

Progetto Trieste – Mycotoxins

FINAL REPORT

Laboratory Proficiency Testing for Food Analysis



01176

2025

Mycotoxins

Round of October

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INTRODUCTION

Test Veritas S.r.l has been accredited EN ISO/IEC 17043:2010 "Conformity assessment - General requirements for proficiency testing" by Accredia.

Also, the quality management system has been assessed and certified by SGS Italia as meeting the requirements of UNI EN ISO 9001:2015 for development and production of materials for agri-food analyses and proficiency supply.

107 laboratories asked to participate to *Progetto Trieste – Mycotoxins Proficiency Testing 2025, round of October*".

The test materials were dispatched on October 20th and 21st, 2025. The deadline for sending the results was November 24th, 2025.

This Proficiency Testing Scheme offered different sets of test materials (biological matrices, see Table a).

Test materials "A" were provided for performance evaluation of confirmatory techniques, while test materials "B" were provided for performance evaluation of screening methods. Some materials are composed by two different subsamples.

Table a: test materials

Test material code	Matrices
MI5700	bovine milk A:110ml x 2 - B: 20ml x 2
F5701	feed A: 55g x 1 - B: 55g x 1
F5702	feed A: 55g x 1 - B: 55g x 1
WH5703	common wheat A: 55g x 1 - B: 55g x 1
SP5705	paprika A: 55g x 1 - B: 55g x 1
DF5706	dried figs (slurry) A: 55g x 1 - B: 55g x 1
R5707	rice A: 55g x 1 - B: 55g x 1

The molecules that could be present in the test materials are shown in Tables b and c.

Table b: Class of substances and molecules that had to be examined for screening and confirmatory methods (test material "1").

Test Material	Class	Molecules
MI5700-1 and MI5700-2	aflatoxin M1	aflatoxin M1
F5701	aflatoxins B/G and ochratoxin A	ochratoxin A*, aflatoxin B1, aflatoxin B2, aflatoxin G1, aflatoxin G2, aflatoxins B1 + B2 + G1 + G2 (sum)
F5702*	DON and T-2 & HT-2	deoxynivalenol, T2, HT2, T2+HT2 (sum)
WH5703	DON and T-2 & HT-2	deoxynivalenol, T2*, HT2*, T2+HT2* (sum)
SP5705	aflatoxins B/G and ochratoxin A	ochratoxin A, aflatoxin B1, aflatoxin B2, aflatoxin G1, aflatoxin G2, aflatoxins B1 + B2 + G1 + G2 (sum)
DF5706*	aflatoxins B/G and ochratoxin A	ochratoxin A, aflatoxin B1, aflatoxin B2, aflatoxin G1, aflatoxin G2, aflatoxins B1 + B2 + G1 + G2 (sum)
R5707*	aflatoxins B/G and ochratoxin A	ochratoxin A, aflatoxin B1, aflatoxin B2, aflatoxin G1, aflatoxin G2, aflatoxins B1 + B2 + G1 + G2 (sum)

*test / measurand not ISO/IEC 17043:2010 accredited

PREPARATION OF TEST MATERIALS, HOMOGENEITY, DISTRIBUTION

Preparation

Milk (incurred)

A number of blank and incurred samples were provided by farms. Milk was centrifuged and fat was removed. Incurred matrices were mixed with blank matrices. Sodium azide could be added as preservative. The obtained materials were homogenized with a magnetic stirrer and lyophilized. After mixing thoroughly, test materials were dispensed into vials, checked for homogeneity and kept at controlled temperature until dispatch.

Milk (spiked)

Milk was centrifuged and fat was removed. Spiking solution was prepared. Blank matrices were spiked. The obtained materials were homogenized with a magnetic stirrer and lyophilized. After mixing thoroughly, test materials were dispensed into vials, checked for homogeneity and kept at controlled temperature until dispatch.

Feed, spices and wheat (incurred)

Contaminated matrices are obtained from a competent laboratory. Contaminated matrices were mixed with a worm shaft mixer. The obtained test materials were dispensed into foil-laminate pouches, heat-sealed, irradiated with beta rays for preventing fungal growth and checked for homogeneity. The test materials were kept at controlled temperature until dispatch.

Rice (spiked)

Spiking solutions were prepared. Blank matrices were spiked. The obtained sample was homogenized with a mixer and dispensed into vials. Homogeneity was assessed, then test materials were kept at controlled temperature until dispatch.

Dried Fruits (water/fruit slurry) (spiked)

Water was added to the mixed blank matrix to obtain a slurry. Spiking solution was prepared and blank slurry was spiked. The obtained sample was homogenized with a mixer and dispensed into the vials. and checked for homogeneity. Homogeneity was assessed, then test materials were kept at controlled temperature until dispatch.

Subcontractor

In order to prevent fungal growth, incurred test materials such as maize, spices, coffee and wheat are beta-irradiated. Irradiation is performed by a competent subcontractor.

In order to check the batch's homogeneity, all analyses (with the exception of aflatoxin M1 and DON) were performed by a competent subcontractor. Aflatoxin M1 and DON analyses were performed in our laboratories.

Homogeneity and stability

Appropriate homogeneity studies assessed that test materials are sufficiently homogeneous for the measurands under study.

Any exception will be statistically managed.

Appropriate stability studies assessed that test materials are stable for the time that elapsed between the dispatch of the samples and the deadline for submission of results.

Information about homogeneity and stability studies are available under request.

Labels

When two Test Materials are present, to avoid labelling errors, the Test Material "-1" and "-2" are always labelled on different days.

Distribution

In accordance with the stability established, the test materials were shipped in proper containers and conditions.

Dispatch was followed by the courier's parcel tracking system on the web site.

Shipments outside the EU follows different procedures.

The parcel contains:

- A number of units of test material
- A covering letter with the necessary instructions for use and storage of the materials, together with indications for reporting results in the on-line form.

An e-mail informed participants that materials were shipped. The e-mail contained an attached copy of the covering letter and safety information: if lyophilized samples are provided, a letter with recommendations on use of lyophilized materials is also attached.

PERFORMANCE EVALUATION CRITERIA

Laboratory code and confidentiality

Confidentiality is guaranteed. Participants are identified in the Final Report by a randomly assigned code.

The laboratory codes were communicated to each participant through his web restricted area.

Confirmatory and screening result: concentration value

In confirmatory analysis, the compounds are separated by chromatographic techniques (GC, HPLC, UPLC, LC...); afterwards they are detected by MS, FLD, DAD, etc...

In screening analysis, participants use techniques as ELISA, lateral flow, etc...

Each participation includes the possibility of being evaluated for 2 different results (obtained with different methods or different technicians).

Participants were asked to report quantitative or semiquantitative ("less than..." or "greater than...") results corrected for recovery.

In case of confirmatory quantitative results, if correction is not applied, the value is not included in the calculation of the assigned value.

Results can be given as:

- "=..." means that the analyte was detected and quantified
- "< of..." means that the analyte was not detected
- "> of..." means that the analyte was detected but not quantified
- "Not Searched-NS" means that the laboratory did not perform the analysis

In reference to the method used, screening results can be expressed for a single analyte or for an analyte group.

Limits of Detection (LOD/DL), Limits of Quantification (LOQ/QL) and uncertainty/MU(%)

For mycotoxins: the limits of detection, limits of quantification and uncertainty for the relative compounds were claimed by the laboratories.

For acrylamide: the limits of quantification were claimed by the laboratories.

If the DL and/or QL and/or MU(%) are not reported by participants, in the tables the box will be empty.

False positive results

If it is possible, false positive results obtained by the laboratories are shown.

- "None" means that no false positive results were reported. This corresponds to a good performance for both screening as well as confirmatory methods.
- "-" means that evaluation was not applicable (e.g. the laboratory search only the compound that was present)

It is not possible to classify as false positives concentrations lower than the assigned value of an intended blank test material. In this case concentrations are reported just for information.

False negative results

In case of false negative confirmatory results, no evaluation is given.

If the laboratory does not detect the analyte that is effectively present, as its method does not allow it, this is an information concerning the capability of the method. The result is “congruent” but the participant should take into consideration if his method has the appropriate capability in respect of his requirement.

In case of false negative screening results, evaluation is given as described (see screening assessment).

Elaboration of laboratory data

In the statistical data processing, all the data submitted by the participants are elaborated considering two decimal places. In case there are not declared decimal places, they are considered as corresponding to “zero” (E.g. 25=25.00 – 25.3=25.30 – 25.32=25.32).

CALCULATION OF THE ASSIGNED VALUE

The Assigned Value x_{pt}

The Assigned Value x_{pt} , is the value attributed to a particular property of proficiency test items (definition from ISO13528:2022).

In the routine, the results from the confirmatory analysis (chromatographic techniques) are considered a reference; they are used with legal purpose (as regulatory requirement). Instead, screening methods have the purpose to analyze in a short time a wide quantity of samples; in case of “positive” results, the data will be verified through the use of chromatographic techniques.

Because of above described, the Assigned Value x_{pt} derives just from participants' quantitative results obtained with confirmatory analysis.

The screening results are compared to the Assigned Value x_{pt} obtained from the confirmatory data.

The procedure for determining the Assigned Value x_{pt} is described below.

After excluding results that are identified as invalid the data population was checked for normality and for the presence of outliers by applying appropriate statistics. x_{pt} represents the value of concentration obtained from Algorithm A or from the median.

The chosen value will be reported in the specific test material tables, where Algorithm A will be indicated as “ISO5725-5 (Alg.AS)” and median as “MADe/Median”.

Sometimes very low concentrations are quantified. When it occurs, the concentration value is assigned only if statistics described in this paragraph are applicable.

The value is not assigned when $p < 8$, where “p” is the number of data after invalid results rejection, when there is a bimodal distribution data or when the standard uncertainty is not negligible (based on PTP experience).

It may happen that only few participants confirm the presence of some analytes in the test materials. In such cases, the presence of an analyte is considered:

- “unconfirmed”, when less than 25 % of participants detect the compound;
- “confirmed”, when 25% of participants, or more, detect the compound (the minimum number of positive results is anyway three).

The standard uncertainty of the assigned value $u(x_{pt})$

The standard uncertainty $u(x_{pt})$ is calculated as:

$$u(x_{pt}) = 1.25 [s^* / \sqrt{p}]$$

where:

- s^* is the robust estimate of the participant standard deviation;
- p is the number of participants;
- 1.25 is the expanded factor

In case of median as estimator, the standard deviation is calculated as $s^* = MADe$ (where MADe is the Median Absolute Deviation).

In case of $u(x_{pt}) \geq 0.3 \sigma_{pt}$ the standard uncertainty of the assigned value is not negligible, so the effects of uncertainty are introduced in the calculation of the z-score, that will be calculated as z'-score.

z-score, z'-score and σ_{pt} (standard deviation for proficiency assessment):

When the number of confirmatory quantitative data is $p \geq 8$, the participant's result (confirmatory and screening) are converted into a z-score according to the equation:

$$Z\text{-score} = (x_i - x_{pt}) / \sigma_{pt}$$

where:

- x_i is the analyte concentration value reported by the laboratory;
- x_{pt} is the assigned value (obtained with confirmatory methods);
- σ_{pt} is the standard deviation for proficiency assessment calculated from $b x_{pt}$
- $b = \%RSD / 100$, (RSD = Relative Standard Deviation)

unless otherwise specified the %RSD value comes from the Horwitz equation (Horwitz, W., 1988, *Pure Appl. Chem.* 60, 855-864)

$$\%RSD = 2^{(1-0.5 \log x_{pt})}$$

where x_{pt} is expressed as a dimensionless concentration.

σ_{pt} is related to the concentration of the analyte: it comes from Horwitz equation (unless otherwise specified); in case of contamination less than 10 ppb the Thompson equation modified Horwitz equation (Thompson, M., 2000, *Analyst* 125, 385-386). In particular circumstance σ_{pt} is chosen from Proficiency Test provider's (PTp) experience, derived from previous rounds.

The adopted criteria is reported in the specific test material table. In the result table, Thompson will be indicated as "Truncated Horwitz".

In case of an inhomogeneous measurand the effects of inhomogeneity are introduced in the calculation of σ'_{pt} , that will be calculated according to the equation:

$$\sigma'_{pt} = \sqrt{(\sigma_{pt}^2 + S_s^2)}$$

where:

- σ_{pt} is the standard deviation for proficiency assessment calculated from $b x_{pt}$
- S_s is the between-sample variance obtained in the homogeneity test

In this case the standard deviation for proficiency assessment will be indicated as σ'_{pt}

If $u(x_{pt}) < 0.3 \sigma_{pt}$ is not met, participants' results are converted into a z'-score according to the equation:

$$z'\text{-score} = (x_i - x_{pt}) / \sqrt{(\sigma_{pt}^2 + u^2(x_{pt}))}$$

where:

- x_i is the analyte concentration value reported by the laboratory;
- x_{pt} is the assigned value (obtained with confirmatory methods);
- σ_{pt} is the standard deviation for proficiency assessment calculated from $b x_{pt}$
- $u^2(x_{pt})$ is the standard uncertainty calculated as previously described.

The chosen score is reported in the specific test material table.

The laboratory performance evaluation was established taking into account the following criteria for z-score:

acceptable (satisfactory)	when	$ z \leq 2.0$
warning signal (questionable)	when	$2.0 < z < 3.0$
action signal (unsatisfactory)	when	$ z \geq 3.0$

Screening assessment

Participants who use screening methods, have to provide quantitative answer (see z-score and σ_{pt} chapter); if they provide a semi-quantitative data (“lower than...” or “greater than...”) they receive a qualitative evaluation:

The results are classified as “satisfactory” in the following cases:

- The laboratory detects the analyte or the group of analytes that are effectively present in the test material.
- The laboratory does not detect the analyte or the group of analytes that are not effectively present in the samples.

The results are classified as “unsatisfactory” in the following case:

- The laboratory does not detect the analyte or the group of analytes that are effectively present in the sample, but according to the method specifications the analyte/analytes is/are detectable. It means that a false negative has been reported.

The results are classified as “questionable” in the following case:

- The laboratory detects an analyte or a group of analytes that were not effectively present in the sample. It means that false positive has been detected. The false positive results are not considered unsuitable, because routine screening positive results should be confirmed by chromatographic methods.

The results are classified as “congruent” in the following case:

- The laboratory does not detect the analyte or a group of analytes that is effectively present, as its method does not allow it. This is an information concerning the capability of the method. The participant should take in consideration if his method has the appropriate capability in respect of his requirement.

The results are not classified, therefore “not applicable” in the following case:

- The laboratory detects the analyte or a group of analytes that were not effectively present in the sample, but the level detected is lower than declared value. In this case it is not possible to evaluate its results.
- The laboratory does not detect the analyte that is effectively present, but his capability corresponds exactly to the assigned value.

Because of the different country legislations, the regulatory limits are not considered in the results evaluation.

Evaluation screening table

Example of the performance criteria for the screening are reported in the table below.

Table d: example of evaluation.

TEST MATERIAL CONTAMINATION	RESULT (PROVIDED BY PARTICIPANT)	EVALUATION	Z-SCORE
Contaminated material (the analyte is present above or below the regulatory limit)	=5 ppb or =7ppb (quantitative result)	not provided	provided
	>5 ppb or >7 ppb (semi-quantitative result)	satisfactory	not provided
	<5 ppb (semi-quantitative result)	unsatisfactory	not provided
Assigned Value $X_{pt} = 6$ ppb (from confirmatory methods)	<7 ppb (semi-quantitative result)	congruent	not provided
	<6 ppb (semi-quantitative result)	not applicable	not provided
Blank material	<5 ppb or <7 ppb (semi-quantitative result)	satisfactory	not provided
	=6 ppb or =7 ppb (quantitative result)	questionable	not provided
Value < 6 ppb (from confirmatory methods)	>5 ppb or >7 ppb (semi-quantitative result)	questionable	not provided
	= 5 ppb (quantitative result)	not applicable	not provided

Graphical presentation

Confirmatory and screening results are shown in different tables. This approach takes into account the different purpose of the methods.

When confirmatory participants receive a score it will be shown in the “bar-chart of z-score”.

Where there is an invalid data, it will be mentioned in the table of assigned value and target standard deviations.

PARTICIPANTS

List of participants ordered by country.

- Federalni agromediteranski zavod Mostar, Buna - Mostar, Bosnia and Herzegovina
- National Veterinary Service Central Laboratory of Veterinary Control and Ecology, Sofia, Bulgaria
- Instituto Colombiano Agropecuario, Mosquera, Cundinamarca 250040, Colombia
- Republic of Cyprus - Ministry of Agriculture, Natural Resources and Environment, LCFAO - Laboratory for the control of foods of Animal Origin, Aglantzia, Nicosia, Cyprus
- Bless agri food laboratory service plc., Sheger, Ethiopia
- ECAE - Ethiopian Conformity Assessment Enterprise, Addis Ababa, Ethiopia
- EFDA - FOOD QUALITY AND SAFETY CONTROL LABORATORY, Addis Ababa, Ethiopia
- JIJE Analytical Testing Service Laboratory. JIJE LaboGlass Pvt.Ltd company, Addis Abeba, Ethiopia
- Toxicology Laboratory Testing Head , Animal Products and Inputs Quality Testing Centre, Ethiopian Agricultural Authority, Addis Ababa, Ethiopia
- MINEFI- Laboratoire du Ministère de l'Economie, des Finances et de l'Industrie de Rennes, Section "Mycotoxines", Rennes, France
- AOKIN AG, Berlin , Germany
- GfL Gesellschaft für Lebensmittel-Forschung mbH, Berlin, Germany
- GoodMills Deutschland GmbH - Castelmühle Krefeld, Krefeld, Germany
- IREKS GmbH, Kulmbach, Germany
- Biolab Mike, Ioannina, Greece
- Biolab Mike, Arta, Greece
- General Chemical State Laboratory, Chemical Service of Piraeus & Aegean, Sub Directorate of Piraeus, Departments A' and B', Piraeus, Greece
- TÜV AUSTRIA LABS S.A., Athens, Greece
- VELTIA Labs for Life, Sindos and Attika, Greece
- NEBIH - National Food Chain Safety Office Nemzeti Élelmiszerlánc-biztonsági Hivatal. Élelmiszer - Toxikológiai Nemzeti Referencia Laboratórium Food Chain Safety Laboratory Directorate Toxicological National Reference Laboratory, Budapest, Hungary
- EIC - Export Inspection Agency-Chennai Laboratory, Chennai, India
- FCI Modern Zonal Lab - Food Corporation of India, Regional Office, Panchkula, Haryana, India
- Modern Zonal QC Laboratory (SZ) - Food Corporation of India, Hyderabad, India
- Modern Zonal Quality Control Lab - Food Corporation of India - Regional Office, Bhubaneswar, India
- Marjaan khatam, Tehran, Iran
- Kimron Veterinary Institute National Residue Control Laboratory, Bet-Dagan, Israel
- 3A Laboratori S.r.l. - Gruppo Lifeanalytics, Padova, Italy
- AAFVG - Associazione Allevatori del Friuli Venezia Giulia, Codroipo, Italy
- Agenzia provinciale per l'ambiente e la tutela del clima di Bolzano, Laboratorio Analisi Alimenti, Bolzano, Italy
- Agroalimentare ASSO.LA.C. Soc. Cooperativa Agricola, Castrovillari, Italy
- Agrolab Alimentaria S.r.l., Altavilla Vicentina, Italy
- ARPA FVG - SOC Laboratorio - SOS Laboratorio Alimenti e Microbiologia - IPAS Analisi Chimiche Alimenti, Udine, Italy
- BioLab Soragna S.r.l.s., Soragna - Parma, Italy
- BonassisaLab S.p.A, Foggia, Italy
- Caseificio Longo S.r.l., Rivarolo Canavese, Italy
- Caseificio Pugliese F.lli Radicci S.p.A., Lauriano , Italy
- Catas SpA Laboratorio Ambiente e Agroalimentare, San Giovanni al Natisone, Italy
- Centrale del Latte di Brescia S.p.A., Brescia, Italy
- Cereal Docks S.p.A., Camisano Vicentino, Italy
- Chemiservice S.r.l., Monopoli, Italy
- ERS A Agenzia regionale per lo Sviluppo Rurale, Pozzuolo del Friuli , Italy
- F.lli De Cecco di Filippo Fara San Martino S.p.A. - Laboratorio CQ, Fara San Martino , Italy

- Gold Standard Diagnostics Trieste s.r.l., Trieste, Italy
- Granarolo s.p.A., Bologna, Italy
- Istituto Superiore della Sanita', Roma, Italy
- Istituto Zooprofilattico Sperimentale del Mezzogiorno, Portici, Italy
- Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle D'Aosta "I. Altara", Asti, Italy
- Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle D'Aosta "I. Altara", Torino, Italy
- Istituto Zooprofilattico Sperimentale della Puglia e della Basilicata, Foggia, Italy
- Istituto Zooprofilattico Sperimentale della Sicilia "A. Mirri", Palermo, Italy
- Labcam S.r.l., Albenga, Italy
- Ladisa Srl, Bari, Italy
- Laemmegroup S.r.l., Moncalieri, Italy
- Made HSE S.r.l., Gazoldo Degli Ippoliti, Italy
- Martini S.p.A., Genoa (CN), Italy
- MB Mangimi S.p.A., Longiano, Italy
- MB Mangimi S.p.A. , Jesi, Italy
- Micro e Bio Lab Servizi s.r.l.s., Castellalto, Italy
- Molino Nicoli S.p.A., Costa Di Mezzate, Italy
- NEOLAC S.r.l., Belgioioso, Italy
- Parmalat S.p.A., Laboratorio controllo qualità, Lab. Centrale Castellaro, Castellaro di Sala Baganza, Italy
- Princes Italia Spa, Ozzano Taro (Parma), Italy
- Salchim s.c.r.l., Cavriago, Italy
- Sammontana S.p.A., Colognola ai Colli, Italy
- Sammontana S.p.A., Laboratorio Chimico, Empoli , Italy
- TecnoLab di Caterina Serino, Altamura, Italy
- Water & Life Lab, Entratico, Italy
- Malawi Bureau of Standards, Head Office, Testing Services, Blantyre, Malawi
- ONARDEP - Office National de Recherches et de Développement d'Elevage et du Pastoralisme, Département Santé Animale et Hygiène Alimentaire Direction des Service d'Hygiène Alimentaire, Ksar/ Nouakchott-Mauritanie, Mauritania
- Centar za ekotoksikološka ispitivanja Podgorica d.o.o., Podgorica, Montenegro
- NSI - Namibian Standard Institution, Walvis Bay, Namibia
- MAFWR - Central Laboratory of Food Safety - Food Safety and Quality Center, Seeb, Muscat , Oman
- UIL - United Integrated Laboratories, Al Rumays, Barka, Oman
- Dirección Nacional de Sanidad Vegetal (DINASA), Ministerio de Desarrollo Agropecuario (MIDA), Panama, Panama
- Servicio Nacional De Sanidad Agraria, Lima, Peru
- NQAC Rzeszów, Nestlé Polska S.A., Rzeszów, Poland
- Ministry of Public Health, Public Health Department, Central Food Laboratories - Food Safety & Environmental Health Division - Central Food Laboratories, Doha, Qatar
- D.S.V.S.A. - Direcția Sanitară Veterinară și pentru Siguranța Alimentelor Bacău, Bacău, Romania
- Fotometric Research Laboratory SRL, Voluntari, Romania
- ICA Research & Development (ICA R&D) SRL, Laboratoare incercari, Bucharest, Romania
- NUTRIENTUL SA, Palota, Romania
- Sanitary Veterinary and Food Safety Directorate, Bucharest, Romania
- Center For Food Analysis - Centar za ispitivanje namirnica, Belgrade , Serbia
- In Vitro Lab doo, Sabac - Serbia, Serbia
- Institute of Veterinary Medicine Jagodina, Jagodina, Serbia
- Mlekara Sabac AD Sabac, Sabac, Serbia
- VSI- Nis, Veterinarski specijalisticki institut Nis, Nis, Serbia
- Veterinarski specijalisticki institut Sombor, Sombor, Serbia
- Public Health Laboratory, Mahe, Seychelles
- Agencia de Gestión Agraria y Pesquera de Andalucía. Junta de Andalucía Dpto. Seguridad y Normalización Laboratorio de Producción y Sanidad Animal de Córdoba, Alcolea, Spain
- Laboratorio de Salud Pública de Palma - Conselleria de Salud, Palma De Mallorca, Spain

