vitamin C	LC-MS/MS

° *Subcontracting*

1.3 Microbiological investigations

COLONY COUNTING	
Aerobic, mesophilic total viable count	ASU L 06.00-18
Yeasts/moulds	ASU L 01.00-37
Enterobacteriaceae	ASU L 05.00-5
Coliform bacteria	ASU L 01.00-3
Escherichia coli	ASU L 01.00-25
Bacillus cereus	ASU L 01.00-72
Staphylococcus aureus	ASU L 02.07-2
Listeria monocytogenes	ASU L 00.00-32
Salmonella spp.	ASU L 00.00-20
Sulfite-reducing clostridia	ASU L 06.00-39
Lactic acid bacteria	ASU L 06.00-35
Pseudomonas aeruginosa	ASU L 02.07-2 mod.
Enterococci	ASU L 02.07-2 mod.
Aerobic spore-formers	ASU L 06.00-18 mod.
Osmotolerant yeasts and moulds	ASU L 01.00-37 mod.

IDENTIFICATIONS	
Bacteria	MALDI-TOF/MS
Yeasts/moulds	MALDI-TOF/MS
Rope spoilage microorganisms	MALDI-TOF/MS

DETERMINATION & VERIFICATION OF MINIMUM DURABILITY	
Determination of the best before date (BBD)	DIN 10968

HYGIENE CONTROLS (PRODUCTS, PROCESSES, STAFF)	
Contact samples	DIN 10113-3
Swab samples	DIN 10113-1 / DIN 10113-2

1.4 Sensory examinations

Descriptive test with/without quality assessment
Sensory examination (scoring system of the DLG) of bakery products, nutriments, pasta and confectionery
Sensory testing of food cereals and food cereal products

° Subcontracting

2. Microbiological investigations of water according to the German Drinking Water Directive

COLONY COUNTING	
Colony count 22°C	DIN EN ISO 6222
Colony count 36 °C	DIN EN ISO 6222
Coliform bacteria	DIN EN ISO 9308-1
Escherichia coli	DIN EN ISO 9308-1
Pseudomonas aeruginosa	DIN EN ISO 16266
Enterococci	DIN EN ISO 7899-2
Clostridium perfringens	DIN EN ISO 14189
Legionella	DIN EN ISO 11731

SAMPLING	
Drinking water	DIN EN ISO 19458 / UBA 2012
Legionella	DIN EN ISO 19458 / UBA 2012

3. Microbiological examination of cosmetics

COLONY COUNTING	
Aerobic mesophilic bacteria	DIN EN ISO 21149
Yeasts/moulds	DIN EN ISO 16212
Candida albicans	DIN EN ISO 18416
Pseudomonas aeruginosa	DIN EN ISO 22717
Staphylococcus aureus	DIN EN ISO 22718

4. Microbiological examination according to Ph. Eur.

COLONY COUNTING	
Aerobic microorganisms	Ph. Eur. 2.6.31 (Ph. Eur. 2.6.12)
Yeasts/moulds	Ph. Eur. 2.6.31 (Ph. Eur. 2.6.12)
Candida albicans	Ph. Eur. 2.6.31 (Ph. Eur. 2.6.13)
Bile salt-resistant, gram-negative bacteria	Ph. Eur. 2.6.31 (Ph. Eur. 2.6.13)
Escherichia coli	Ph. Eur. 2.6.31 (Ph. Eur. 2.6.13)
Salmonellae	Ph. Eur. 2.6.31 (Ph. Eur. 2.6.13)
Pseudomonas aeruginosa	Ph. Eur. 2.6.13
Staphylococcus aureus	Ph. Eur. 2.6.13

PRESERVATIVES STRESS TEST	
Preservatives stress test	Ph. Eur. 5.1.3

5. Cell biological studies

Metabolic activity/cell viability *in vitro* (MTT)
in vitro – acute toxicity (LC50) (Lethal Concentration)
Radical scavenger and repair effects *in vitro* (MTT/UVA)
Type-I collagen synthesis - Assay

Notes

Imprint

IGV Institut für Getreideverarbeitung GmbH
Arthur-Scheunert-Allee 40-41
14558 Nuthetal
Germany

Phone +49 33200 89-0
Fax +49 33200 89-220
igv-manage@igv-gmbh.de
www.igv-gmbh.com

Issued – July 20

5. Edition