- LABORATORIO DE SANIDAD ANIMAL Y VEGETAL DEL PRINCIPADO DE ASTURIAS, Gijón (ASTURIAS), Spain
- LARAGA - Laboratorio Agroalimentario y Ambiental, Toledo, Spain
- Paprimur S.L., Fortuna (Murcia), Spain
- Antalya Gıda Kontrol Laboratuvar Müdürlüğü, Kepez, Türkiye
- Bilçev Özel Gıda Kontrol Laboratuvarı, Kemalpaşa / İZMİR, Türkiye
- FORMÜL LABORATUAR HİZMETLERİ GIDA KİM. DAN. ÇEV. EĞT. SAN. VE TİC. LTD. ŞTİ. Özel Gıda Kontrol Laboratuvarı, Ataşehir İSTANBUL, Türkiye
- GDA LABORATUVAR HİZMETLERİ GIDA KİMYA ÇEVRE EĞİTİM DANIŞMANLIK SANAYİ VETİCARET LİMİTED ŞİRKETİ, Maltepe İSTANBUL, Türkiye
- Intertek Test Hizmetleri A.S, İstanbul Özel Gıda Kontrol Laboratuvarı İstanbul, Yenibosna-İstanbul-Turkey, Türkiye
- LTS Özel Gıda Kontrol Laboratuvarı, Kartal, Türkiye
- MİKROKİM LABORATUVAR HİZMETLERİ KİMYA GIDA DANIŞMANLIK ÇEVRE EĞİTİM SAN. VE TİC. LTD. ŞTİ., İstanbul, Türkiye
- SIMPLIQA, Akdeniz, Türkiye
- UNBS - Uganda National Bureau of Standards - Headquarters, Kampala, Uganda
- BioProfile Testing Laboratories, LLC, Minneapolis, MN, United States
- Division de Laboratorios Veterinarios, MGAP - Ministerio de Ganadería, Agricultura y Pesca, Montevideo, Uruguay
- CCIC VIETNAM CERTIFICATION AND INSPECTION COMPANY LIMITED – HO CHI MINH BRANCH, Ho Chi Minh, Vietnam

REFERENCES

“Progetto Trieste” is managed in agreement to:

- UNI CEI EN ISO/IEC 17043:2010 Conformity assessment – General requirements for proficiency testing
- EURACHEM Selection, Use and Interpretation of Proficiency Testing (PT) Schemes, 3rd edition, 2021
- ISO 13528:2022 Statistical method for use in proficiency testing by interlaboratory comparisons
- UNI CEI EN ISO 17034:2017 General requirements for the competence of reference materials producers
- IUPAC Technical Report The International Harmonized Protocol for the Proficiency Testing of Analytical Chemistry Laboratories, 2006

RESULTS

Proficiency test MI5700, result contents

Test material MI5700-1, aflatoxin M1 in bovine milk

- **Result of confirmatory "A"**
- **Result of screening "B"**

Test material MI5700-2, aflatoxin M1 in bovine milk

- **Result of confirmatory "A"**
- **Result of screening "B"**

Test material MI5700, bovine milk, confirmatory

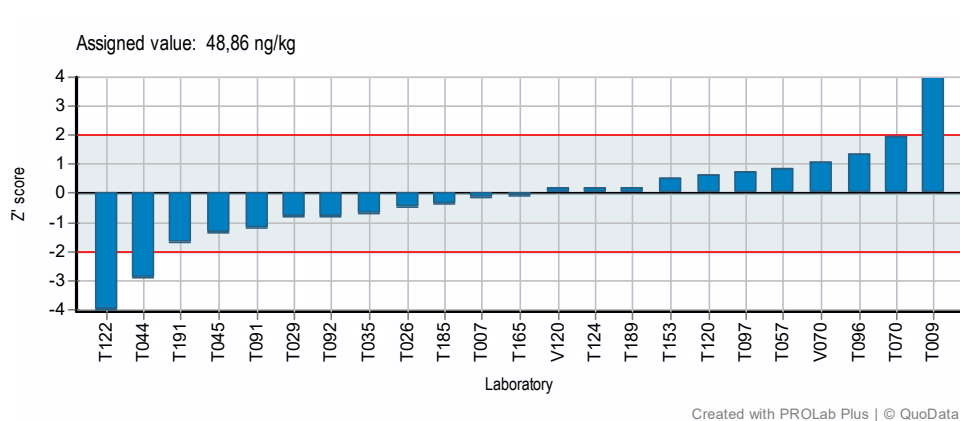
MI5700-1, aflatoxin M1

Assigned value and target standard deviations.

Analyte	Assigned value		ng/kg		Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
aflatoxin M1	22*	48,86	13,35	27,32	3,56	No	Truncated Horwitz-Thompson	10,75	26,21	71,50

*result of laboratory T122 is considered as invalid.

Figure 1: Z' scores for milk, aflatoxin M1



Percentage of satisfactory scores 86,96%

Concentration, arithmetic mean	n= 23	60,15 ng/kg
Standard deviation	n= 23	72,43 ng/kg
Coefficient of variation	n= 23	120,41 %

Test material MI5700, bovine milk, confirmatory

Results of confirmatory analyses performed on test material MI5700-1 (incurred sample).

MI5700-1, aflatoxin M1

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T007	47,5	30,00	110,00	-0,12	3,00	10,00	YES
T009	385	30,00		29,69	20,00	40,00	YES
T026	43,49			-0,47	0,90	10,00	YES
T029	40		97,00	-0,78	9,00	25,00	YES
T035	41	10,00		-0,69	5,00	10,00	YES
T044	15,9		99,40	-2,91	3,00	10,00	YES
T045	33,3			-1,37	0,70	25,00	YES
T057	58,4		92,00	0,84			YES
T070	71,1	34,00		1,96			YES
T091	35,5			-1,18		25,00	YES
T092	40			-0,78	5,00	25,00	YES
T096	64	11,00	99,00	1,34	3,00	9,00	YES
T097	57	16,20	91,30	0,72		10,00	YES
T120	56			0,63	10,00	25,00	NO
T122	3,3			-4,02			-
T124	51,15	11,58		0,20	5,00	20,00	YES
T153	55			0,54		25,00	YES
T165	48			-0,08	10,00	10,00	YES
T185	44,81	2,00	81,00	-0,36		10,00	YES
T189	51,3	24,80		0,22	12,50	12,50	YES
T191	29,5			-1,71		10,00	YES
V070	61,3	34,00		1,10			YES
V120	51			0,19	10,00	25,00	NO

Concentration, DL and QL have the measurement unit of ng/kg.

Test material MI5700, bovine milk, screening

Results of screening analyses performed on test material MI5700-1 (incurred sample).

MI5700-1, aflatoxin M1

aflatoxin M1- Summary results of measured values								
Lab. code	Concentration	MU [%]	Recovery rate [%]	Z'-score	Evaluation	DL	QL	ISO 17025
T005	58,5	-	-	0,85		-	-	YES
T024	55,97	-	105	0,63		10	20	NO
T025	60	-	-	0,98		10	10	NO
T026	64,06	-	-	1,34		3	3,7	YES
T029	62	-	-	1,16		5	-	YES
T030	57,64	-	-	0,78		5	100	NO
T034	67,3	-	-	1,63		-	5	YES
T035	60	19	-	0,98		5	10	YES
T039	75,19	-	-	2,33		5	80	-
T055	35,97	-	-	-1,14		-	-	YES
T056	55,3	18,22	-	0,57		5	10	YES
T061	67,7	2,7	-	1,66		5	10	YES
T070	62,9	-	-	1,24		-	-	YES
T097	85,24	-	96	3,21		50	-	YES
T100	>40	-	-		satisfactory	-	40	YES
T103	>4	-	-		satisfactory	-	-	-
T112	52,4	26	103,24	0,31		1,5	5	YES
T113	49,99	34,9	83,49	0,10		5	6	YES
T115	63,44	2,9	-	1,29		5	5	NO
T134	47,24	-	108,9	-0,14		5	20	YES
T152	34,73	-	-	-1,25		8	-	-
T158	44	-	-	-0,43		-	-	-
T159	66,7	-	-	1,58		-	-	NO
T186	59,22	-	-	0,91		-	5	NO
T190	57,81	-	-	0,79		-	-	YES
T192	>25	-	-		satisfactory	-	-	NO
T193	70,73	18	-	1,93		-	5	YES
V026	62	-	-	1,16		3,3	4,6	-
V070	57,2	-	-	0,74		-	-	YES
V103	>4	-	-		satisfactory	-	-	-

Test material MI5700, bovine milk, screening

Results of screening analyses performed on test material MI5700-1 (incurred sample).

MI5700-1, aflatoxin M1

aflatoxin M1- Summary results of measured values							
Lab. code	Concentration	MU [%]	Recovery rate [%]	Z'-score	DL	QL	ISO 17025
V158	42,5	-	-	-0,56	-	-	-
V186	59,24	-	-	0,92	-	5	NO
V190	61,77	-	-	1,14	-	-	YES

Concentration, DL and QL have the measurement unit of ng/kg.

Concentration, arithmetic mean	n=	29	58,51	ng/kg
Standard deviation	n=	29	10,83	ng/kg
Coefficient of variation	n=	29	18,51	%

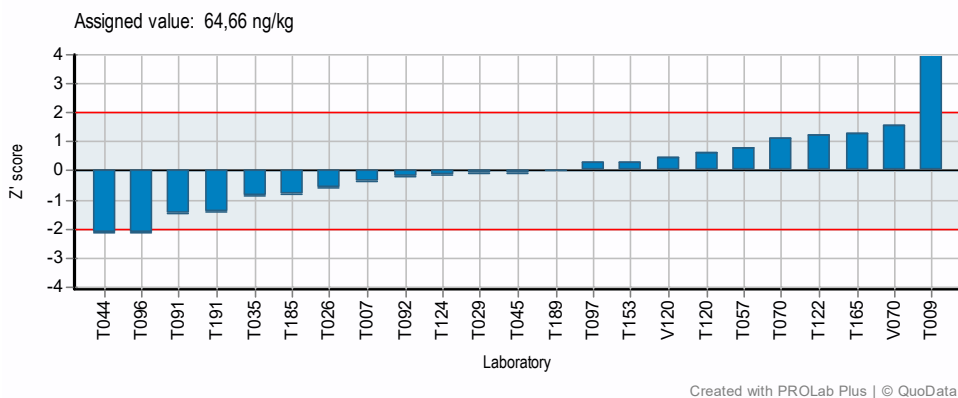
Test material MI5700, bovine milk, confirmatory

MI5700-2, aflatoxin M1

Assigned value and target standard deviations.

Analyte	Assigned value ng/kg				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty $u(X_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
aflatoxin M1	23	64,66	17,62	27,25	4,59	No	Truncated Horwitz-Thompson	14,22	34,76	94,55

Figure 2: Z' scores for milk, aflatoxin M1



Percentage of satisfactory scores 86,96%

Concentration, arithmetic mean	n= 23	74,87 ng/kg
Standard deviation	n= 23	59,17 ng/kg
Coefficient of variation	n= 23	79,03 %

Test material MI5700, bovine milk, confirmatory

Results of confirmatory analyses performed on test material MI5700-2

MI5700-2, aflatoxin M1

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T007	59	30,00	110,00	-0,38	3,00	10,00	YES
T009	337	30,00		18,22	20,00	40,00	YES
T026	56,35			-0,56	0,90	10,00	YES
T029	63		99,00	-0,11	9,00	25,00	YES
T035	52	10,00		-0,85	5,00	10,00	YES
T044	32,45		101,40	-2,15	3,00	10,00	YES
T045	63,5			-0,08	0,70	25,00	YES
T057	76,4		89,00	0,79			YES
T070	81,6	34,00		1,13			YES
T091	42,9			-1,46		25,00	YES
T092	62			-0,18	5,00	25,00	YES
T096	33	6,00	99,00	-2,12	3,00	9,00	YES
T097	69	14,00	91,30	0,29		10,00	YES
T120	74			0,63	10,00	25,00	NO
T122	82,9			1,22			-
T124	62,29	11,58		-0,16	5,00	20,00	YES
T153	69			0,29		25,00	YES
T165	84			1,29	10,00	10,00	YES
T185	52,61	2,00	105,00	-0,81		10,00	YES
T189	65,4	24,80		0,05	12,50	12,50	YES
T191	43,4			-1,42		10,00	YES
V070	88,2	34,00		1,58			YES
V120	72			0,49	10,00	25,00	NO

Concentration, DL and QL have the measurement unit of ng/kg.

Test material MI5700, bovine milk, screening

Results of screening analyses performed on test material MI5700-2.

MI5700-2, aflatoxin M1

aflatoxin M1- Summary results of measured values								
Lab. code	Concentration	MU [%]	Recovery rate [%]	Z'-score	Evaluation	DL	QL	ISO 17025
T005	67,1	-	-	0,16		-	-	YES
T024	60,36	-	105	-0,29		10	20	NO
T025	71	-	-	0,42		10	10	NO
T026	73,07	-	-	0,56		3	3,7	YES
T029	42	-	-	-1,52		5	-	YES
T030	62,29	-	-	-0,16		5	100	NO
T034	90,1	-	-	1,70		-	5	YES
T035	68	19	-	0,22		5	10	YES
T039	37,41	-	-	-1,82		5	80	-
T055	39,72	-	-	-1,67		-	-	YES
T056	71,5	18,22	-	0,46		5	10	YES
T061	74,9	2,8	-	0,69		5	10	YES
T070	72,31	-	-	0,51		-	-	YES
T097	123,6	-	96	3,94		50	-	YES
T100	>40	-	-		satisfactory	-	40	YES
T103	>4	-	-		satisfactory	-	-	-
T112	63,6	26	103,24	-0,07		1,5	5	YES
T113	57,91	34,9	83,49	-0,45		5	6	YES
T115	73,55	3,1	-	0,59		5	5	NO
T134	19,23	-	108,9	-3,04		5	20	YES
T152	61,02	-	-	-0,24		8	-	-
T158	71,5	-	-	0,46		-	-	-
T159	69,1	-	-	0,30		-	-	NO
T186	71,68	-	-	0,47		-	5	NO
T190	71,28	-	-	0,44		-	-	YES
T192	>25	-	-		satisfactory	-	-	NO
T193	77,86	18	-	0,88		-	5	YES
V026	71,89	-	-	0,48		3,3	4,6	-
V070	67,55	-	-	0,19		-	-	YES
V103	>4	-	-		satisfactory	-	-	-

Test material MI5700, bovine milk, screening

Results of screening analyses performed on test material MI5700-2.

MI5700-2, aflatoxin M1

aflatoxin M1- Summary results of measured values							
Lab. code	Concentration	MU [%]	Recovery rate [%]	Z'-score	DL	QL	ISO 17025
V158	67,5	-	-	0,19	-	-	-
V186	69,43	-	-	0,32	-	5	NO
V190	75	-	-	0,69	-	-	YES

Concentration, DL and QL have the measurement unit of ng/kg.

Concentration, arithmetic mean	n=	29	66,95	ng/kg
Standard deviation	n=	29	17,87	ng/kg
Coefficient of variation	n=	29	26,70	%

Proficiency test F5701Y, result contents

Test material F5701Y, aflatoxins B/G in feed

- **Result of confirmatory "A"**
- **Result of screening "B"**

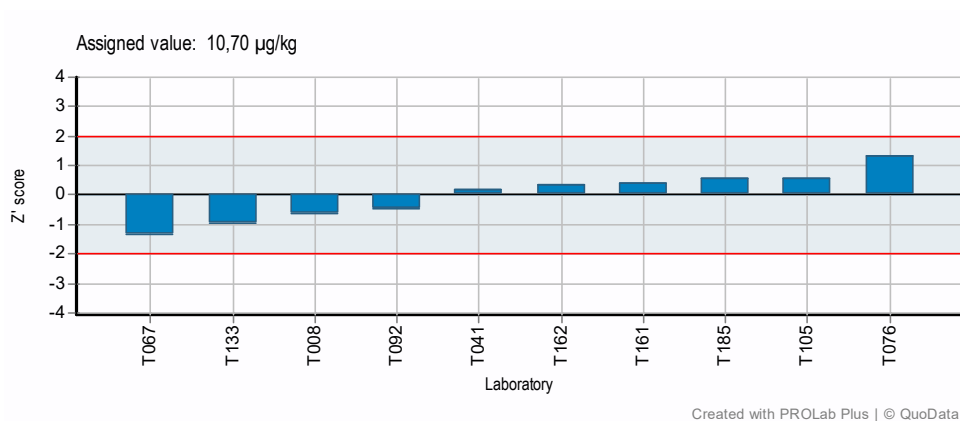
Test material F5701Y, feed, confirmatory

F5701Y, aflatoxin B1

Assigned value and target standard deviations.

Analyte	Assigned value $\mu\text{g/kg}$				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
aflatoxin B1	10	10,70	3,35	31,31	1,32	No	Horwitz	3,39	3,42	17,97

Figure 3: Z' scores for feed, aflatoxin B1



Percentage of satisfactory scores 100,00%

Concentration, arithmetic mean	n= 10	10,70 $\mu\text{g/kg}$
Standard deviation	n= 10	2,96 $\mu\text{g/kg}$
Coefficient of variation	n= 10	27,63 %

Test material F5701Y, feed, confirmatory

Results of confirmatory analyses performed on test material F5701Y (incurred sample).

F5701Y, aflatoxin B1

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T008	8,36			-0,64		2,00	YES
T041	11,4	20		0,19	1,00	1,00	YES
T067	5,87	28,20	81,25	-1,33	0,80	0,70	YES
T076	15,5	40	81	1,32		2,00	YES
T092	9			-0,47		1,00	NO
T105	12,76	25	94	0,57		0,08	YES
T133	7,3	0,04	99,7	-0,93	0,20	0,50	YES
T161	12,1			0,39		0,10	YES
T162	11,97			0,35	0,35	0,50	NO
T185	12,71	2	87	0,55		0,50	YES

Concentration, DL and QL have the measurement unit of µg/kg.

Test material F5701Y, feed, screening

Results of screening analyses performed on test material F5701Y (incurred sample).

F5701Y, aflatoxin B1

aflatoxin B1- Summary results of measured values							
Lab. code	Concentration	MU [%]	Recovery rate [%]	Z'-score	DL	QL	ISO 17025
T005	11,82	-	-	0,31	-	-	YES
T006	11,27	23,56	96,7	0,16	1	2,5	YES
T040	NS	NS	NS		-	-	-
T064	NS	NS	NS		-	-	-
T069	NS	NS	NS		-	-	-
T108	NS	NS	NS		-	-	-
T115	NS	NS	NS		-	-	-
T138	NS	NS	NS		-	-	-
V064	NS	NS	NS		-	-	-
V115	NS	NS	NS		-	-	-

Concentration, DL and QL have the measurement unit of µg/kg.

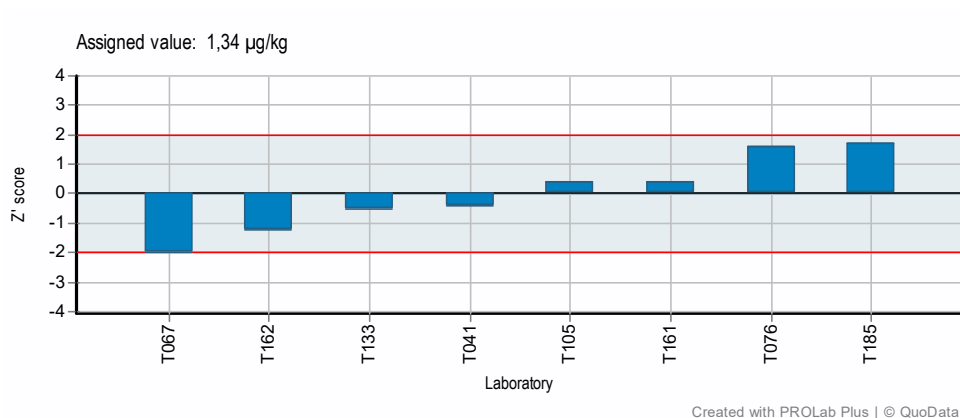
Test material F5701Y, feed, confirmatory

F5701Y, aflatoxin B2

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
aflatoxin B2	8	1,34	0,53	39,55	0,23	No	PTp: 25%	0,33	0,52	2,16

Figure 4: Z' scores for feed, aflatoxin B2



Percentage of satisfactory scores 100,00%

Concentration, arithmetic mean	n= 8	1,34 µg/kg
Standard deviation	n= 8	0,53 µg/kg
Coefficient of variation	n= 8	39,58 %

Test material F5701Y, feed, confirmatory

Results of confirmatory analyses performed on test material F5701Y (incurred sample).

F5701Y, aflatoxin B2

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T008	<2,0					2,00	YES
T041	1,18	22		-0,39	1,00	1,00	YES
T067	0,53	00	00	-1,99	0,10	0,03	YES
T076	2	40	74	1,62		2,00	-
T092	<0,5					0,50	NO
T105	1,5	25	97	0,39		0,15	NO
T133	1,14	0,04	98,88	-0,49	0,20	0,50	YES
T161	1,5			0,39		0,10	YES
T162	0,83			-1,25	0,35	0,50	NO
T185	2,05	2	83	1,74		0,50	YES

Concentration, DL and QL have the measurement unit of µg/kg.

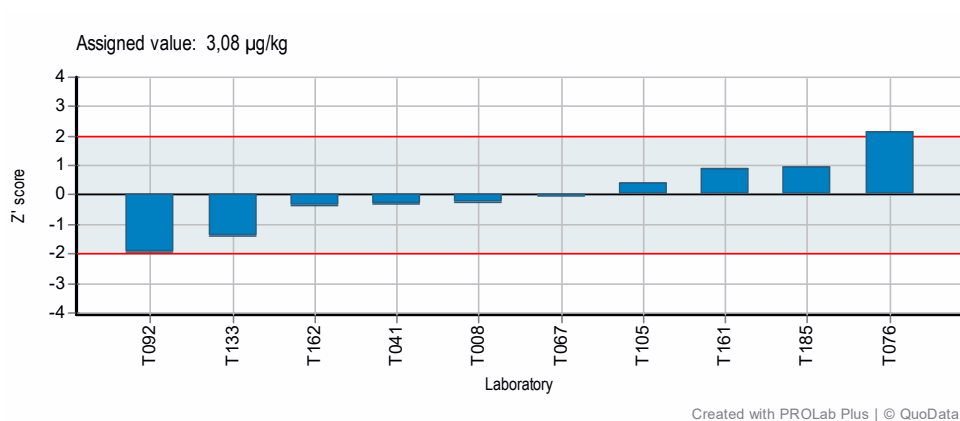
Test material F5701Y, feed, confirmatory

F5701Y, aflatoxin G1

Assigned value and target standard deviations.

Analyte	Assigned value $\mu\text{g}/\text{kg}$				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
aflatoxin G1	10	3,08	1,15	37,34	0,45	No	PTp: 25%	0,77	1,29	4,87

Figure 5: Z' scores for feed, aflatoxin G1



Percentage of satisfactory scores 90,00%

Concentration, arithmetic mean	n= 10	3,10 $\mu\text{g}/\text{kg}$
Standard deviation	n= 10	1,05 $\mu\text{g}/\text{kg}$
Coefficient of variation	n= 10	33,96 %

Test material F5701Y, feed, confirmatory

Results of confirmatory analyses performed on test material F5701Y (incurred sample).

F5701Y, aflatoxin G1

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T008	2,88			-0,23		2,00	YES
T041	2,8	27		-0,31	1,00	1,00	YES
T067	3,06	00	00	-0,02	0,04	0,01	YES
T076	5	40	82	2,15		2,00	-
T092	1,35			-1,94		0,50	NO
T105	3,45	25	101	0,41		0,20	NO
T133	1,85	0,04	101,1	-1,38	0,20	0,50	YES
T161	3,9			0,92		0,10	YES
T162	2,76			-0,36	0,35	0,50	NO
T185	3,95	2	82	0,97		0,50	YES

Concentration, DL and QL have the measurement unit of µg/kg.

Test material F5701Y, feed, confirmatory

Results of confirmatory analyses performed on test material F5701Y (incurred sample).

F5701Y, aflatoxin G2, presence

Summary results of measured values						
Lab	Concentration	MU [%]	Recovery rate [%]	DL	QL	ISO 17025
T008	<2,0	-	-	-	2,0	YES
T041	<1,00	42	-	1,00	1,00	YES
T067	1,09	00	00	0,20	0,05	YES
T076	<2	40	80	-	2	-
T092	<0,5	-	-	-	0,5	NO
T105	0,66	25	101	-	0,20	NO
T133	0,51	0,04	99,78	0,2	0,5	YES
T161	0,60	-	-	-	0,1	YES
T162	0,54	-	-	0,35	0,5	NO
T185	1,20	2	83	-	0,5	YES

Concentration, DL and QL have the measurement unit of µg/kg.

Concentration, arithmetic mean	n= 6	0,77 µg/kg
Standard deviation	n= 6	0,30 µg/kg
Coefficient of variation	n= 6	39,08 %

The value is not assigned when $p < 8$, where "p" is the number of data after invalid results rejection.

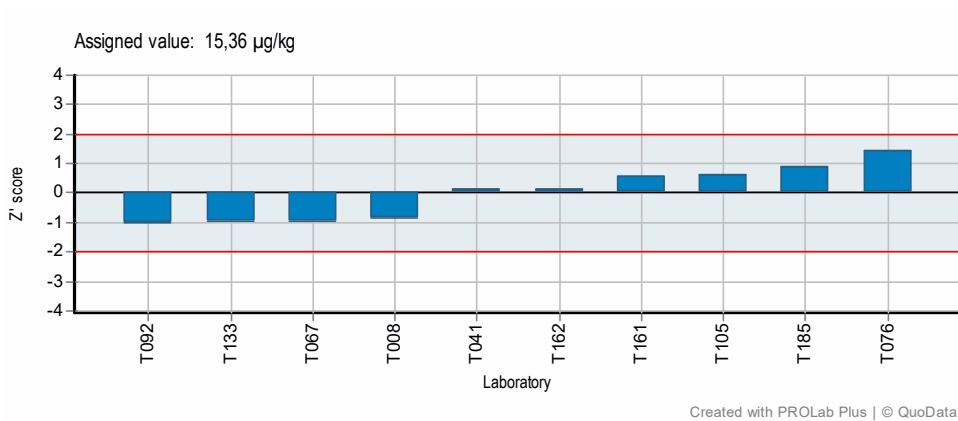
Test material F5701Y, feed, confirmatory

F5701Y, aflatoxins B1 + B2 + G1 + G2 (sum)

Assigned value and target standard deviations.

Analyte	Assigned value µg/kg				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty u (x _{pt})	u<0,3 σ _{pt}	Origin σ _{pt}	σ _{pt}	lower	upper
aflatoxins B1 + B2 + G1 + G2 (sum)	10	15,36	5,05	32,88	2,00	No	Horwitz	4,61	5,32	25,40

Figure 6: Z' scores for feed, aflatoxins B1 + B2 + G1 + G2 (sum)



Percentage of satisfactory scores 100,00%

Concentration, arithmetic mean	n= 10	15,36 µg/kg
Standard deviation	n= 10	4,45 µg/kg
Coefficient of variation	n= 10	28,99 %

Test material F5701Y, feed, confirmatory

Results of confirmatory analyses performed on test material F5701Y (incurred sample).

F5701Y, aflatoxins B1 + B2 + G1 + G2 (sum)

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T008	11,24			-0,82		2,00	YES
T041	16			0,13	1,00	1,00	YES
T067	10,54	00	00	-0,96	1,70	0,00	YES
T076	22,5			1,42			
T092	10,35			-1,00			
T105	18,37	25		0,60			NO
T133	10,48	0,20	99,86	-0,97	0,20	0,50	YES
T161	18,1			0,55		0,10	YES
T162	16,1			0,15	0,35	0,50	NO
T185	19,92			0,91			-

Concentration, DL and QL have the measurement unit of µg/kg.

Test material F5701Y, feed, screening

Results of screening analyses performed on test material F5701Y (incurred sample).

F5701Y, aflatoxins B1 + B2 + G1 + G2 (sum)

aflatoxins B1 + B2 + G1 + G2 (sum)- Summary results of measured values							
Lab. code	Concentration	MU [%]	Recovery rate [%]	Z'-score	DL	QL	ISO 17025
T040	13,44	-	-	-0,38	-	-	-
T064	14	-	-	-0,27	1,4	5	NO
T069	6,8	-	93	-1,70	100	-	NO
T108	15,66	26	0,88	0,06	0,44	1,75	YES
T115	22,5	4,9	-	1,42	7	7,5	NO
T138	14,62	1,99	117,25	-0,15	1,8	2,3	NO
V064	13	-	-	-0,47	1,4	5	NO
V115	20,8	10	-	1,08	1,5	3	NO

Concentration, DL and QL have the measurement unit of µg/kg.

Concentration, arithmetic mean	n=	8	15,10 µg/kg
Standard deviation	n=	8	4,86 µg/kg
Coefficient of variation	n=	8	32,15 %

Proficiency test F5701O, result contents

Test material F5701O, ochratoxin A in feed

- **Result of confirmatory "A"**

- **Result of screening "B"**

Test material F5701O, feed, confirmatory

Summary result.

It was not possible to assign a value because $p < 8$, where “p” is the number of data after invalid results rejection, and because the value has a high uncertainty.

But it is noted that all estimators checked agree on the result, see below.

µg/kg	Arithmetic mean	Algorithm A	Median	Hampel
Mean	24,59	24,59	25,55	24,59
Standard deviation	10,92	12,38	7,71	13,43
coefficient of variation %	44,40	50,35	30,18	54,62

Results of confirmatory analyses performed on test material F5701O (incurred sample).

F5701O, ochratoxin A

Summary results of measured values						
Lab	Concentration	MU [%]	Recovery rate [%]	DL	QL	ISO 17025
T041	26,5	42,00		1,00	1,00	YES
T067	42,84	0,00	96,98	0,06	0,20	YES
T076	<50		100,00		50,00	NO
T092	11				10,00	NO
T097	16,1	4,83	91,50	0,44	1,44	NO
T161	25				0,30	YES
T185	26,1	2,00	91,00		1,00	YES

Concentration, DL and QL have the measurement unit of µg/kg.

Test material F5701O, feed, screening

Results of screening analyses performed on test material F5701O (incurred sample).

F5701O, ochratoxin A, presence

	ochratoxin A- Summary results of measured values					
Lab. code	Concentration	MU [%]	Recovery rate [%]	DL	QL	ISO 17025
T040	10,33	-	-	-	-	-
T096	<50	-	-	50	-	YES
T113	21,8	26,1	90	0,89	1,14	YES
T138	24,11	3,53	105,7	3	4	NO

Concentration, DL and QL have the measurement unit of µg/kg.

Proficiency test F5702D, result contents

Test material F5702D, DON in feed

- **Result of confirmatory "A"**
- **Result of screening "B"**

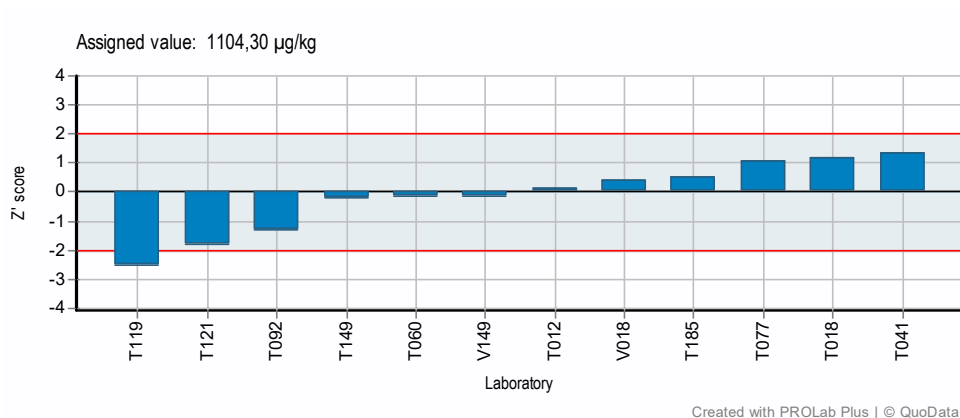
Test material F5702D, feed, confirmatory

F5702D, deoxynivalenol

Assigned value and target standard deviations.

Analyte	Assigned value $\mu\text{g}/\text{kg}$				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty $u(X_{\text{pt}})$	$u < 0,3 \sigma_{\text{pt}}$	Origin σ_{pt}	σ_{pt}	lower	upper
deoxynivalenol	12	1104,30	290,59	26,31	104,86	No	PTp: 20%	220,86	615,32	1593,28

Figure 7: Z' scores for feed, deoxynivalenol



Percentage of satisfactory scores 91,67%

Concentration, arithmetic mean	n= 12	1076,15 $\mu\text{g}/\text{kg}$
Standard deviation	n= 12	295,80 $\mu\text{g}/\text{kg}$
Coefficient of variation	n= 12	27,49 %

Test material F5702D, feed, confirmatory

Results of confirmatory analyses performed on test material F5702D (incurred sample).

F5702D, deoxynivalenol

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T012	1141,19	44	88	0,15	1,60	16,00	YES
T018	1394,67	2,97	103,00	1,19	6,00	20,00	YES
T041	1440	44		1,37	100,00	100,00	YES
T060	1065	44,73	100,23	-0,16			YES
T077	1363		94	1,06		10,00	YES
T092	781			-1,32	100,00	250,00	NO
T119	487,84	9,49	95,01	-2,52	30,00	100,00	YES
T121	672	0,15	98	-1,77		50,00	YES
T149	1051,16			-0,22		50,00	YES
T185	1237,5	2	86	0,54		50,00	YES
V018	1213	3,00	103,00	0,44	6,00	20,00	YES
V149	1067,41			-0,15			-

Concentration, DL and QL have the measurement unit of µg/kg.

Test material F5702D, feed, screening

Results of screening analyses performed on test material F5702D (incurred sample).

F5702D, deoxynivalenol

deoxynivalenol- Summary results of measured values							
Lab. code	Concentration	MU [%]	Recovery rate [%]	Z'-score	DL	QL	ISO 17025
T064	1849	-	-	3,05	100	250	NO
T115	1720	7	-	2,52	40	150	NO
T178	1545	15	89	1,80	50	-	YES
V064	1780	-	-	2,76	100	250	NO
V115	1770	5,7	-	2,72	400	500	NO

Concentration, DL and QL have the measurement unit of µg/kg.

Concentration, arithmetic mean	n=	5	1732,80	µg/kg
Standard deviation	n=	5	114,62	µg/kg
Coefficient of variation	n=	5	6,61	%

Proficiency test F5702T, result contents

Test material F5702T, T-2 & HT-2 in feed

- **Result of confirmatory "A"**
- **Result of screening "B"**

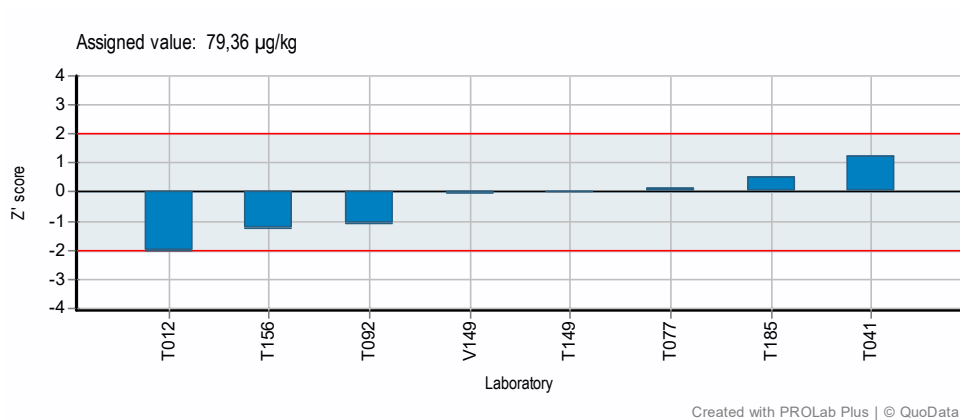
Test material F5702T, feed, confirmatory

F5702T, T2

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty $u(X_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
T2	8	79,36	27,23	34,31	12,03	No	PTp: 25%	19,84	32,95	125,77

Figure 8: Z' scores for feed, T2



Percentage of satisfactory scores 87,50%

Concentration, arithmetic mean	n= 8	72,41 µg/kg
Standard deviation	n= 8	24,47 µg/kg
Coefficient of variation	n= 8	33,80 %

Test material F5702T, feed, confirmatory

Results of confirmatory analyses performed on test material F5702T (incurred sample).

F5702T, T2

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T012	32,53	44	91	-2,02	0,40	4,00	YES
T041	108	23		1,23	2,00	2,00	YES
T077	82,4		83	0,13		10,00	YES
T092	55			-1,05	10,00	20,00	NO
T149	79,82			0,02			YES
T156	50,89			-1,23			NO
T185	91,72	2	110	0,53		20,00	YES
V149	78,9			-0,02			-

Concentration, DL and QL have the measurement unit of µg/kg.

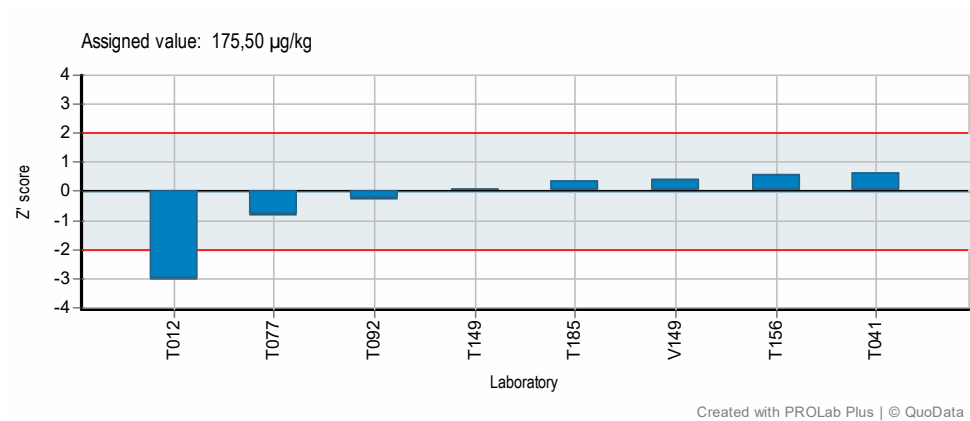
Test material F5702T, feed, confirmatory

F5702T, HT2

Assigned value and target standard deviations.

Analyte	Assigned value		µg/kg		Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
HT2	8	175,50	34,69	19,77	15,33	No	PTp: 25%	43,87	82,55	268,45

Figure 9: Z' scores for feed, HT2



Percentage of satisfactory scores 87,50%

Concentration, arithmetic mean	n= 8	164,67 µg/kg
Standard deviation	n= 8	56,24 µg/kg
Coefficient of variation	n= 8	34,15 %

Test material F5702T, feed, confirmatory

Results of confirmatory analyses performed on test material F5702T (incurred sample).

F5702T-1, HT2

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T012	36,81	44	91	-2,98	0,40	4,00	YES
T041	205	48		0,63	10,00	10,00	YES
T077	139		82	-0,79		10,00	YES
T092	164			-0,25	25,00	50,00	NO
T149	180,83			0,11			YES
T156	203,31			0,60			NO
T185	192,38	2	80	0,36		20,00	YES
V149	196			0,44			-

Concentration, DL and QL have the measurement unit of µg/kg.

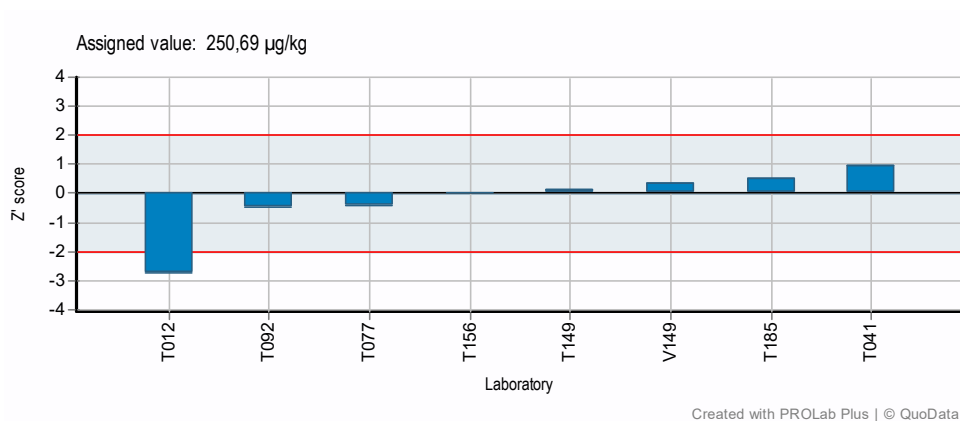
Test material F5702T, feed, confirmatory

F5702T, T2+HT2 (sum)

Assigned value and target standard deviations.

Analyte	Assigned value		µg/kg		Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty u (X _{pt})	u<0,3 σ _{opt}	Origin opt	σ _{opt}	lower	upper
T2+HT2 (sum)	8	250,69	48,83	19,48	21,58	No	PTp: 25%	62,67	118,12	383,25

Figure 10: Z' scores for feed, T2+HT2 (sum)



Percentage of satisfactory scores 87,50%

Concentration, arithmetic mean	n= 8	237,14 µg/kg
Standard deviation	n= 8	74,77 µg/kg
Coefficient of variation	n= 8	31,53 %

Test material F5702T, feed, confirmatory

Results of confirmatory analyses performed on test material F5702T (incurred sample).

F5702T, T2+HT2 (sum)

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T012	69,06	44	91	-2,74	0,40	4,00	YES
T041	313			0,94	10,00	10,00	YES
T077	221,4			-0,44		10,00	-
T092	219			-0,48			
T149	260,66			0,15			YES
T156	254,2			0,05			
T185	284,9	2		0,52			YES
V149	274,9			0,37			-

Concentration, DL and QL have the measurement unit of µg/kg.

Test material F5702T, feed, screening

Results of screening analyses performed on test material F5702T-1, (incurred sample).

F5702T, T2+HT2 (sum)

T2+HT2 (sum)- Summary results of measured values							
Lab. code	Concentration	MU [%]	Recovery rate [%]	Z'-score	DL	QL	ISO 17025
T064	254	-	-	0,05	10	25	NO
V064	281	-	-	0,46	10	25	NO
V115	280	8	-	0,44	50	50	NO

Concentration, DL and QL have the measurement unit of µg/kg.

Concentration, arithmetic mean	n=	3	271,67	µg/kg
Standard deviation	n=	3	15,31	µg/kg
Coefficient of variation	n=	3	5,63	%

Proficiency test WH5703D, result contents

Test material WH5703D, DON in common or durum wheat

- **Result of confirmatory "A"**
- **Result of screening "B"**

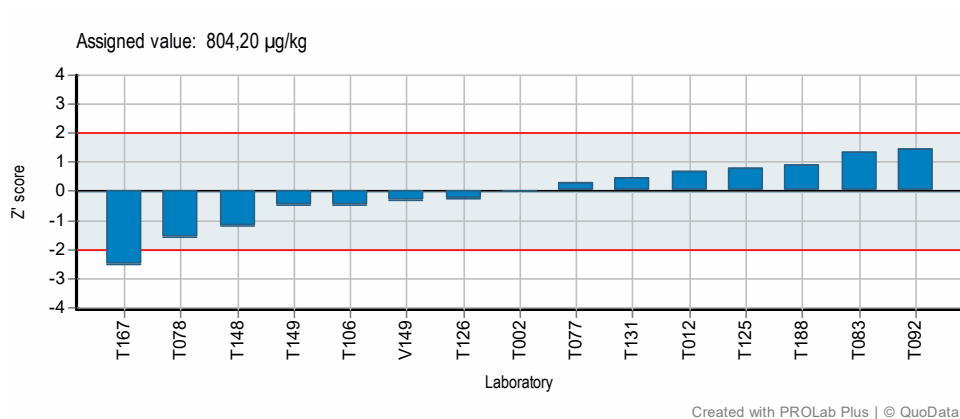
Test material WH5703D, common wheat, confirmatory

WH5703D, deoxynivalenol

Assigned value and target standard deviations.

Analyte	Assigned value $\mu\text{g}/\text{kg}$				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
deoxynivalenol	15	804,20	191,27	23,78	61,73	No	PTp: 20%	160,84	459,64	1148,76

Figure 11: Z' scores for wheat, deoxynivalenol



Percentage of satisfactory scores 93,33%

Concentration, arithmetic mean	n= 15	794,54 $\mu\text{g}/\text{kg}$
Standard deviation	n= 15	189,18 $\mu\text{g}/\text{kg}$
Coefficient of variation	n= 15	23,81 %

Test material WH5703D, common wheat, confirmatory

Results of confirmatory analyses performed on test material WH5703D (incurred sample).

WH5703D, deoxynivalenol

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T002	805	50,00		0,00		10,00	YES
T012	920,18	44,00	88,00	0,67	1,60	16,00	YES
T077	855		94,00	0,29		10,00	YES
T078	528,05			-1,60			-
T083	1033	20,00	71,50	1,33		125,00	YES
T092	1052			1,44	100,00	250,00	NO
T106	726	50,00	74,00	-0,45		50,00	NO
T125	943,07	10,81	97,08	0,81		160,00	YES
T126	760			-0,26			-
T131	884,67		92,00	0,47		20,00	YES
T148	600	40,00	88,00	-1,19	30,00	95,00	YES
T149	721,93			-0,48			YES
T167	372,39	9,25	80,00	-2,51	166,67	500,00	NO
T188	962,72	15,40	110,00	0,92	3,90	13,00	YES
V149	754,1			-0,29			-

Concentration, DL and QL have the measurement unit of µg/kg.

Test material WH5703D, common wheat, screening

Results of screening analyses performed on test material WH5703D (incurred sample).

WH5703D, deoxynivalenol

deoxynivalenol- Summary results of measured values							
Lab. code	Concentration	MU [%]	Recovery rate [%]	Z'-score	DL	QL	ISO 17025
T051	995	-	-	1,11	-	-	NO
T063	1221	-	-	2,42	200	200	NO
T064	1267	-	-	2,69	200	200	NO
T065	900	-	-	0,56	-	-	-
T114	662,5	-	-	-0,82	200	500	NO
T115	1030	5,7	-	1,31	250	300	NO
V063	1711	-	-	5,26	200	200	NO
V064	1442	-	-	3,70	100	250	NO
V065	850	-	-	0,27	-	-	-
V115	1330	15	-	3,05	40	125	NO

Concentration, DL and QL have the measurement unit of µg/kg.

Concentration, arithmetic mean	n=	10	1140,85 µg/kg
Standard deviation	n=	10	312,49 µg/kg
Coefficient of variation	n=	10	27,39 %

Proficiency test WH5703T, result contents

Test material WH5703T, T-2 & HT-2 in common or durum wheat

- **Result of confirmatory "A"**

- **Result of screening "B"**

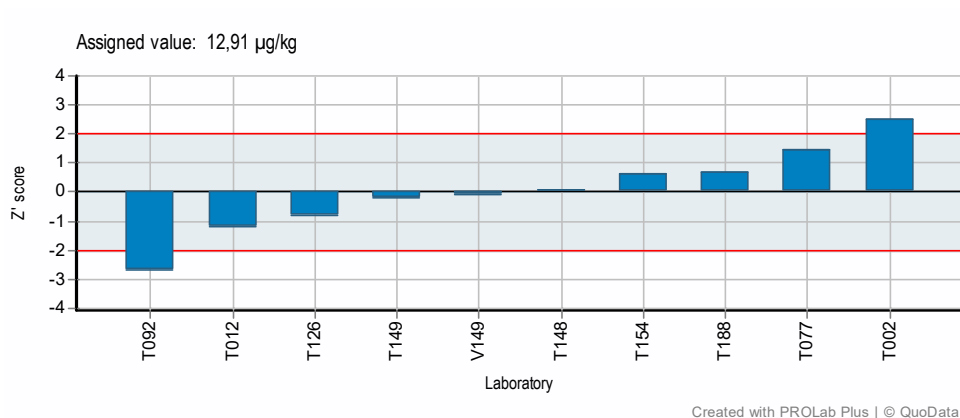
Test material WH5703T, common or durum wheat, confirmatory

WH5703T, T2

Assigned value and target standard deviations.

Analyte	Assigned value $\mu\text{g}/\text{kg}$				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
T2	10	12,91	3,98	30,83	1,57	No	PTp: 25%	3,23	5,73	20,08

Figure 12: Z' scores for wheat, T2



Percentage of satisfactory scores 80,00%

Concentration, arithmetic mean	n= 10	13,07 $\mu\text{g}/\text{kg}$
Standard deviation	n= 10	5,15 $\mu\text{g}/\text{kg}$
Coefficient of variation	n= 10	39,44 %

Test material WH5703T, common or durum wheat, confirmatory

Results of confirmatory analyses performed on test material WH5703T (incurred sample).

WH5703T, T2

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T002	22	50		2,53		2,00	YES
T012	8,75	44	91	-1,16	0,40	4,00	YES
T077	18,1		83	1,45		10,00	YES
T092	3,3			-2,68	0,50	1,00	NO
T126	10			-0,81			-
T131	<20		95			20,00	YES
T148	13,3	40	110	0,11		5,00	YES
T149	12,25			-0,18			YES
T154	15,1			0,61	10,00	10,00	NO
T188	15,37	30	88	0,69	1,89	6,25	NO
V149	12,51			-0,11			-

Concentration, DL and QL have the measurement unit of µg/kg.

Test material WH5703T, common or durum wheat, screening

Results of screening analyses performed on test material WH5703T (incurred sample).

WH5703T, T2

T2- Summary results of measured values							
Lab. code	Concentration	MU [%]	Recovery rate [%]	Evaluation	DL	QL	ISO 17025
T063	NS	NS	NS		-	-	-
T064	NS	NS	NS		-	-	-
T101	>25	-	-	satisfactory	25	-	-
T115	NS	NS	NS		-	-	-
V063	NS	NS	NS		-	-	-
V064	NS	NS	NS		-	-	-

Concentration, DL and QL have the measurement unit of µg/kg.

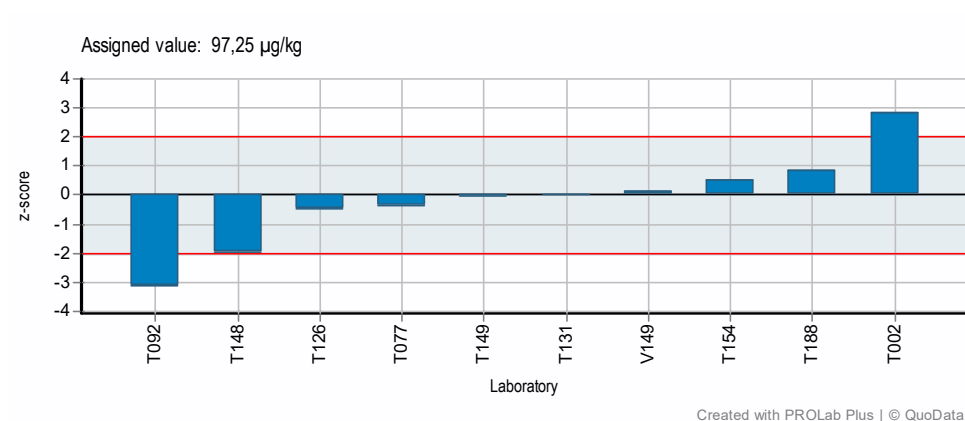
Test material WH5703T, common or durum wheat, confirmatory

WH5703T, HT2

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty $u(X_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
HT2	10	97,25	18,24	18,76	7,21	Yes	PTp: 25%	24,31	48,63	145,87

Figure 13: z-scores for wheat, HT2



Percentage of satisfactory scores 80,00%

Concentration, arithmetic mean	n= 10	93,67 µg/kg
Standard deviation	n= 10	38,87 µg/kg
Coefficient of variation	n= 10	41,50 %

Test material WH5703T, common or durum wheat, confirmatory

Results of confirmatory analyses performed on test material WH5703T (incurred sample).

WH5703T, HT2

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	z-score	DL	QL	ISO 17025
T092	21,5			-3,12	0,50	1,00	NO
T148	49,4	40	120	-1,97		5,00	YES
T126	86			-0,46			-
T077	88,2	-	82	-0,37		10,00	YES
T149	96,95			-0,01			YES
T131	97,54	-	100	0,01		20,00	YES
V149	100,97			0,15			-
T154	110,6			0,55	10,00	10,00	NO
T188	118,74	30	102	0,88	1,89	6,25	NO
T002	166,8	50	-	2,86		2,00	YES

Concentration, DL and QL have the measurement unit of µg/kg.

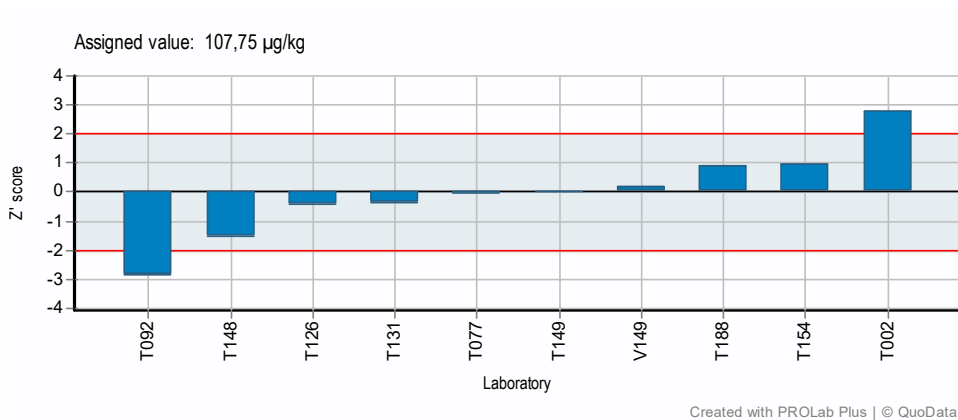
Test material WH5703T, common or durum wheat, confirmatory

WH5703T, T2+HT2 (sum)

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty $u(X_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
T2+HT2 (sum)	10	107,75	28,26	26,23	11,17	No	PTp: 25%	26,94	49,43	166,07

Figure 14: Z' scores for wheat, T2+HT2 (sum)



Percentage of satisfactory scores 80,00%

Concentration, arithmetic mean	n= 10	106,95 µg/kg
Standard deviation	n= 10	43,82 µg/kg
Coefficient of variation	n= 10	40,97 %

Test material WH5703T, common or durum wheat, confirmatory

Results of confirmatory analyses performed on test material WH5703T (incurred sample).

WH5703T, T2+HT2 (sum)

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T002	188,8	50		2,78		2,00	YES
T077	106,3			-0,05		10,00	YES
T092	24,8			-2,84			
T126	96			-0,40			-
T131	97,54			-0,35			
T148	62,7	40		-1,54		5,00	YES
T149	109,2			0,05			YES
T154	136,6			0,99	10,00	10,00	NO
T188	134,11	30	90	0,90	1,89	6,25	NO
V149	113,48			0,20			-

Concentration, DL and QL have the measurement unit of µg/kg.

Test material WH5703T, common or durum wheat, screening

Results of screening analyses performed on test material WH5703T (incurred sample).

WH5703T, T2+HT2 (sum)

T2+HT2 (sum)- Summary results of measured values							
Lab. code	Concentration	MU [%]	Recovery rate [%]	Z'-score	DL	QL	ISO 17025
T063	37	-	-	-2,43	10	10	NO
T064	66	-	-	-1,43	10	10	NO
T115	89	10	-	-0,64	25	25	NO
V063	41	-	-	-2,29	10	10	NO
V064	85	-	-	-0,78	10	25	NO

Concentration, DL and QL have the measurement unit of µg/kg.

Concentration, arithmetic mean	n=	5	63,60 µg/kg
Standard deviation	n=	5	24,12 µg/kg
Coefficient of variation	n=	5	37,93 %

Proficiency test SP5705Y, result contents

Test material SP5705Y, aflatoxins B/G in paprika or chili

- **Result of confirmatory "A"**

- **Result of screening "B"**

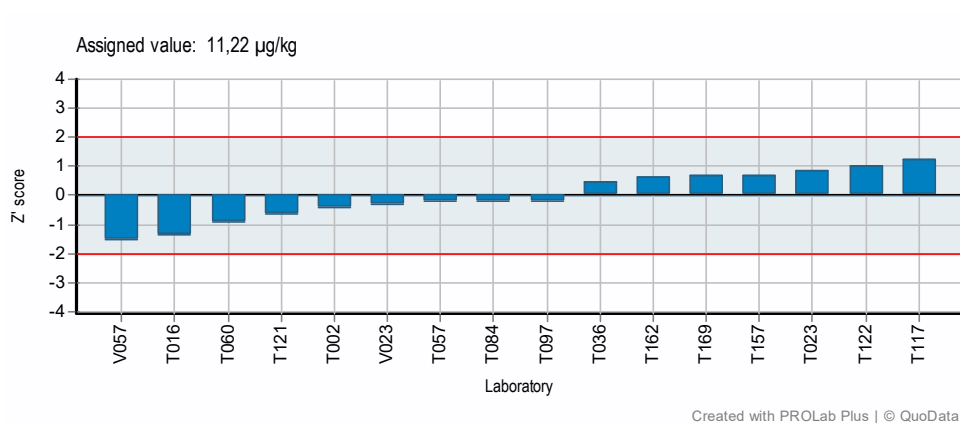
Test material SP5705Y, paprika, confirmatory

SP5705Y, aflatoxins B1 + B2 + G1 + G2 (sum)

Assigned value and target standard deviations.

Analyte	Assigned value $\mu\text{g}/\text{kg}$				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
aflatoxins B1 + B2 + G1 + G2 (sum)	16	11,22	3,50	31,19	1,09	No	Horwitz	3,53	3,83	18,60

Figure 15: Z' scores for paprika, aflatoxins B1 + B2 + G1 + G2 (sum)



Percentage of satisfactory scores 100,00%

Concentration, arithmetic mean	n= 16	11,20 $\mu\text{g}/\text{kg}$
Standard deviation	n= 16	3,12 $\mu\text{g}/\text{kg}$
Coefficient of variation	n= 16	27,85 %

Test material SP5705Y, paprika, confirmatory

Results of confirmatory analyses performed on test material SP5705Y (incurred sample).

SP5705Y, aflatoxins B1 + B2 + G1 + G2 (sum)

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T002	9,58	50,00		-0,44		0,20	YES
T016	6,25			-1,34			YES
T023	14,41	17,28	73,58	0,87	0,28	0,34	YES
T036	12,9			0,46			NO
T057	10,43			-0,21			NO
T060	7,88			-0,90			YES
T084	10,56	40,00		-0,18	0,50	1,00	YES
T097	10,6	1,00	85,00	-0,17	0,32	0,96	NO
T117	15,8			1,24			YES
T121	8,8	0,07	98,00	-0,65		0,25	YES
T122	15,05			1,04			-
T157	13,81	28,40	87,70	0,70	1,00	2,00	YES
T162	13,61			0,65	0,35	0,50	NO
T169	13,8			0,70		2,00	YES
V023	10	17,28	76,72	-0,33	0,28	0,34	YES
V057	5,67		78,00	-1,50			YES

Concentration, DL and QL have the measurement unit of µg/kg.

Test material SP5705Y, paprika, confirmatory

Results of confirmatory analyses performed on test material SP5705Y (incurred sample).

SP5705Y, aflatoxin B1, presence

Summary results of measured values						
Lab	Concentration	MU [%]	Recovery rate [%]	DL	QL	ISO 17025
T002	5,43	50	-	-	0,2	YES
T016	4,24	-	-	-	-	YES
T023	8,49	19,59	76,27	0,2	0,24	YES
T036	7,10	-	90,90	0,50	0,50	NO
T057	5,78	-	100	-	0,1	NO
T060	4,91	-	-	-	-	YES
T084	6,71	30	85	0,50	1,0	YES
T097	5,5	0,8	-	0,2	0,6	NO
T117	8,7	23	79,2	-	0,5	YES
T121	5,2	0,14	98	-	0,25	YES
T122	8,1	-	-	-	-	-
T157	8,59	28,4	83,3	0,25	0,50	YES
T162	9,26	-	-	0,35	0,5	NO
T169	8,19	12,4	77,91	-	0,5	YES
V023	5,51	19,59	87,08	0,2	0,24	YES
V057	3,06	-	106	-	-	YES

Concentration, DL and QL have the measurement unit of µg/kg.

Concentration, arithmetic mean	n= 16	6,55 µg/kg
Standard deviation	n= 16	1,85 µg/kg
Coefficient of variation	n= 16	28,26 %

It was not possible to assign a value, because the confirmatory data distribution is bimodal (see Kernel diagram). In case of bimodal distribution ISO 13528 does not allow to give the assigned value.

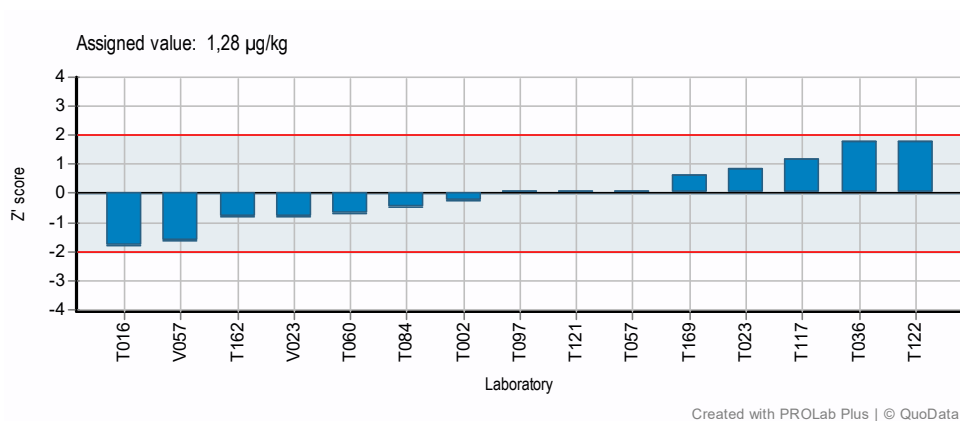
Test material SP5705Y, paprika, confirmatory

SP5705Y, aflatoxin B2

Assigned value and target standard deviations.

Analyte	Assigned value $\mu\text{g}/\text{kg}$				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty $u(x_{\text{pt}})$	$u < 0,3 \sigma_{\text{pt}}$	Origin σ_{pt}	σ_{pt}	lower	upper
aflatoxin B2	15	1,28	0,44	34,38	0,14	No	PTp: 25%	0,32	0,58	1,97

Figure 16: Z' scores for paprika, aflatoxin B2



Percentage of satisfactory scores 100,00%

Concentration, arithmetic mean	n= 15	1,28 $\mu\text{g}/\text{kg}$
Standard deviation	n= 15	0,39 $\mu\text{g}/\text{kg}$
Coefficient of variation	n= 15	30,17 %

Test material SP5705Y, paprika, confirmatory

Results of confirmatory analyses performed on test material SP5705Y (incurred sample).

SP5705Y, aflatoxin B2

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T002	1,19	50,00		-0,25		0,20	YES
T016	0,65			-1,80			YES
T023	1,57	43,00	80,38	0,84	0,20	0,24	NO
T036	1,9		76,90	1,79	0,50	0,50	NO
T057	1,31		80,00	0,10		0,10	NO
T060	1,03			-0,71			YES
T084	1,11	36,00	85,00	-0,48	0,50	1,00	YES
T097	1,3			0,07	0,06	0,17	NO
T117	1,7	22,00	82,50	1,21		0,50	YES
T121	1,3	0,06	98,00	0,07		0,25	YES
T122	1,91			1,82			-
T162	0,99			-0,82	0,35	0,50	NO
T169	1,49	13,10	88,52	0,61		0,50	YES
V023	0,99	43,00	83,73	-0,82	0,20	0,24	NO
V057	0,71		96,00	-1,62			YES

Concentration, DL and QL have the measurement unit of µg/kg.

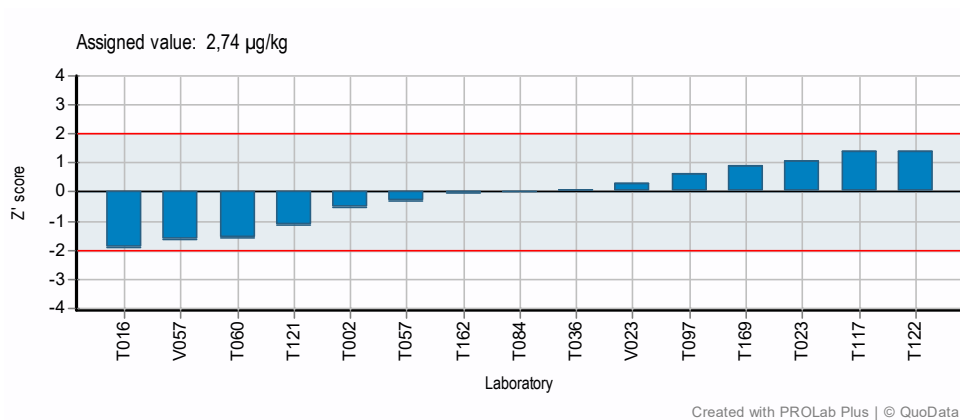
Test material SP5705Y, paprika, confirmatory

SP5705Y, aflatoxin G1

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
aflatoxin G1	15	2,74	0,99	36,13	0,32	No	PTp: 25%	0,69	1,23	4,25

Figure 17: Z' scores for paprika, aflatoxin G1



Percentage of satisfactory scores 100,00%

Concentration, arithmetic mean	n= 15	2,67 µg/kg
Standard deviation	n= 15	0,83 µg/kg
Coefficient of variation	n= 15	30,91 %

Test material SP5705Y, paprika, confirmatory

Results of confirmatory analyses performed on test material SP5705Y (incurred sample).

SP5705Y, aflatoxin G1

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T002	2,35	50,00		-0,52		0,20	YES
T016	1,3			-1,90			YES
T023	3,54	34,00	69,90	1,06	0,20	0,24	NO
T036	2,8		76,90	0,08	0,50	0,50	NO
T057	2,5		70,00	-0,32		0,10	NO
T060	1,54			-1,59			YES
T084	2,74	30,00	81,00	0,00	0,50	1,00	YES
T097	3,2			0,61	0,25	0,76	NO
T117	3,8	31,00	83,50	1,40		0,50	YES
T121	1,9	0,11	98,00	-1,11		0,25	YES
T122	3,81			1,41			-
T162	2,73			-0,01	0,35	0,50	NO
T169	3,41	22,50	82,17	0,89		0,50	YES
V023	2,99	34,00	59,71	0,33	0,20	0,24	NO
V057	1,49		106,00	-1,65			YES

Concentration, DL and QL have the measurement unit of µg/kg.

Test material SP5705Y, paprika, confirmatory

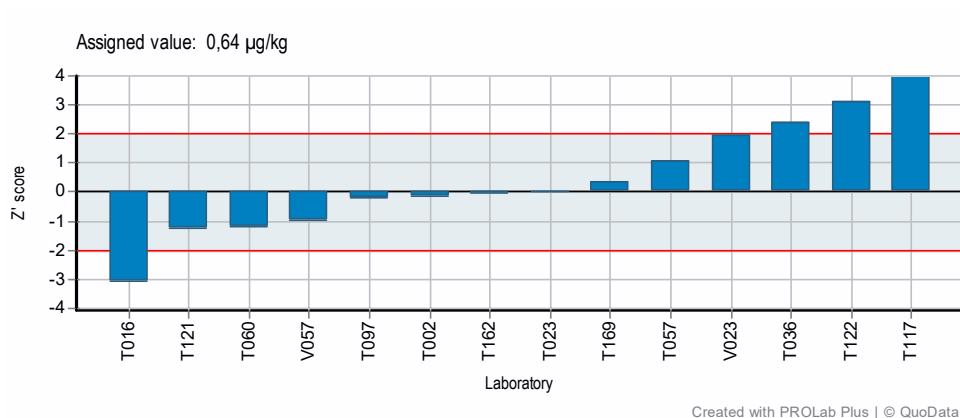
SP5705Y, aflatoxin G2

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
aflatoxin G2	13*	0,64	0,30	46,88	0,10	No	PTp: 25%	0,16	0,26	1,02

*result of laboratory T016 is considered as invalid.

Figure 18: Z' scores for paprika, aflatoxin G2



Percentage of satisfactory scores 71,43%

Concentration, arithmetic mean	n= 14	0,74 µg/kg
Standard deviation	n= 14	0,39 µg/kg
Coefficient of variation	n= 14	53,54 %

Test material SP5705Y, paprika, confirmatory

Results of confirmatory analyses performed on test material SP5705Y (incurred sample).

SP5705Y, aflatoxin G2

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T002	0,61	50,00		-0,16		0,20	YES
T016	0,06			-3,05			YES
T023	0,64	26,00	54,29	0,00	0,20	0,24	NO
T036	1,1		50,00	2,42	0,50	0,50	NO
T057	0,84		72,00	1,05		0,10	NO
T060	0,41			-1,21			YES
T084	<1,00	40,00	77,00		0,50	1,00	YES
T097	0,6			-0,21	0,08	0,23	NO
T117	1,6	29,00	88,90	5,05		0,50	YES
T121	0,4	0,06	98,00	-1,26		0,25	YES
T122	1,23			3,10			-
T162	0,63			-0,05	0,35	0,50	NO
T169	0,71	22,40	86,96	0,37		0,50	YES
V023	1,01	26,00	54,76	1,95	0,20	0,24	NO
V057	0,46		86,00	-0,95			YES

Concentration, DL and QL have the measurement unit of µg/kg.

Proficiency test SP57050, result contents

Test material SP57050, ochratoxin A in paprika

- **Result of confirmatory "A"**
- **Result of screening "B"**

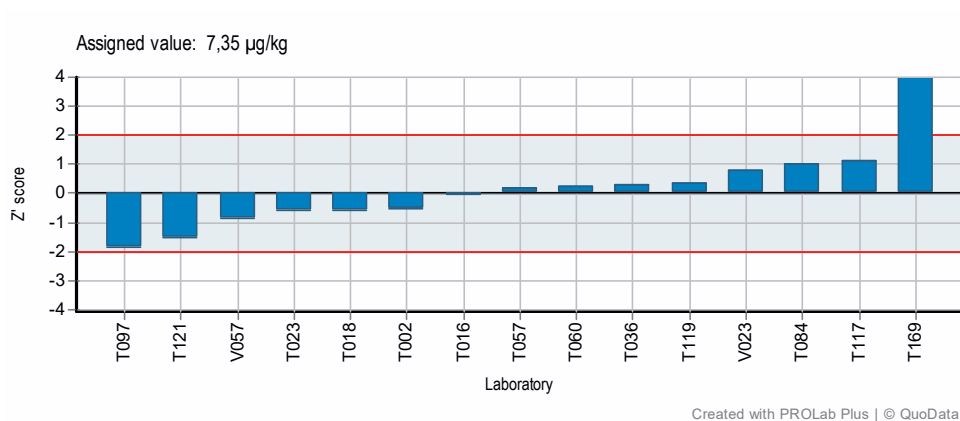
Test material SP5705O, paprika, confirmatory

SP5705O, ochratoxin A

Assigned value and target standard deviations.

Analyte	Assigned value $\mu\text{g}/\text{kg}$				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
ochratoxin A	15	7,35	2,07	28,16	0,67	No	PTp: 25%	1,84	3,44	11,25

Figure 19: Z' scores for paprika, ochratoxin A



Percentage of satisfactory scores 93,33%

Concentration, arithmetic mean	n= 15	8,61 $\mu\text{g}/\text{kg}$
Standard deviation	n= 15	6,13 $\mu\text{g}/\text{kg}$
Coefficient of variation	n= 15	71,24 %

Test material SP5705O, paprika, confirmatory

Results of confirmatory analyses performed on test material SP5705O (incurred sample).

SP5705O, ochratoxin A

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T002	6,36	50,00		-0,50		0,20	YES
T016	7,3			-0,02			YES
T018	6,25	9,23	109,90	-0,56	0,30	1,00	YES
T023	6,22	17,80	87,52	-0,58	0,35	1,50	YES
T036	7,9		90,90	0,28	0,50	0,50	NO
T057	7,76		108,00	0,21		0,10	NO
T060	7,84			0,25			YES
T084	9,34	36,00	82,00	1,02	0,50	1,00	YES
T097	3,69	1,11	91,50	-1,87	0,44	1,44	NO
T117	9,52	35,00	78,30	1,11		5,00	YES
T119	8,03	17,30	99,60	0,35	1,00	3,00	YES
T121	4,4	0,08	98,00	-1,51		3,00	YES
T169	29,92	25,80	100,25	11,55		0,50	YES
V023	8,91	17,80	115,00	0,80	0,35	1,50	YES
V057	5,67		78,00	-0,86		0,10	YES

Concentration, DL and QL have the measurement unit of µg/kg.

Proficiency test DF5706Y, result contents

Test material DF5706Y, aflatoxins B/G in dried figs (slurry)

- **Result of confirmatory "A"**
- **Result of screening "B"**

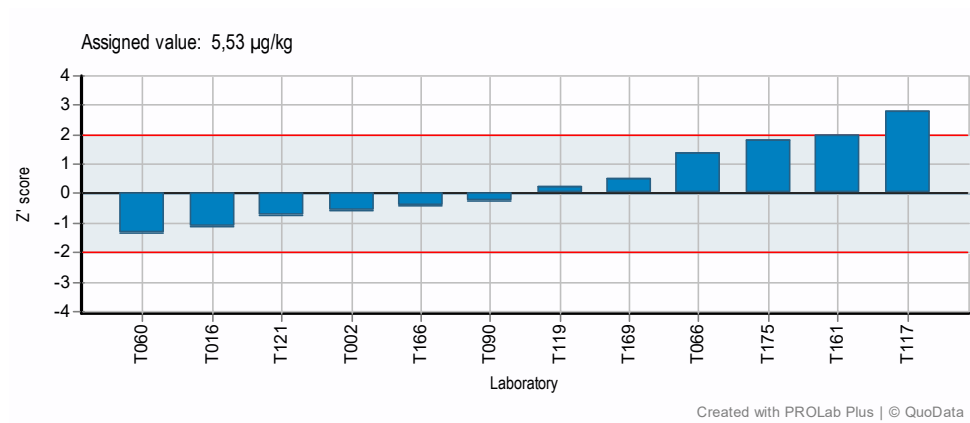
Test material DF5706Y, dried figs (slurry), confirmatory

DF5706Y, aflatoxin B1

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
aflatoxin B1	12	5,53	1,89	34,18	0,68	No	Truncated Horwitz-Thompson	1,22	2,74	8,31

Figure 20: Z' scores for dried figs (slurry), aflatoxin B1



Percentage of satisfactory scores 91,67%

Concentration, arithmetic mean	n= 12	6,04 µg/kg
Standard deviation	n= 12	1,87 µg/kg
Coefficient of variation	n= 12	30,92 %

Test material DF5706Y, dried figs (slurry), confirmatory

Results of confirmatory analyses performed on test material DF5706Y.

DF5706Y, aflatoxin B1

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T002	4,75	50,00		-0,56		0,20	YES
T016	4			-1,09			YES
T060	3,69			-1,32			YES
T066	7,49	10,00	76,00	1,41	0,30	1,00	YES
T090	5,18	30,00	86,00	-0,25	0,15	0,50	NO
T117	9,4	23,00	81,00	2,78		0,60	YES
T119	5,87	0,46	90,28	0,25	0,30	1,00	YES
T121	4,5	0,16	95,00	-0,74		0,25	YES
T161	8,3			1,99		0,20	YES
T166	4,98	0,51	106,00	-0,39	1,00	3,00	YES
T169	6,26	20,70	77,91	0,53		0,50	YES
T175	8,1	3,60	95,00	1,85		0,60	YES

Concentration, DL and QL have the measurement unit of µg/kg.

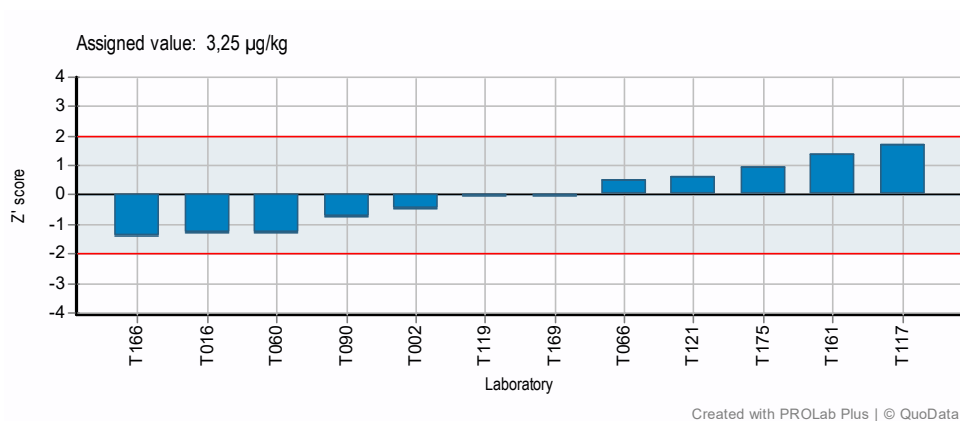
Test material DF5706Y, dried figs (slurry), confirmatory

DF5706Y, aflatoxin B2

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty u (x _{pt})	u<0,3 σ _{pt}	Origin σ _{pt}	σ _{pt}	lower	upper
aflatoxin B2	12	3,25	1,08	33,23	0,39	No	PTp: 25%	0,81	1,44	5,05

Figure 21: Z' scores for dried figs (slurry), aflatoxin B2



Percentage of satisfactory scores 100,00%

Concentration, arithmetic mean	n= 12	3,25 µg/kg
Standard deviation	n= 12	0,95 µg/kg
Coefficient of variation	n= 12	29,37 %

Test material DF5706Y, dried figs (slurry), confirmatory

Results of confirmatory analyses performed on test material DF5706Y.

DF5706Y, aflatoxin B2

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T002	2,85	50,00		-0,44		0,20	YES
T016	2,1			-1,27			YES
T060	2,1			-1,27			YES
T066	3,69	10,00	94,00	0,49	0,06	0,20	YES
T090	2,59	30,00		-0,73	0,15	0,50	NO
T117	4,8	22,00	84,10	1,73		0,50	YES
T119	3,2	0,25	90,38	-0,05	0,30	1,00	YES
T121	3,8	0,09	92,00	0,62		0,25	YES
T161	4,5			1,39		0,20	YES
T166	2	0,15	107,00	-1,38	0,30	1,00	YES
T169	3,21	12,00	88,52	-0,04		0,50	YES
T175	4,1	1,80	94,00	0,95		0,20	YES

Concentration, DL and QL have the measurement unit of µg/kg.

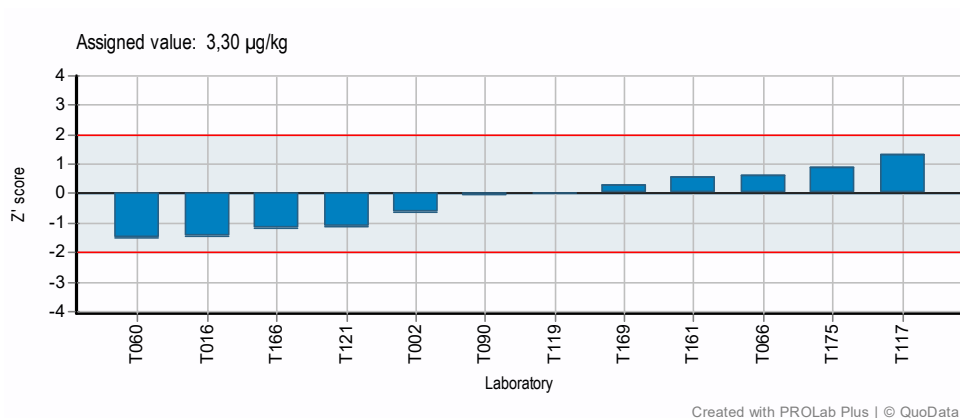
Test material DF5706Y, dried figs (slurry), confirmatory

DF5706Y, aflatoxin G1

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
aflatoxin G1	12	3,30	1,02	30,91	0,37	No	PTp: 25%	0,83	1,50	5,11

Figure 22: Z' scores for dried figs (slurry), aflatoxin G1



Percentage of satisfactory scores 100,00%

Concentration, arithmetic mean	n= 12	3,15 µg/kg
Standard deviation	n= 12	0,87 µg/kg
Coefficient of variation	n= 12	27,67 %

Test material DF5706Y, dried figs (slurry), confirmatory

Results of confirmatory analyses performed on test material DF5706Y.

DF5706Y, aflatoxin G1

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T002	2,75	50,00		-0,61		0,20	YES
T016	2			-1,44			YES
T060	1,96			-1,49			YES
T066	3,88	10,00	77,00	0,64	0,30	1,00	YES
T090	3,3	30,00	83,00	-0,01	0,15	0,50	NO
T117	4,5	31,00	86,90	1,32		0,60	YES
T119	3,31	0,34	87,20	0,01	0,30	1,00	YES
T121	2,3	0,13	92,00	-1,11		0,25	YES
T161	3,8			0,55		0,20	YES
T166	2,26	0,51	92,30	-1,16	1,00	3,00	YES
T169	3,59	25,00	82,17	0,32		0,50	YES
T175	4,1	1,80	101,00	0,88		0,60	YES

Concentration, DL and QL have the measurement unit of µg/kg.

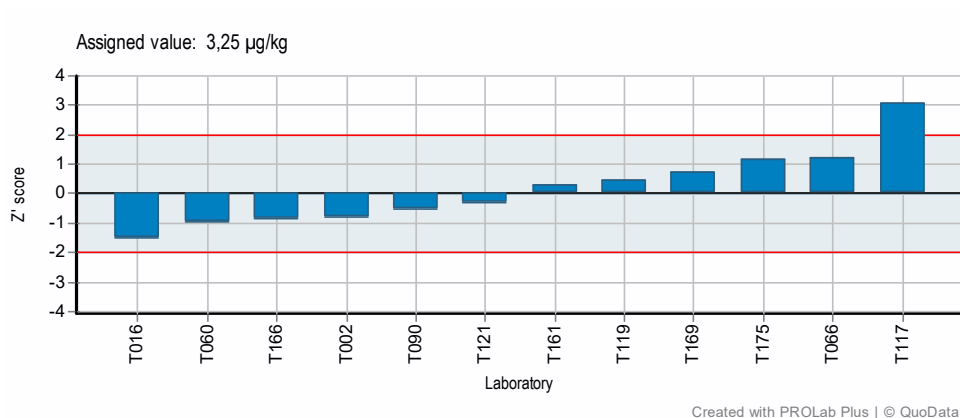
Test material DF5706Y, dried figs (slurry), confirmatory

DF5706Y, aflatoxin G2

Assigned value and target standard deviations.

Analyte	Assigned value µg/kg				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty u (x _{pt})	u<0,3 σ _{pt}	Origin σ _{pt}	σ _{pt}	lower	upper
aflatoxin G2	12	3,25	1,08	33,23	0,39	No	PTp: 25%	0,81	1,45	5,05

Figure 23: Z' scores for dried figs (slurry), aflatoxin G2



Percentage of satisfactory scores 91,67%

Concentration, arithmetic mean	n= 12	3,41 µg/kg
Standard deviation	n= 12	1,14 µg/kg
Coefficient of variation	n= 12	33,37 %

Test material DF5706Y, dried figs (slurry), confirmatory

Results of confirmatory analyses performed on test material DF5706Y.

DF5706Y, aflatoxin G2

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T002	2,54	50,00		-0,79		0,20	YES
T016	1,9			-1,50			YES
T060	2,41			-0,93			YES
T066	4,36	10,00	85,00	1,23	0,06	0,20	YES
T090	2,76	30,00		-0,54	0,15	0,50	NO
T117	6	29,00	80,70	3,05		0,50	YES
T119	3,66	0,40	85,08	0,45	0,30	1,00	YES
T121	3	0,08	92,00	-0,28		0,25	YES
T161	3,5			0,28		0,20	YES
T166	2,5	1,58	109,00	-0,83	0,30	1,00	YES
T169	3,93	24,90	86,96	0,75		0,50	YES
T175	4,3	1,90	99,00	1,16		0,20	YES

Concentration, DL and QL have the measurement unit of µg/kg.

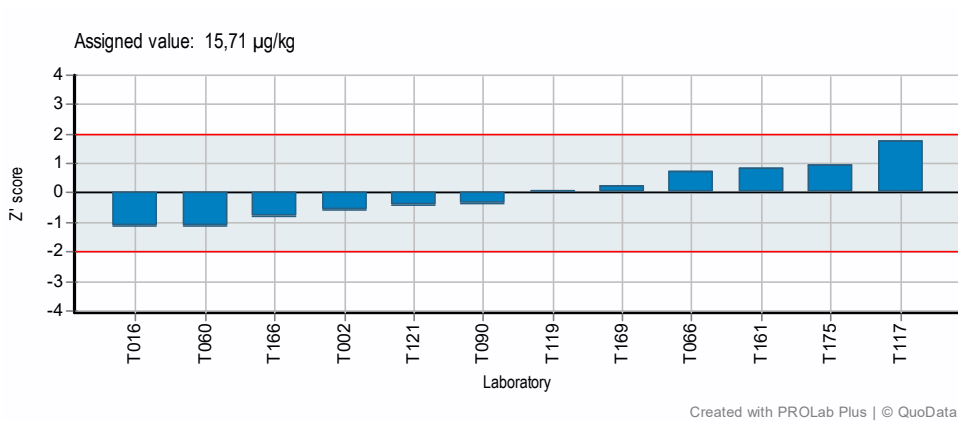
Test material DF5706Y, dried figs (slurry), confirmatory

DF5706Y, aflatoxins B1 + B2 + G1 + G2 (sum)

Assigned value and target standard deviations.

Analyte	Assigned value µg/kg				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty u (x _{pt})	u<0,3 σ _{pt}	Origin σ _{pt}	σ _{pt}	lower	upper
aflatoxins B1 + B2 + G1 + G2 (sum)	12	15,71	4,94	31,44	1,78	No	Horwitz	4,70	5,66	25,75

Figure 24: Z' scores for dried figs (slurry), aflatoxins B1 + B2 + G1 + G2 (sum)



Percentage of satisfactory scores 100,00%

Concentration, arithmetic mean	n= 12	15,84 µg/kg
Standard deviation	n= 12	4,62 µg/kg
Coefficient of variation	n= 12	29,14 %

Test material DF5706Y, dried figs (slurry), confirmatory

Results of confirmatory analyses performed on test material DF5706Y.

DF5706Y, aflatoxins B1 + B2 + G1 + G2 (sum)

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T002	12,89	50,00		-0,56		0,20	YES
T016	10			-1,14			YES
T060	10,16			-1,10			YES
T066	19,42			0,74			YES
T090	13,84			-0,37			NO
T117	24,7			1,79			-
T119	16,04	1,45		0,07			YES
T121	13,6	0,04	93,00	-0,42		0,25	YES
T161	20,1			0,87		0,10	YES
T166	11,74			-0,79	2,70	8,00	YES
T169	16,99			0,26		2,00	YES
T175	20,6	9,10	98,00	0,97		0,60	YES

Concentration, DL and QL have the measurement unit of µg/kg.

Test material DF5706Y, dried figs (slurry), screening

Results of screening analyses performed on test material DF5706Y.

DF5706Y, aflatoxins B1 + B2 + G1 + G2 (sum)

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T069	18	87	93	0,46	100	-	NO

Concentration, DL and QL have the measurement unit of µg/kg.

Proficiency test DF5706O, result contents

Test material DF5706O, ochratoxin A in dried figs (slurry)

- **Result of confirmatory "A"**
- **Result of screening "B"**

Test material DF5706O, dried figs (slurry), confirmatory

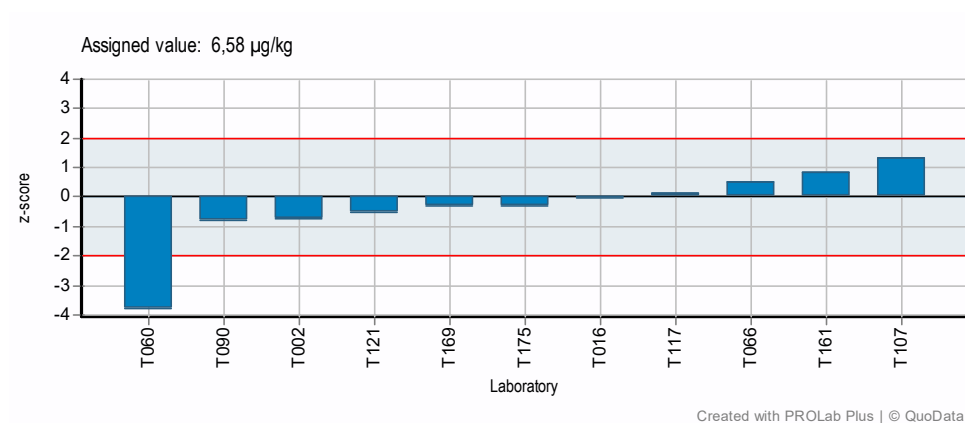
DF5706O, ochratoxin A

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
ochratoxin A	10*	6,58	1,23	18,69	0,49	Yes	PTp: 25%	1,64	3,30	9,86

*result of laboratory T060 is considered as invalid.

Figure 25: z-scores for dried figs (slurry), ochratoxin A



Percentage of satisfactory scores 90,91%

Concentration, arithmetic mean	n= 11	6,04 µg/kg
Standard deviation	n= 11	2,18 µg/kg
Coefficient of variation	n= 11	36,11 %

Test material DF5706O, dried figs (slurry), confirmatory

Results of confirmatory analyses performed on test material DF5706O.

DF5706O, ochratoxin A

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	z-score	DL	QL	ISO 17025
T002	5,34	50,00		-0,75		0,20	YES
T016	6,5			-0,05			YES
T060	0,35			-3,79			NO
T066	7,47	10,00	74,00	0,54	0,60	2,00	YES
T090	5,29	30,00		-0,78	0,15	0,50	NO
T107	8,77	99,00	98,00	1,33	0,88	1,21	YES
T117	6,79	28,00	93,80	0,13		1,00	YES
T121	5,77	0,07	94,00	-0,49		1,00	YES
T161	8			0,87		0,30	YES
T169	6,09	25,60	100,25	-0,30		0,50	YES
T175	6,1	2,70	97,00	-0,29		1,00	YES

Concentration, DL and QL have the measurement unit of µg/kg.

Proficiency test R5707Y, result contents

Test material R5707Y, aflatoxins B/G in rice

- **Result of confirmatory "A"**

- **Result of screening "B"**

Test material R5707Y, rice, confirmatory

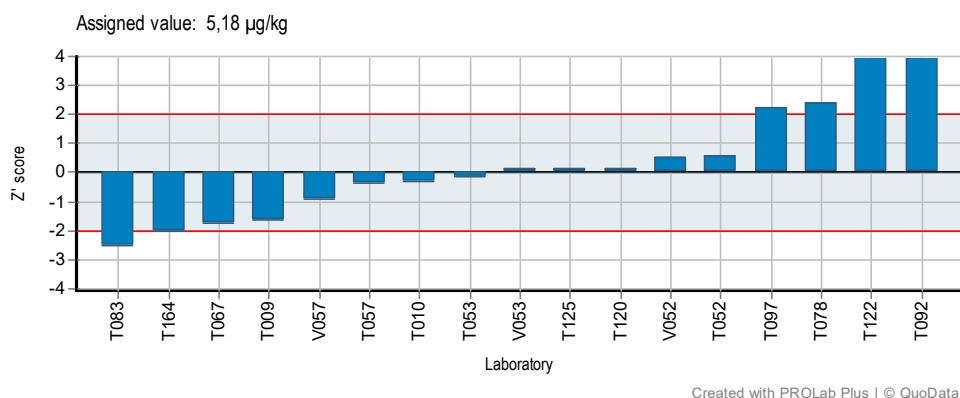
R5707Y, aflatoxin B1

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty u (x _{pt})	u<0,3 σ _{pt}	Origin σ _{pt}	σ _{pt}	lower	upper
aflatoxin B1	16*	5,18	1,52	29,34	0,48	No	PTp: 25%	1,29	2,42	7,94

*result of laboratory T092 is considered as invalid.

Figure 26: Z' scores for rice, aflatoxin B1



Percentage of satisfactory scores 70,59%

Concentration, arithmetic mean	n= 17	9,18 µg/kg
Standard deviation	n= 17	15,16 µg/kg
Coefficient of variation	n= 17	165,16 %

Test material R5707Y, rice, confirmatory

Results of confirmatory analyses performed on test material R5707Y.

R5707Y, aflatoxin B1

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T009	2,9	25,00		-1,65	0,13	0,25	YES
T010	4,74	30,00	80,00	-0,32	1,00	2,00	YES
T052	5,95	0,00		0,56	0,50	2,50	YES
T053	5,02	9,35		-0,12	0,50	1,00	YES
T057	4,69		87,00	-0,36		0,10	NO
T067	2,75	28,20	81,25	-1,76	0,10	0,80	YES
T078	8,49			2,40			NO
T083	1,7	44,00	118,10	-2,52		1,00	YES
T092	66,5			44,45	5,00	10,00	NO
T097	8,3	1,20		2,26	0,20	0,60	NO
T120	5,37			0,14	0,50	1,00	NO
T122	16,67			8,33			-
T125	5,36	0,80	91,84	0,13		2,50	YES
T164	2,43	8,30		-1,99	1,30		YES
V052	5,89	0,00		0,51	0,50	2,50	YES
V053	5,34	9,35		0,12	0,50	1,00	YES
V057	3,9		106,00	-0,93		0,10	YES

Concentration, DL and QL have the measurement unit of µg/kg.

Test material R5707Y, rice, confirmatory

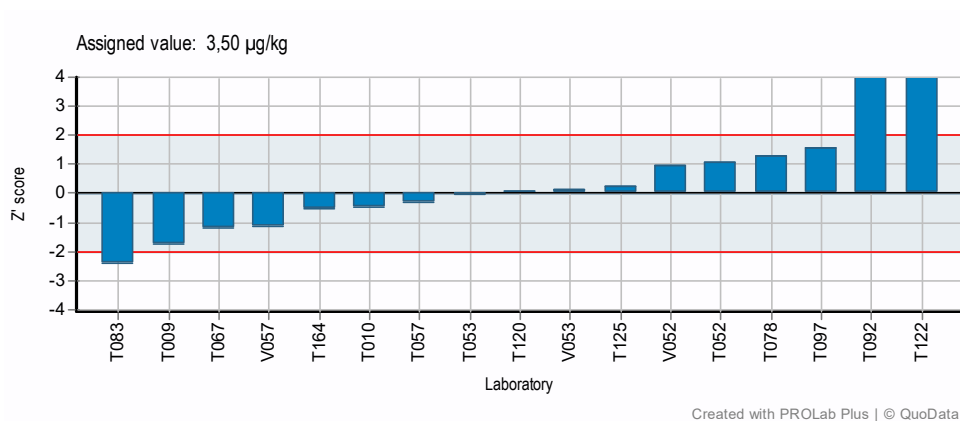
R5707Y, aflatoxin B2

Assigned value and target standard deviations.

Analyte	Assigned value $\mu\text{g}/\text{kg}$				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	Algorithm A ISO5725-5 (Alg.AS)	Standard deviation	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ_{pt}	lower	upper
aflatoxin B2	16*	3,50	1,28	36,57	0,40	No	PTp: 25%	0,87	1,57	5,42

*result of laboratory T122 is considered as invalid.

Figure 27: Z' scores for rice, aflatoxin B2



Percentage of satisfactory scores 82,35%

Concentration, arithmetic mean	n= 17	11,28 $\mu\text{g}/\text{kg}$
Standard deviation	n= 17	26,01 $\mu\text{g}/\text{kg}$
Coefficient of variation	n= 17	230,64 %

Test material R5707Y, rice, confirmatory

Results of confirmatory analyses performed on test material R5707Y.

R5707Y, aflatoxin B2

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T009	1,83	20,00		-1,73	0,06	0,13	YES
T010	3,03	30,00	80,00	-0,48	1,00	2,00	YES
T052	4,53	0,00		1,08	0,50	2,50	YES
T053	3,47	5,77		-0,03	0,50	1,00	YES
T057	3,18		99,00	-0,33		0,10	NO
T067	2,33	0,00	0,00	-1,21	0,03	0,10	YES
T078	4,75			1,30			NO
T083	1,2	44,00	113,60	-2,39		0,25	YES
T092	33,5			31,22	5,00	10,00	NO
T097	5			1,57	0,06	0,17	NO
T120	3,56			0,07	0,50	1,00	NO
T122	108,07			108,80			-
T125	3,76	0,48	89,32	0,27		2,50	YES
T164	3,01	11,00		-0,51	0,40		YES
V052	4,43	0,00		0,97	0,50	2,50	YES
V053	3,65	5,77		0,16	0,50	1,00	YES
V057	2,41		96,00	-1,13		0,10	YES

Concentration, DL and QL have the measurement unit of µg/kg.

Test material R5707Y, rice, confirmatory

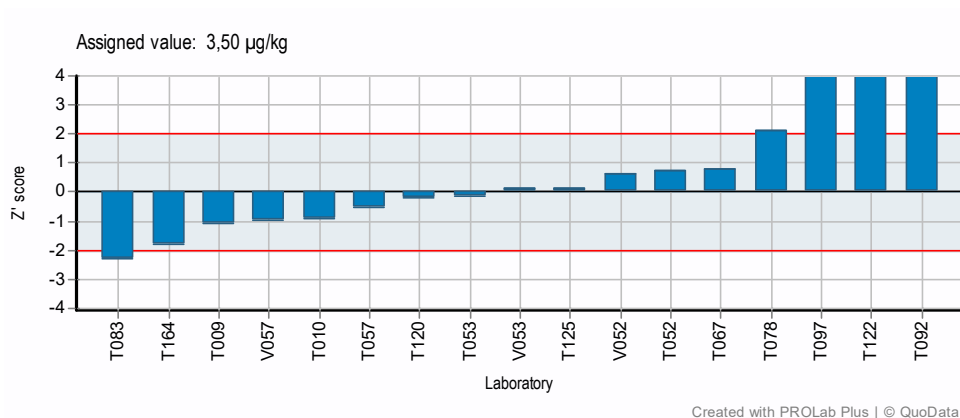
R5707Y, aflatoxin G1

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty u (x _{pt})	u<0,3 σ _{pt}	Origin σ _{pt}	σ _{pt}	lower	upper
aflatoxin G1	16*	3,50	1,23	35,14	0,38	No	PTp: 25%	0,88	1,59	5,41

*result of laboratory T092 is considered as invalid.

Figure 28: Z' scores for rice, aflatoxin G1



Percentage of satisfactory scores 70,59%

Concentration, arithmetic mean	n= 17	6,43 µg/kg
Standard deviation	n= 17	9,34 µg/kg
Coefficient of variation	n= 17	145,37 %

Test material R5707Y, rice, confirmatory

Results of confirmatory analyses performed on test material R5707Y.

R5707Y, aflatoxin G1

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T009	2,49	25,00		-1,06	0,13	0,25	YES
T010	2,61	30,00	90,00	-0,93	1,00	2,00	YES
T052	4,22	0,00		0,75	0,50	2,50	YES
T053	3,39	7,69		-0,12	0,50	1,00	YES
T057	3,02		87,00	-0,50		0,10	NO
T067	4,27	0,00	0,00	0,81	0,01	0,04	YES
T078	5,53			2,12			NO
T083	1,3	44,00	109,70	-2,30		1,00	YES
T092	41			39,23	5,00	10,00	NO
T097	10,4			7,22	0,25	0,76	NO
T120	3,34			-0,17	0,50	1,00	NO
T122	12,01			8,90			-
T125	3,63	0,64	89,64	0,14		2,50	YES
T164	1,8	13,00		-1,78	1,30		YES
V052	4,1	0,00		0,63	0,50	2,50	YES
V053	3,61	7,69		0,12	0,50	1,00	YES
V057	2,55		106,00	-0,99		0,10	YES

Concentration, DL and QL have the measurement unit of µg/kg.

Test material R5707Y, rice, confirmatory

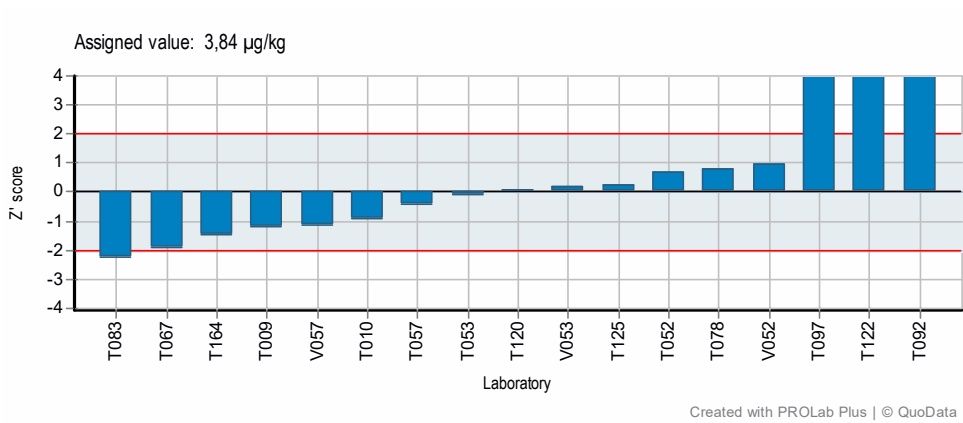
R5707Y, aflatoxin G2

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty $u(x_{pt})$	$u < 0,3 \sigma_{pt}$	Origin σ_{pt}	σ'_{pt}	lower	upper
aflatoxin G2	16*	3,84	1,62	42,19	0,51	No	PTp: 25%	1,02	1,56	6,12

*result of laboratory T092 is considered as invalid.

Figure 29: Z' scores for rice, aflatoxin G2



Percentage of satisfactory scores 76,47%

Concentration, arithmetic mean	n= 17	7,31 µg/kg
Standard deviation	n= 17	12,62 µg/kg
Coefficient of variation	n= 17	172,64 %

Test material R5707Y, rice, confirmatory

Results of confirmatory analyses performed on test material R5707Y.

R5707Y, aflatoxin G2

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T009	2,47	20,00		-1,20	0,06	0,13	YES
T010	2,78	30,00	90,00	-0,93	1,00	2,00	YES
T052	4,62	0,00		0,68	0,50	2,50	YES
T053	3,73	4,90		-0,10	0,50	1,00	YES
T057	3,38		86,00	-0,40		0,10	NO
T067	1,69	0,00	0,00	-1,89	0,05	0,20	YES
T078	4,76			0,81			NO
T083	1,3	44,00	102,80	-2,23		0,25	YES
T092	55			44,91	5,00	10,00	NO
T097	10,3			5,67	0,08	0,23	NO
T120	3,95			0,10	0,50	1,00	NO
T122	12,46			7,57			-
T125	4,12	0,51	89,04	0,25		2,50	YES
T164	2,19	9,70		-1,45	0,40		YES
V052	4,97	0,00		0,99	0,50	2,50	YES
V053	4,04	4,90		0,18	0,50	1,00	YES
V057	2,55		86,00	-1,13		0,10	YES

Concentration, DL and QL have the measurement unit of µg/kg.

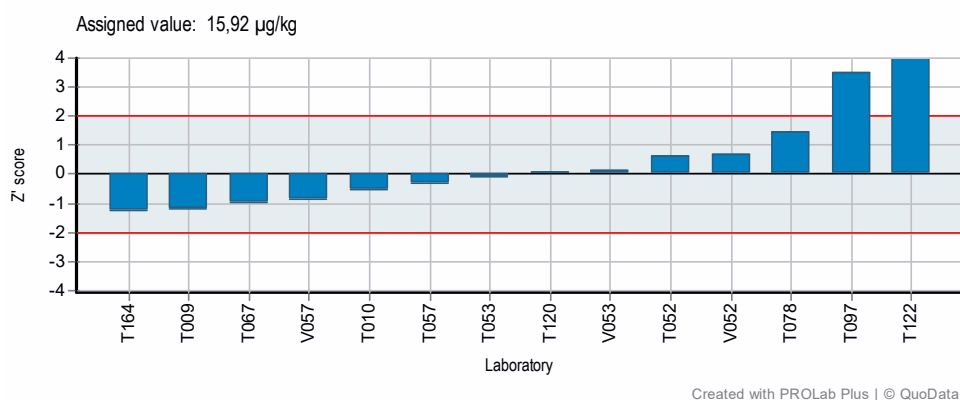
Test material R5707Y, rice, confirmatory

R5707Y, aflatoxins B1 + B2 + G1 + G2 (sum)

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty u (x _{pt})	u<0,3 σ _{pt}	Origin σ _{pt}	σ _{pt}	lower	upper
aflatoxins B1 + B2 + G1 + G2 (sum)	14	15,92	5,92	37,19	1,98	No	Horwitz	4,75	5,63	26,21

Figure 30: Z' scores for rice, aflatoxins B1 + B2 + G1 + G2 (sum)



Percentage of satisfactory scores 85,71%

Concentration, arithmetic mean	n= 14	25,93 µg/kg
Standard deviation	n= 14	36,06 µg/kg
Coefficient of variation	n= 14	139,10 %

Test material R5707Y, rice, confirmatory

Results of confirmatory analyses performed on test material R5707Y.

R5707Y, aflatoxins B1 + B2 + G1 + G2 (sum)

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T009	9,72	25,00		-1,21			-
T010	13,16			-0,54	4,00	8,00	YES
T052	19,32	0,00		0,66	2,00	10,00	YES
T053	15,62	6,95		-0,06	2,00	4,00	YES
T057	14,27			-0,32			-
T067	11,05	0,00	0,00	-0,95	0,00	1,70	YES
T078	23,53			1,48			NO
T097	34	3,30	65,00	3,51	0,32	0,96	NO
T120	16,22			0,06	2,00	4,00	NO
T122	149,21			25,91			-
T164	9,43			-1,26			YES
V052	19,39	0,00		0,67	2,00	10,00	YES
V053	16,64	6,95		0,14	2,00	4,00	YES
V057	11,41			-0,88		0,10	YES

Concentration, DL and QL have the measurement unit of µg/kg.

Proficiency test R5707O, result contents

Test material R5707O, ochratoxin A in rice

- **Result of confirmatory "A"**

- **Result of screening "B"**

Test material R5707O, rice, confirmatory

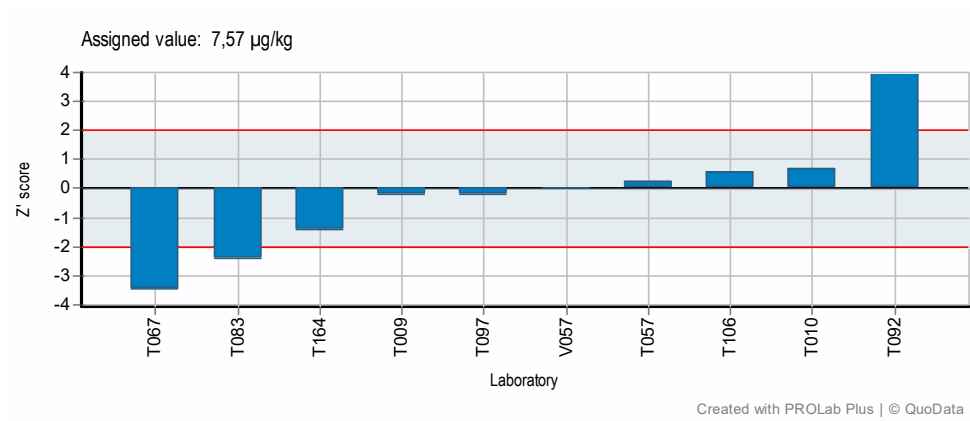
R5707O, ochratoxin A

Assigned value and target standard deviations.

Analyte	Assigned value				Standard deviation for proficiency assessment				Satisfactory range	
	Data points, n	MADe/Median	MADe	CV (%)	Standard uncertainty u (x _{pt})	u<0,3 σ _{pt}	Origin σ _{pt}	σ _{pt}	lower	upper
ochratoxin A	9*	7,57	1,82	24,04	0,76	No	PTp: 25%	1,89	3,49	11,65

*result of laboratory T067 is considered as invalid.

Figure 31: Z' scores for rice, ochratoxin A



Percentage of satisfactory scores 70,00%

Concentration, arithmetic mean	n= 10	9,36 µg/kg
Standard deviation	n= 10	10,43 µg/kg
Coefficient of variation	n= 10	111,48 %

Test material R5707O, rice, confirmatory

Results of confirmatory analyses performed on test material R5707O.

R5707O, ochratoxin A

Summary results of measured values							
Lab	Concentration	MU [%]	Recovery rate [%]	Z' score	DL	QL	ISO 17025
T009	7,12	30,00		-0,22	0,70	0,15	YES
T010	8,96	30,00	80,00	0,68	1,00	2,00	YES
T057	8,13		106,00	0,27		0,10	NO
T067	0,52	0,00	96,98	-3,46	0,06	0,20	YES
T083	2,7	44,00	107,90	-2,39		1,00	YES
T092	38			14,92	5,00	10,00	NO
T097	7,13	2,14	91,50	-0,22	0,44	1,44	NO
T106	8,8	50,00		0,60		2,00	NO
T164	4,67	17,00		-1,42	2,50		YES
V057	7,57		108,00	0,00		0,10	YES

Concentration, DL and QL have the measurement unit of µg/kg.

ANNEX

ANNEX

ANALYTICAL METHODS USED

aflatoxin M1 in bovine milk, MI5700A

Analytical methods used by participants

aflatoxin M1	
Methods	Laboratory Code
HPLC-MS/MS	T007-T091-T092-T120-T191-V120
HPLC/FLD	T026-T029-T035-T044-T045-T070-T096-T097-T122-T124-T185-V070
HPLC/UV	T165
LC-MS/MS	T009-T057-T153
UHPLC-MS/MS	T189
UNI EN ISO 14501:2021	T026

aflatoxin M1	
Is the analytical method a routine one?	Laboratory Code
NO	T120-V120
YES	T007-T009-T026-T029-T035-T044-T045-T070-T091-T092-T096-T097-T122-T124-T165-T185-T189-V070

Action level

aflatoxin M1	
Action level µg/Kg or ng/kg	Laboratory Code
0,01	T044
0,05	T045
0,050	T035
0,058	T097
0,5	T122
8	V070
9	T096
50	T007-T026-T029-T124-T189
50,00	T120-V120

Number of replicates (1 replicate = 1 extraction)

aflatoxin M1	
Number of replicates	Laboratory Code
1	T026-T029-T044-T057-T096-T124
2	T007-T035-T045-T091-T092-T097-T122-T189-V070-V120
3	T185
4	T120

Recovery

aflatoxin M1	
Recovery calculated by	Laboratory Code
Reference material	T029
Spiked sample	T007-T009-T026-T044-T045-T057-T096-T097-T185
standard addition	V120

Quality

aflatoxin M1	
Quality control implemented	Laboratory Code
Control chart	T044-T045-T057-T091
Control chart with Certified Reference Material (CRM)	T026-T070-T124-V070
Control chart with Reference Material (RM)	T007-T029-T097
Duplicate analyses	T120-T122-V120
Regular participation to proficiency test (PT)	T189
Spiked sample	T092-T185

Measurement uncertainty

aflatoxin M1	
	Laboratory Code
Type of uncertainty	
expanded standard	T007-T009-T029-T035-T057-T092-T097-T124 T026-T096
Coverage Factor	
2	T007-T097
27,3	T026

Reference

aflatoxin M1	
Reference	Laboratory Code
ISO 14501:2021	T029
Internal method	T007-T009-T035-T044-T057-T091-T092-T096-T097-T120-T124- T185-T189-V120
external standard	T122

Source of standards for chromatographic analysis

source	AFLA M1
Sigma, Aldrich, Fluka	T009-T057-T070-T122-T124-T185-T189-V070
LGC standard	T029
N'TOX	T097
CIFGA	T091
Dr. Ehrenstorfer	T045
r-Biopharm - Rhone	T026
Honeywell	T044
Biopure	T007

Sample preparation

Amount of test sample for the extraction

aflatoxin M1	
Sample volume (ml)	Laboratory Code
5	T057-T120-V120
10,0	T097
10	T185-T189
20	T007
20,0	T044
50	T026-T045-T091-T096-T122-T124
100	T029

Sample treatment

aflatoxin M1	
	Laboratory Code
Solvent Extraction	
acetonitrile	T044
Extraction procedure	
centrifugation	T044
centrifuge	T122
shaking	T189
vortex	T045-T120-V120
Extraction time (minutes)	
15	T044
Sample clean up	
Immunoafinity column	T029-T044-T045-T091-T097-T122-T124-T189-V070
SPE	T029-T070
Sample work up	
centrifugation	T029-T120-V120
defatting	T070-V070
dilution	T044-T045
filtration	T122

HPLC methodology and conditions

aflatoxin M1	
	Laboratory Code
Gradient Isocratic	T045-T091-T097-T120-T189-V120 T026-T029-T035-T044-T070-T122-T124-T185-V070
Column packing	
C18	T026-T029-T044-T045-T070-T091-T097-T120-T122-T124-T185-T189-V070-V120
Injection volume (µl)	
0,5	T091
20	T044-T189
30	T097
50	T029-T122-T185
100	T026-T045-T070-T124-V070
Column brand	
ACE	T122
Acquity™	T189
Agilent	T045
Gemini™	T185
Luna®	T091
Novapak®	T029
Superspher®	T124
Thermo ODS Hypersil	T044
Zorbax®	T097
Mobile phase components	
Water/acetonitrile	T045
acetonitrile / methanol / water	T044-T097-T124
acn/water	T029
formic acid / water	T189
methanol / formic acid / water	T091
water	T185
water/Acetonitrile (75:25)	T122
Flow rate (ml/min)	
0,4	T091
0,5	T045-T189
0,8	T029-T122
1	T044-T097-T124-T185-V070

aflatoxin M1 in bovine milk, MI5700B

Analytical methods used by participants

aflatoxin M1	
Methods	Laboratory Code
ELISA	T005-T024-T025-T026-T029-T030-T034-T035-T039-T055-T056-T061-T070-T097-T103-T112-T113-T115-T134-T159-T186-T190-T193-V026-V070-V103-V186-V190
LC Ms	T100
Lateral flow	T152-T158-V158
RIA	T192
lateral flow	V158
aflatoxin M1	
Is the analytical method a routine one ?	Laboratory Code
NO	T103-T115-T192-V103
YES	T005-T024-T025-T026-T029-T030-T034-T035-T039-T055-T056-T061-T070-T097-T100-T112-T113-T134-T152-T158-T159-T186-T190-T193-V026-V070-V158-V186-V190

Action level

aflatoxin M1	
Action level µg/Kg or ng/kg	Laboratory Code
0,005	T039
0,025	T192
0,035	T035
0,05	T061-T134-T158-V158
5	T034
40	T193
50	T025-T029-T097-T186-V186
50,0	T026-V026
200	T030

aflatoxin M1	
In case of non-compliant results by screening, do you proceed with confirmatory analysis ?	Laboratory Code
NO	T186-T192-V186
YES	T005-T025-T026-T029-T030-T034-T035-T039-T061-T097-T134-T158-T159-T193-V026

Number of replicates (1 replicate = 1 extraction)

aflatoxin M1	
Number of replicates	Laboratory Code
1	T005-T056-T061-T070-T134-T158-T192-V026-V070-V158
2	T026-T029-T030-T034-T035-T039-T055-T097-T103-T112-T115-T186-T193-V103-V186
3	T159

Recovery

aflatoxin M1	
Recovery calculated by	Laboratory Code
In-house Reference Material (RM)	T030-T035
Internal standard	T005-T034-T112-T158-T193-V158
Reference material	T029
Spiked sample	T026-T056-T097-T134-V026

Quality

aflatoxin M1	
Quality control implemented	Laboratory Code
Control chart	T097-T134
Control chart with Certified Reference Material (CRM)	T112-T186
Control chart with Reference Material (RM)	T005-T026-T055-T115-T193-V026
Duplicate analyses	T029-T030-T039-T056
MUESTRA ENRIQUECIDA	T192
Regular participation to proficiency test (PT)	T035-T061-T158-T159-T190-V158-V190

Reference

aflatoxin M1	
Reference	Laboratory Code
ISO14675	T035
Internal method	T029-T103-T134-T158-T193-V103-V158
Kit insert	T005-T026-T030-T034-T039-T055-T056-T061-T097-T112-T113-T115-T159-T186-T192-V026

Source of test kits

aflatoxin M1	
Manufacturer (Kit Code)	Laboratory Code
Astori Technica Quik afla M1 Astori Technical	V158
Romer Labs 10002120	T030
Astori Technica Quik afla M1	T158
CHARM CATM-035B	T192
Gold Standard Diagnostics HU0040001	T115
Gold Standard Diagnostics HU0040003	T055
Gold Standard diagnostics HU0040003	T159
Gold standard diagnostics 2524814821	T103-V103
PROGNOSIS BIO-SHIELD M1 ES B20192	T029
PROGNOSIS BIOTECH B2596080	T005
ProGnosis Biotech S2148 / S2196	T152
Prognosis Biotech TK669	T097
Prognosis SKU B2548/B2596	T056
Tecna	T025-T026-T034-T193-V026
Tecna H0807064	T061
Tecna HU0040001	V190
Tecna HU0040002	T112
r-Biopharm	T035-T113-T134
r-Biopharm Art.No.R1121	T039

Sample preparation

Amount of test sample

aflatoxin M1	
Sample volume (ml)	Laboratory Code
0,1	T025-T026-T029-T061-T152-T159-T193-V026
1	T034-T056
1,2	T035
5	T030-T039
10	T005
10,9	T112
6,5	T192
15	T134
20	T097

Sample treatment

aflatoxin M1	
	Laboratory Code
Extraction	
n/a	T039
plated neat	T030
Solvent extraction	
N/A	T039
water	T112
Extraction procedure	
Centrifugation	T039
shaking	T112
Extraction time (minutes)	
10	T039
Sample work up	
centrifugation	T039-T097

Calibration curve (for ELISA)

aflatoxin M1	
Calibration Curve	Laboratory Code
4 parameters	T025-T055-T103-V103
Cubic spline	T039
Linear regression	T030-T112
Logit / Log	T034-T097
Point to point	T005-T026-T070-T115-T134-T186-T193-V026-V070-V186
Provided by manufacturer	T159
Spline	T061

aflatoxins B/G in feed, F5701YA

Analytical methods used by participants

aflatoxins B/G	
Methods	Laboratory Code
HPLC-MS/MS	T041-T076-T092-T185
HPLC/FLD	T067-T105-T133-T161-T162
LC-MS/MS	T008
OTHER	T069

aflatoxins B/G	
Is the analytical method a routine one?	Laboratory Code
NO	T092
YES	T008-T041-T067-T076-T105-T133-T161-T162-T185

Action level

aflatoxins B/G	
Action level µg/Kg	Laboratory Code
2	T076
10	T067
20,0	T133

Number of replicates (1 replicate = 1 extraction)

aflatoxins B/G	
Number of replicates	Laboratory Code
1	T041-T076-T105
2	T008-T067-T092-T133
3	T185

Recovery

aflatoxins B/G	
Recovery calculated by	Laboratory Code
In-house Reference Material (RM)	T067
Internal standard	T041
Not Applicable	T008
Spiked sample	T076-T105-T185

Quality

aflatoxins B/G	
Quality control implemented	Laboratory Code
Control chart	T105-T162
Control chart with Reference Material (RM)	T041-T067
Not Applicable	T008
Spiked sample	T076-T092-T133-T185

Measurement uncertainty

aflatoxins B/G	
Type of uncertainty	Laboratory Code
expanded	T041-T067-T076-T133
standard	T105
Coverage Factor	
2	T067-T076
2,0	T133

Reference

aflatoxins B/G	
Reference	Laboratory Code
Internal method	T008-T041-T067-T076-T092-T105-T133-T162-T185

Source of standards for chromatographic analysis

source	Afla B1	Afla B2	Afla G1	Afla G2	aflatoxins (sum)
Sigma, Aldrich, Fluka	T162	T162	T162	T162	T162
r-Biopharm - Rhone	T076	T076	T076	T076	T076
Biopure	T185	T185	T185	T185	
Supelco	T067	T067	T067	T067	T067
DR					
EHRENSTORFER	T133	T133	T133	T133	T133
HPC	T008	T008	T008	T008	T008

Sample preparation

Amount of test sample for the extraction

aflatoxins B/G	
Sample volume (g)	Laboratory Code
5,0	T008
5	T067-T076
12,5	T133
6,3	T041
8	T185
40	T105

Sample treatment

aflatoxins B/G	
	Laboratory Code
Additives for Extraction	
MgSO4	T041
NaCl	T041-T067-T105-T133
Quchers	T008
Solvent Extraction	
acetonitrile	T008-T041-T076
methanol	T133
methanol / water	T067-T105
with acetic acid	T041
Extraction procedure	
blending	T105
shaking	T041-T133
vortex	T008-T067-T076
vortex and sonication	T133
Extraction time (minutes)	
1	T041
3	T105
5	T008
10	T067
180	T133
Sample clean up	
Immunoaffinity column	T041-T067-T105-T133
SPE	T008
Sample work up	
centrifugation	T041
dilution	T067
filtration	T008-T133

HPLC methodology and conditions

aflatoxins B/G	
	Laboratory Code
Gradient	T008-T041-T076-T133
Isocratic	T067-T105
Column paking	
C18	T008-T041-T067-T076-T105-T133
Injection volume (µl)	
3	T008
5,0	T041
5	T076
20	T067-T133
150	T105

Column brand	
Accucore Aq C18	T008
Raptor BIPHENYL	T076
Symmetry®	T105
YMC™	T133
Zorbax®	T041-T067
Mobile phase components	
acetonitrile / methanol / water	T105-T133
ammonium formiate	T041
methanol / formic acid / water	T041-T067-T076
water/ formic acid / ammonium acetate	T008
pH of mobile phase	
4,0	T067
Flow rate (ml/min)	
0,3	T008
0,4	T041-T076
1,0	T067
1	T105-T133
Post column derivatization	
NA	T008
photochemical	T067
potassium bromide	T105

aflatoxins B/G in feed, F5701YB

Analytical methods used by participants

aflatoxins B/G	
Methods	Laboratory Code
ELISA	T005-T006-T040-T064-T108-T115-T138-V064-V115
Flourometer VICAM	T069

aflatoxins B/G	
Is the analytical method a routine one ?	Laboratory Code
NO	T115-V115
YES	T006-T040-T064-T069-T108-T138-V064

Action level

aflatoxins B/G	
Action level µg/Kg	Laboratory Code
5	T006
20	T040-T064-T138-V064
50	T108
300	T069

aflatoxins B/G	
In case of non-compliant results by screening, do you proceed with confirmatory analysis ?	Laboratory Code
NO	T064-V064
YES	T005-T006-T040-T108-T138

Number of replicates (1 replicate = 1 extraction)

aflatoxins B/G	
Number of replicates	Laboratory Code
1	T040-T064-T138-V064
2	T005-T006-T069-T108-T115-V115

Recovery

aflatoxins B/G	
Recovery calculated by	Laboratory Code
Control material Test Veritas F3603/CM	T006
Spiked sample	T005

Quality

aflatoxins B/G	
Quality control implemented	Laboratory Code
All offered methods	T006
Control chart	T005
Control chart with Certified Reference Material (CRM)	T064-T138-V064
Control chart with Reference Material (RM)	T108-T115-V115
Duplicate analyses	T040
Regular participation to proficiency test (PT)	T069

Reference

aflatoxins B/G	
Reference	Laboratory Code
Kit insert	T005-T006-T064-T108-T115-T138-V064-V115

Source of test kits

aflatoxins B/G	
Manufacturer (Kit Code)	Laboratory Code
Neogen VX8030	T064-V064
GOLD STANDARDS DIAGNOSTICS 2502204105	T005
Gold Standard Diagnostics 2502204104	T138
Gold Standard Diagnostics HU0040055	T115
Gold Standard Diagnostics HU0040097	V115
ProGnosis Biotech Bio-shield B1 OP	T006
r-Biopharm R4701	T108
r-Biopharm R5202	T040

Sample preparation

Amount of test sample

aflatoxins B/G	
Sample volume (g)	Laboratory Code
2	T108
5	T040-T138
5,0	T115-V115
10	T005
20	T006-T064-V064
50	T069

Sample treatment

aflatoxins B/G	
	Laboratory Code
Extraction	
70% methanol	T006
Methanol/NaCl add NaCl	T138 T005-T069-V115
Solvent extraction	
methanol	T006-T040
methanol / water	T005-T064-T069-T108-V064-V115
methanol 70% + NaCl 4%	T138
water	T115
Extraction procedure	
blending	T006-T069
shaking	T005-T040-T108-T115-V115
vortex	T064-T138-V064
Extraction time (minutes)	
1	V064-T069
3	T005-T040-T115-T138-V115
4	T006
15	T108

Sample clean up	
wash buffer solution	T040
Immunoaffinity column	T069
Sample work up	
centrifugation	T108
dilution	T040-T069
filtration	T005-T006-T064-T115-T138-V064-V115

Calibration curve (for ELISA)

aflatoxins B/G	
Calibration Curve	Laboratory Code
5 standards	T138
Cubic spline	T108
Logit / Log	T006-T040-T138
Point to point	T005-T064-T115-V064-V115

ochratoxin A in feed, F5701OA

Analytical methods used by participants

ochratoxin A	
Methods	Laboratory Code
HPLC-MS/MS	T076-T092-T185
HPLC/FLD	T067-T097-T161
HPLC/MS	T041

ochratoxin A	
Is the analytical method a routine one?	Laboratory Code
NO	T092
YES	T041-T067-T076-T097-T161-T185

Action level

ochratoxin A	
Action level µg/Kg	Laboratory Code
10	T067

Number of replicates (1 replicate = 1 extraction)

ochratoxin A	
Number of replicates	Laboratory Code
1	T041
2	T067-T076-T092-T097
3	T185

Recovery

ochratoxin A	
Recovery calculated by	Laboratory Code
In-house Reference Material (RM)	T067
Internal standard	T041
Spiked sample	T076-T097-T185

Quality

ochratoxin A	
Quality control implemented	Laboratory Code
Control chart	T097
Control chart with Reference Material (RM)	T041-T067
Spiked sample	T076-T092-T185

Measurement uncertainty

ochratoxin A	
	Laboratory Code
Type of uncertainty	
expanded standard	T041-T067-T076-T097 T185
Coverage Factor	
2	T067-T076-T097

Reference

ochratoxin A	
Reference	Laboratory Code
Internal method	T041-T067-T076-T092-T097-T185

Source of standards for chromatographic analysis

source	OTA
LabStandard	T097
Supelco	T067-T185

Sample preparation

Amount of test sample for the extraction

ochratoxin A	
Sample volume (g)	Laboratory Code
5	T067-T076
6,3	T041
8	T185
10	T097

Sample treatment

ochratoxin A	
	Laboratory Code
Additives for Extraction	
MgSO4	T041
NaCl	T041-T067
Solvent Extraction	
acetonitrile	T041-T076-T185
methanol / water	T067-T097
with acetic acid	T041
Extraction procedure	
shaking	T041-T185
sonication	T097
vortex	T067-T097
Extraction time (minutes)	
1	T041
10	T067
12	T097
Sample clean up	
Immunoaffinity column	T041-T067-T097
Sample work up	
centrifugation	T041-T097
dilution	T067

HPLC methodology and conditions

ochratoxin A	
	Laboratory Code
Gradient	T041-T076-T185
Isocratic	T067-T097
Column packing	
C18	T041-T067-T097-T185
Injection volume (µl)	
5,0	T041
5	T076
20	T067
30	T097
50	T185

Column brand	
Kinetex	T097
Raptor BIPHENYL	T076
Zorbax®	T041-T067-T185
Mobile phase components	
Methanol/Acetonitrile/Water/Acetic acid	T097
acetonitrile / water / glacial acetic acid	T067
ammonium formiate	T041
methanol / formic acid / water	T041-T076
water/ formic acid / ammonium acetate	T185
pH of mobile phase	
4,0	T067
7	T185
Flow rate (ml/min)	
0,4	T041-T076
0,5	T185
0,9	T097
1,0	T067
Post column derivatization	
UVE	T067

ochratoxin A in feed, F5701OB

Analytical methods used by participants

ochratoxin A	
Methods	Laboratory Code
ELISA	T040-T096-T113-T138

ochratoxin A	
Is the analytical method a routine one ?	Laboratory Code
YES	T040-T096-T113-T138

Action level

ochratoxin A	
Action level µg/Kg	Laboratory Code
50	T096
100	T040-T138

ochratoxin A	
In case of non-compliant results by screening, do you proceed with confirmatory analysis ?	Laboratory Code
YES	T040-T096-T138

Number of replicates (1 replicate = 1 extraction)

ochratoxin A	
Number of replicates	Laboratory Code
1	T040-T096-T138

Recovery

ochratoxin A	
Recovery calculated by	Laboratory Code
Certified Reference Material	T138
Spiked sample	T096

Quality

ochratoxin A	
Quality control implemented	Laboratory Code
Control chart	T096
Control chart with Certified Reference Material (CRM)	T138
Duplicate analyses	T040

Reference

ochratoxin A	
Reference	Laboratory Code
Kit insert	T040-T096-T138

Source of test kits

ochratoxin A	
Manufacturer (Kit Code)	Laboratory Code
Gold Standard Diagnostics 2509207138	T138
r-Biopharm R5402	T040

Sample preparation

Amount of test sample

ochratoxin A	
Sample volume (g)	Laboratory Code
5	T138
10	T040

Sample treatment

ochratoxin A	
	Laboratory Code
Extraction	
Methanol/NaCl	T138
Solvent extraction	
ECO Extractor solution	T040
methanol 70% + NaCl 4%	T138
Extraction procedure	
shaking	T040
vortex	T138
Extraction time (minutes)	
3	T138
5	T040
Sample clean up	
wash buffer solution	T040
Sample work up	
dilution	T040
filtration	T138

Calibration curve (for ELISA)

ochratoxin A	
Calibration Curve	Laboratory Code
Logit / Log	T040-T138
Point to point	T096

DON in feed, F5702DA

Analytical methods used by participants

DON	
Methods	Laboratory Code
HPLC-MS/MS	T012-T077-T092-T185
HPLC/DAD	T119
HPLC/FLD	T121
HPLC/MS	T041
HPLC/UV	T060
LC-MS/MS	T149-V149
UHPLC-MS/MS	T018-V018

DON	
Is the analytical method a routine one?	Laboratory Code
NO	T092
YES	T012-T018-T041-T077-T119-T149-T185-V018

Action level

DON	
Action level µg/Kg	Laboratory Code
5000	T119

Number of replicates (1 replicate = 1 extraction)

DON	
Number of replicates	Laboratory Code
1	T041-T119
2	T018-T092-V018
3	T185

Recovery

DON	
Recovery calculated by	Laboratory Code
Internal standard	T041
Spiked sample	T018-T119-T185-V018

Quality

DON	
Quality control implemented	Laboratory Code
Control chart with Reference Material (RM)	T041-T119
Spiked sample	T018-T092-T185-V018

Measurement uncertainty

DON	
Type of uncertainty	Laboratory Code
expanded standard	T018-T041-V018 T119-T185
Coverage Factor	
2	T018-T119-V018

Reference

DON	
Reference	Laboratory Code
Internal method	T018-T041-T092-T119-T185-V018

Source of standards for chromatographic analysis

source	DON
Sigma, Aldrich, Fluka	T185
Biopure	T018-V018
Trilogy	T119

Sample preparation

Amount of test sample for the extraction

	DON	Laboratory Code
Sample volume (g)		
5,0		T018
5		T119-V018
6,3		T041
8		T185

Sample treatment

	DON	Laboratory Code
Additives for Extraction		
MgSO4		T041
NaCl		T041-T119
Solvent Extraction		
acetonitrile / water		T018-V018
methanol / acetonitrile/ water		T185
water		T119
with acetic acid		T041
Extraction procedure		
blending		T119
shaking		T018-T185-V018
Extraction time (minutes)		
1		T041
2		T119
60		T018-V018
90		T185
Sample clean up		
Immunoaffinity column		T119
Mycospin		T018-V018
QUECHERS		T041
Sample work up		
centrifugation		T041
dilution		T119
filtration		T018-V018

HPLC methodology and conditions

	DON	Laboratory Code
Gradient		T018-T041-T185-V018
Isocratic		T119
Column packing		
C18		T018-T041-T119-T185-V018
Injection volume (µl)		
2,0		T018-V018
5,0		T041
50		T185
100		T119
Column brand		
Acquity™		T018-V018
Zorbax®		T041-T119-T185
Mobile phase components		
agua:formiato de amonio, ´cido formico:metanol		V018
ammonium formiate		T041
methanol / formic acid / water		T018-T041-T119
water/ formic acid / ammonium acetate		T185
Flow rate (ml/min)		
0,3		T018-V018
0,4		T041
0,5		T185
0,8		T119

DON in feed, F5702DB

Analytical methods used by participants

DON	
Methods	Laboratory Code
Aokin ELISA	T178 T064-T115-V064-V115

DON	
Is the analytical method a routine one ?	Laboratory Code
NO	T115-V115
YES	T064-T178-V064

Action level

DON	
Action level µg/Kg	Laboratory Code
1000	T064-V064

DON	
In case of non-compliant results by screening, do you proceed with confirmatory analysis ?	Laboratory Code
NO	T064-V064

Number of replicates (1 replicate = 1 extraction)

DON	
Number of replicates	Laboratory Code
1	T064-V064
2	T115-T178-V115

Recovery

DON	
Recovery calculated by	Laboratory Code
In-house Reference Material (RM)	T178

Quality

DON	
Quality control implemented	Laboratory Code
Control chart with Certified Reference Material (CRM)	T064-V064
Control chart with Reference Material (RM)	T115-V115

Reference

DON	
Reference	Laboratory Code
Kit insert	T064-T115-V064-V115

Source of test kits

DON	
Manufacturer (Kit Code)	Laboratory Code
Neogen 8331NE	T064-V064
Gold Standard Diagnostics HU0040009	T115
Gold Standard Diagnostics HU0040017	V115
aokin MY-QC-02	T178

Sample preparation

Amount of test sample

DON	
Sample volume (g)	Laboratory Code
5	T115-T178
20	T064-V064

Sample treatment

DON	
	Laboratory Code
Extraction	
add NaCl	T115-V115
Solvent extraction	
methanol	T115
water	T064-V064-V115
Extraction procedure	
shaking	T115-V115
vortex	T064-V064
Extraction time (minutes)	
1	T064-V064
3	T115-V115
Sample work up	
dilution	V064
filtration	T064-T115-V115

Calibration curve (for ELISA)

DON	
	Laboratory Code
Calibration Curve	
Point to point	T064-T115-V064-V115

T-2 & HT-2 in feed, F5702TA

Analytical methods used by participants

T-2 & HT-2	
Methods	Laboratory Code
HPLC-MS/MS	T012-T077-T092-T185
HPLC/MS	T041
LC-MS/MS	T149-T156-V149

T-2 & HT-2	
Is the analytical method a routine one?	Laboratory Code
YES	T012-T041-T077-T156-T185

Number of replicates (1 replicate = 1 extraction)

T-2 & HT-2	
Number of replicates	Laboratory Code
1	T041
2	T092
3	T185

Recovery

T-2 & HT-2	
Recovery calculated by	Laboratory Code
Internal standard	T041
Spiked sample	T185

Quality

T-2 & HT-2	
Quality control implemented	Laboratory Code
Control chart with Reference Material (RM)	T041
Spiked sample	T092-T185

Measurement uncertainty

	T-2 & HT-2
Type of uncertainty	Laboratory Code
expanded	T041

Reference

	T-2 & HT-2
Reference	Laboratory Code
Internal method	T041-T092

Source of standards for chromatographic analysis

source	T2	HT2	T2+HT2 (sum)
Sigma, Aldrich, Fluka	T185	T185	

Sample preparation

Amount of test sample for the extraction

	T-2 & HT-2
Sample volume (g)	Laboratory Code
6,3	T041
8	T185

Sample treatment

	T-2 & HT-2
Additives for Extraction	Laboratory Code
MgSO4	T041
NaCl	T041
Solvent Extraction	
acetonitrile	T041
methanol / acetonitrile/ water with acetic acid	T185 T041
Extraction procedure	
shaking	T041-T185
Extraction time (minutes)	
1	T041
90	T185
Sample clean up	
QUECHERS	T041
Sample work up	
centrifugation	T041

HPLC methodology and conditions

	T-2 & HT-2
Gradient	Laboratory Code
	T041-T185
Column packing	
C18	T041-T185
Injection volume (µl)	
5,0	T041
50	T185
Column brand	
Zorbax®	T041-T185
Mobile phase components	
ammonium formiate	T041
methanol / formic acid / water	T041
water/ formic acid / ammonium acetate	T185
Flow rate (ml/min)	
0,4	T041
0,5	T185

T-2 & HT-2 in feed, F5702TB

Analytical methods used by participants

T-2 & HT-2	
Methods	Laboratory Code
ELISA	T064-V064-V115

T-2 & HT-2	
Is the analytical method a routine one ?	Laboratory Code
NO	V115
YES	T064-V064

Action level

T-2 & HT-2	
Action level µg/Kg	Laboratory Code
50	T064-V064

T-2 & HT-2	
In case of non-compliant results by screening, do you proceed with confirmatory analysis ?	Laboratory Code
NO	T064-V064

Number of replicates (1 replicate = 1 extraction)

T-2 & HT-2	
Number of replicates	Laboratory Code
1	T064-V064
2	V115

Quality

T-2 & HT-2	
Quality control implemented	Laboratory Code
Control chart with Certified Reference Material (CRM)	T064-V064
Control chart with Reference Material (RM)	V115

Reference

T-2 & HT-2	
Reference	Laboratory Code
Kit insert	T064-V064-V115

Source of test kits

T-2 & HT-2	
Manufacturer (Kit Code)	Laboratory Code
Neogen VX8230	T064-V064
Gold Standard Diagnostics HU0040010	V115

Sample preparation

Amount of test sample

T-2 & HT-2	
Sample volume (g)	Laboratory Code
5	V115
20	T064-V064

Sample treatment

T-2 & HT-2	
	Laboratory Code
Extraction	
add NaCl	V115
Solvent extraction	
methanol	V115
methanol / water	T064-V064

Extraction procedure	
shaking	V115
vortex	T064-V064
Extraction time (minutes)	
1	T064-V064
3	V115
Sample work up	
filtration	T064-V064-V115

Calibration curve (for ELISA)

T-2 & HT-2	
Calibration Curve	Laboratory Code
Point to point	T064-V064-V115

DON in common wheat, WH5703DA

Analytical methods used by participants

DON	
Methods	Laboratory Code
HPLC-MS/MS	T002-T012-T077-T092-T126-T148-T167-T188
HPLC/FLD	T083
HPLC/MS	T131
LC-MS/MS	T106-T125-T149-V149
UHPLC-MS/MS	T078

DON	
Is the analytical method a routine one?	Laboratory Code
NO	T092
YES	T002-T012-T077-T078-T083-T106-T125-T126-T131-T148-T188

Action level

DON	
Action level µg/Kg	Laboratory Code
125	T083
600	T148-T188
1000	T125

Number of replicates (1 replicate = 1 extraction)

DON	
Number of replicates	Laboratory Code
1	T012-T083
2	T092-T148-T188
3	T125
4	T002-T126

Recovery

DON	
Recovery calculated by	Laboratory Code
In-house Reference Material (RM)	T083
MRC	T148
Spiked sample	T012-T125-T131-T188

Quality

	DON	Laboratory Code
Quality control implemented		
Control chart		T131
Control chart with Certified Reference Material (CRM)		T188
Control chart with Reference Material (RM)		T083
Regular participation to proficiency test (PT)		T012-T148
Spiked sample		T092-T125

Measurement uncertainty

	DON	Laboratory Code
Type of uncertainty		
expanded		T002-T012-T125-T131-T148-T188
standard		T083
Coverage Factor		
1,96		T125
2		T131-T148-T188

Reference

	DON	Laboratory Code
Reference		
17641:2022		T078
Internal method		T002-T083-T092-T125-T131-T148
UNI EN 17641:2022		T188

Source of standards for chromatographic analysis

source	DON	Laboratory Code
Sigma, Aldrich, Fluka		T148
LGC standard		T083
Supelco		T125
Biopure		T131
RomerLabs		T188

Sample preparation

Amount of test sample for the extraction

	DON	Laboratory Code
Sample volume (g)		
2		T125
2,0		T148
5		T012-T131
5,0		T188
25		T083

Sample treatment

	DON	Laboratory Code
Additives for Extraction		
glacial acetic acid		T188
Solvent Extraction		
acetonitrile		T131
acetonitrile / water		T125-T188
methanol / water		T148
water		T083
Extraction procedure		
shaking		T083-T188
vortex		T125-T148
Extraction time (minutes)		
15		T083
20		T188
52		T125
60		T012-T148
Sample clean up		
Immunoaffinity column		T083
QueChers, n-Hexane,		T188

Sample work up	
centrifugation	T148-T188
filtration	T083-T125

HPLC methodology and conditions

	DON
Gradient	Laboratory Code T083-T125-T131-T148-T188
Column paking	
C18	T083-T125-T131-T148
HSS T3	T188
Injection volume (µl)	
2	T125
5	T148
10	T188
Column brand	
Acquity™	T083
HSS T3 100*2,1mm 1,8micro;m	T188
Waters BEH tecnology	T188
Zorbax®	T125
Mobile phase components	
+ammonium formiate	T188
WATER/AMMONIUM ACETATE/ACETIC ACID/METHANOL	T125
methanol / formic acid / water	T148-T188
Flow rate (ml/min)	
0,3	T125
0,4	T188
4	T148

DON in common or durum wheat, WH5703DB

Analytical methods used by participants

	DON
Methods	Laboratory Code
ELISA	T065-T115-V064-V065-V115
Lateral flow	T051-T063-T064-T114-V063

	DON
Is the analytical method a routine one ?	Laboratory Code
NO	T063-T064-T115-V064-V115
YES	T051-T065-T114-V065

Action level

	DON
Action level µg/Kg	Laboratory Code
1000	T114
2000	T063-T064-V063-V064
5000	T065-V065

	DON
In case of non-compliant results by screening, do you proceed with confirmatory analysis ?	Laboratory Code
NO	T063-T064-V063-V064
YES	T065-T114-V065

Number of replicates (1 replicate = 1 extraction)

	DON
Number of replicates	Laboratory Code
1	T051-T063-T064-V063-V064
2	T115-V115
3	T065-V065
4	T114

Recovery

	DON
Recovery calculated by	Laboratory Code
Internal standard	T114
Matrix matched calibration	T051

Quality

	DON
Quality control implemented	Laboratory Code
Control chart with Certified Reference Material (CRM)	T063-V063-V064
Control chart with Reference Material (RM)	T051-T064-T114-T115-V115

Reference

	DON
Reference	Laboratory Code
Kit insert	T051-T065-T114-T115-V064-V065-V115
manuale Alfa Nano Safe Food	T063-T064-V063

Source of test kits

	DON
Manufacturer (Kit Code)	Laboratory Code
Charm ROSA DONQ2	T114
Neogen 8331NE	V064
Gold Standard Diagnostics HU0040009	V115
Gold Standard Diagnostics HU0040017	T115
Prognosis D4548	T065-V065
Romer Labs 24-58042	T051
Vicam 100000246	T063-T064-V063

Sample preparation

Amount of test sample

	DON
Sample volume (g)	Laboratory Code
5,0	T065-V065
5	T115-V115
10	T051-T114
20	V064
40	T063-T064-V063

Sample treatment

	DON
	Laboratory Code
Extraction	
add NaCl	T115-V115
water based with extraction powder	T051
Solvent extraction	
Alfa Xtra	T063-T064-V063
ethanol / water	V063
methanol	T065-V065-V115
water	T051-T114-T115-V064
Extraction procedure	
shaking	T051-T065-T114-T115-V065-V115
vortex	T063-T064-V063-V064

Extraction time (minutes)	
1	T063-T064-T114-V063-V064
2	T051-T065-V065
3	T115-V115
Sample work up	
centrifugation	T051
dilution	T114
filtration	T063-T064-T065-T115-V063-V064-V065-V115

Calibration curve (for ELISA)

	DON	Laboratory Code
Calibration Curve		
1 standard		T065-V065
Point to point		T115-V064-V115

T-2 & HT-2 in common or durum wheat, WH5703TA

Analytical methods used by participants

	T-2 & HT-2	Laboratory Code
Methods		
HPLC-MS/MS		T002-T012-T077-T092-T148-T154-T188
HPLC/MS		T131
LC-MS/MS		T126-T149-V149

	T-2 & HT-2	Laboratory Code
Is the analytical method a routine one?		
NO		T092-T154
YES		T002-T012-T077-T126-T131-T148-T188

Action level

	T-2 & HT-2	Laboratory Code
Action level µg/Kg		
20		T148-T188

Number of replicates (1 replicate = 1 extraction)

	T-2 & HT-2	Laboratory Code
Number of replicates		
1		T154
2		T092-T148-T188
4		T002-T126

Recovery

	T-2 & HT-2	Laboratory Code
Recovery calculated by		
CRM		T154
MRC		T148
Spiked sample		T131-T188

Quality

	T-2 & HT-2	Laboratory Code
Quality control implemented		
Control chart		T131
Control chart with Certified Reference Material (CRM)		T154
Control chart with Reference Material (RM)		T188
Regular participation to proficiency test (PT)		T148
Spiked sample		T092

Measurement uncertainty

	T-2 & HT-2
	Laboratory Code
Type of uncertainty	
expanded	T002-T131-T148-T154-T188
Coverage Factor	
2	T131-T148-T154-T188

Reference

	T-2 & HT-2
	Laboratory Code
Reference	
ISO EN 17641:2022	T154
Internal method	T002-T092-T131-T148
UNI EN 17641:2022	T188

Source of standards for chromatographic analysis

source	T2	HT2	T2+HT2 (sum)
Sigma, Aldrich, Fluka	T148	T148	
HPC	T154	T154	T154
Biopure	T131	T131	
RomerLabs	T188	T188	

Sample preparation

Amount of test sample for the extraction

	T-2 & HT-2
	Laboratory Code
Sample volume (g)	
2,0	T148
5	T131-T154-T188

Sample treatment

	T-2 & HT-2
	Laboratory Code
Additives for Extraction	
glacial acetic acid	T188
Solvent Extraction	
acetic acid in acetonitrile	T154
acetonitrile	T131
acetonitrile / water	T188
methanol / water	T148
Extraction procedure	
shaking	T154-T188
vortex	T148
Extraction time (minutes)	
10	T154
20	T188
60	T148
Sample clean up	
QueChers, n-Hexane,	T188
Sample work up	
centrifugation	T148-T154-T188

HPLC methodology and conditions

	T-2 & HT-2
	Laboratory Code
Gradient	T131-T148-T154-T188
Column paking	
C18	T131-T148-T154
HSS T3	T188
Injection volume (µl)	
5	T148
10	T154-T188
Column brand	
HSS T3 100*2,1mm 1,8µm	T188
Waters BEH technology	T188
Zorbax®	T154

Mobile phase components	
+ammonium formiate	T188
ammonium formiate	T154
methanol / formic acid / water	T148-T188
Flow rate (ml/min)	
0,4	T154-T188
4	T148

T-2 & HT-2 in common or durum wheat, WH5703TB

Analytical methods used by participants

T-2 & HT-2	
Methods	Laboratory Code
ELISA	T101-T115-V064
Lateral flow	T063-T064-V063

T-2 & HT-2	
Is the analytical method a routine one ?	Laboratory Code
NO	T063-T064-T115-V063
YES	T101-V064

Action level

T-2 & HT-2	
Action level µg/Kg	Laboratory Code
25	T101
150	T063-T064-V063-V064

T-2 & HT-2	
In case of non-compliant results by screening, do you proceed with confirmatory analysis ?	Laboratory Code
NO	T063-T064-V063-V064
YES	T101

Number of replicates (1 replicate = 1 extraction)

T-2 & HT-2	
Number of replicates	Laboratory Code
1	T063-T064-V063-V064
2	T101-T115

Quality

T-2 & HT-2	
Quality control implemented	Laboratory Code
Control chart with Certified Reference Material (CRM)	T063-T064-V063-V064
Control chart with Reference Material (RM)	T115

Reference

T-2 & HT-2	
Reference	Laboratory Code
Kit insert	T101-T115-V064
manuale Alfa Nano Safe Food	T063-T064-V063

Source of test kits

	T-2 & HT-2	
Manufacturer (Kit Code)	Laboratory Code	
BiooScientific Vicam 100000247	V063	
Neogen 8230	V064	
Gold Standard Diagnostics HU0040010	T115	
Vicam 100000247	T063-T064	
Tecna	T101	

Sample preparation

Amount of test sample

	T-2 & HT-2	
Sample volume (ml)	Laboratory Code	
5	T101-T115	
20	V064	
40	T063-T064-V063	

Sample treatment

	T-2 & HT-2	
	Laboratory Code	
Extraction		
add NaCl	T115	
Solvent extraction		
Alfa Xtra	T063-T064-V063	
methanol	T115	
methanol / water	V064	
Extraction procedure		
shaking	T115	
vortex	T063-T064-V063-V064	
Extraction time (minutes)		
1	T063-T064-V063-V064	
3	T115	
Sample work up		
filtration	T063-T064-T115-V063-V064	

Calibration curve (for ELISA)

	T-2 & HT-2	
Calibration Curve	Laboratory Code	
Point to point	T101-T115-V064	

aflatoxins B/G in paprika or chili, SP5705YA

Analytical methods used by participants

	aflatoxins B/G	
Methods	Laboratory Code	
HPLC-MS/MS	T002	
HPLC/FLD	T016-T023-T036-T060-T084-T097-T117-T121-T122-T157-T162-T169-V023	
UHPLC	T057-V057	

	aflatoxins B/G	
Is the analytical method a routine one?	Laboratory Code	
NO	T057	
YES	T002-T023-T036-T084-T097-T117-T122-T157-T162-T169-V023-V057	

Action level

aflatoxins B/G	
Action level µg/Kg	Laboratory Code
4	T122
5	T023-V023- T084-T117
10	T036-T097-T157

Number of replicates (1 replicate = 1 extraction)

aflatoxins B/G	
Number of replicates	Laboratory Code
1	T023-T036-T057-T084-T117-T157-V023-V057
2	T097-T122-T169
4	T002

Recovery

aflatoxins B/G	
Recovery calculated by	Laboratory Code
CRM (ERM-BD286)	T122
Method Validation	T117
QC	T023-V023
Spiked sample	T036-T057-T084-T097-T157-V057

Quality

aflatoxins B/G	
Quality control implemented	Laboratory Code
CRM (ERM-BD286)	T122
Control chart	T057-T084-T097-T162-V057
Control chart with Certified Reference Material (CRM)	T023-T157
Duplicate analyses	T036
Spiked sample	T117

Measurement uncertainty

aflatoxins B/G	
Type of uncertainty	Laboratory Code
expanded	T002-T023-T036-T057-T084-T097-T117-T157-V023
Coverage Factor	
2	T023-T084-T097-T117-T157

Reference

aflatoxins B/G	
Reference	Laboratory Code
Internal method	T002-T023-T036-T084-T117-T157-T162-V023-V057
external standard	T122

Source of standards for chromatographic analysis

source	Afla B1	Afla B2	Afla G1	Afla G2	aflatoxins (sum)
Sigma, Aldrich,	T057-T084-T122-	T057-T084-T122-	T057-T084-T122-	T057-T084-T122-	T057-T084-T122-
Fluka	T162-V057	T162-V057	T162-V057	T162-V057	T162-V057
Biopure	T036	T036	T036	T036	T036
LGC standard	T157-T169	T169	T169	T169	T023-T157-T169-
IRMM	T117	T117	T117	T117	V023
Supelco	T097	T097	T097	T097	T117
					T097

Sample preparation

Amount of test sample for the extraction

aflatoxins B/G	
Sample volume (g)	Laboratory Code
5	T023-T057-T157-V023-V057
10	T084-T117
15	T036-T097
25	T169
50	T122

Sample treatment

aflatoxins B/G	
	Laboratory Code
Additives for Extraction	
NaCl	T036-T084-T117-T122-T157
Solvent Extraction	
methanol / water	T023-T036-T084-T097-T117-T122-T157-V023
Extraction procedure	
blending	T036-T084
shaking	T023-T117-V023
ultraturrax®	T122-T157
Extraction time (minutes)	
2	T097-T157
3	T122
5	T084
15	T117
20	T023-V023
30	T036
Sample clean up	
Immunoaffinity column	T023-T036-T084-T097-T117-T122-T157-V023
Sample work up	
centrifugation, dilution	T157
filtration	T023-T036-T084-T097-T117-V023

HPLC methodology and conditions

aflatoxins B/G	
	Laboratory Code
Gradient	T036-T057-T084-V057
Isocratic	T023-T097-T117-T122-T157-V023
Column paking	
C12	T036
C18	T023-T057-T084-T097-T117-T122-T157-V023-V057
Injection volume (µl)	
10	T057-T084
20	T097-T122
50	T157
100	T023-T036-V023
200	T117
Column brand	
ACE	T122
Acquity™	T084
OTHER	T117
Phenomenex Kinetex®	T023-V023
Pursuit®XRs	T157
Waters	T117
Zorbax®;	T036-T097
Mobile phase components	
Methanol/Water	T057
Water/THF	T117
acetonitrile / methanol / water	T023-T036-T084-T097-T122-T157-V023
pH of mobile phase	
7,4	T122
Flow rate (ml/min)	
0,4	T084
0,5	T117
0,8	T057
1	T023-T122-T157-V023
1,0	T097
1,5	T036
Post column derivatization	
Kobra Cell™	T023-T057-T157-V023
Saturated Iodine solution	T117
UVE	T097-T122

ochratoxin A in paprika, SP57050A

Analytical methods used by participants

ochratoxin A	
Methods	Laboratory Code
HPLC-MS/MS	T002
HPLC/FLD	T016-T023-T036-T060-T084-T097-T117-T119-T121-T169-V023
UHPLC	T057-V057
UHPLC-MS/MS	T018

ochratoxin A	
Is the analytical method a routine one?	Laboratory Code
NO	T057
YES	T002-T018-T036-T084-T097-T117-T119-T169-V023-V057

Action level

ochratoxin A	
Action level µg/Kg	Laboratory Code
20	T023-T036-T084-T097-T117-T119-V023
100	T016

Number of replicates (1 replicate = 1 extraction)

ochratoxin A	
Number of replicates	Laboratory Code
1	T023-T036-T057-T084-T117-T119-V023-V057
2	T018-T097-T169
4	T002

Recovery

ochratoxin A	
Recovery calculated by	Laboratory Code
Method Validation	T117
QC	T023-V023
Spiked sample	T018-T036-T057-T084-T097-T119-V057

Quality

ochratoxin A	
Quality control implemented	Laboratory Code
Control chart	T057-T084-T097-V057
Control chart with Certified Reference Material (CRM)	V023
Control chart with Reference Material (RM)	T023-T119
Duplicate analyses	T018-T036
Spiked sample	T117

Measurement uncertainty

ochratoxin A	
Type of uncertainty	Laboratory Code
expanded	T002-T018-T023-T036-T057-T084-T097-T117-V023-V057
standard	T119
Coverage Factor	
2	T018-T023-T084-T097-T117-T119-V023

Reference

ochratoxin A	
Reference	Laboratory Code
Internal method	T002-T018-T023-T036-T057-T084-T097-T117-T119-V023-V057

Source of standards for chromatographic analysis

source	OTA
Sigma, Aldrich, Fluka	T057-T084-V057
Biopure	T018-T036
LGC, Dr. Ehrenstorfer	T117
LabStandard	T097
Trilogy	T119
LGC standard	T023-V023

Sample preparation

Amount of test sample for the extraction

ochratoxin A	
Sample volume (g)	Laboratory Code
5	T057-T117-V023-V057
10	T018-T084-T097
15	T036
25	T119

Sample treatment

ochratoxin A	
	Laboratory Code
Additives for Extraction	
NaCl	T036-T084-T119
NaHCO ₃	T117
Solvent Extraction	
Methanol 70% in NaHCO ₃ 1%	T023-V023
Sodium bicarbonate / PEG	T018
methanol / water	T036-T084-T097-T119
water	T117
Extraction procedure	
blending	T036-T084-T119
shaking	T018-T023-T117-V023
sonication	T097
vortex	T097
Extraction time (minutes)	
2	T119
5	T084
12	T097
15	T117
20	T023-V023
30	T036
60	T018
Sample clean up	
Immunoaffinity column	T018-T023-T036-T084-T097-T117-T119-V023
Sample work up	
centrifugation	T097
dilution	T119
filtration	T018-T023-T036-T084-T117-V023

HPLC methodology and conditions

ochratoxin A	
	Laboratory Code
Gradient	T036-T057-V057
Isocratic	T018-T023-T084-T097-T117-T119-V023
Column packing	
C12	T036
C18	T018-T023-T057-T084-T097-T117-T119-V057
Injection volume (µl)	
2,0	T018
10	T057-T084-V057
30	T097
100	T023-T036-T117-T119-V023

Column brand	
ACE	T119
Acquity™	T018-T084
Kinetex	T097
Phenomenex Kinetex®	T023-V023
Waters	T117
Zorbax®	T036
Mobile phase components	
Methanol/Acetonitrile/Water/Acetic acid	T097
Methanol/Water	T057-V057
acetonitrile / water / glacial acetic acid	T018-T023-T036-T084-T117-T119-V023
Flow rate (ml/min)	
0,3	T018-T084
0,8	T057-V057
0,9	T097
1	T023-T119-V023
1,0	T036-T117
Post column derivatization	
Kobra Cell&™	T057-V057

aflatoxins B/G in dried figs (slurry), DF5706YA

Analytical methods used by participants

aflatoxins B/G	
Methods	Laboratory Code
HPLC-MS/MS	T002
HPLC/FLD	T016-T060-T066-T090-T117-T119-T121-T161-T166-T169-T175

aflatoxins B/G	
Is the analytical method a routine one?	Laboratory Code
YES	T002-T016-T066-T090-T117-T119-T161-T175

Action level

aflatoxins B/G	
Action level µg/Kg	Laboratory Code
6	T090
6,0	T117
100	T016

Number of replicates (1 replicate = 1 extraction)

aflatoxins B/G	
Number of replicates	Laboratory Code
1	T016-T066-T090-T117-T119-T175
2	T169
4	T002

Recovery

aflatoxins B/G	
Recovery calculated by	Laboratory Code
Method Validation	T117
Spiked sample	T066-T090-T119-T175

Quality

aflatoxins B/G	
Quality control implemented	Laboratory Code
Control chart	T090
Control chart with Certified Reference Material (CRM)	T119
Quality control material	T066
Spiked sample	T117-T175

Measurement uncertainty

aflatoxins B/G	
Type of uncertainty	Laboratory Code
expanded standard	T002-T066-T090-T117-T175 T119
Coverage Factor	
2	T066-T090-T117-T119-T175

Reference

aflatoxins B/G	
Reference	Laboratory Code
AOAC 999.07	T119
Internal method	T002-T090-T117
UNI EN 14123:2008	T175

Source of standards for chromatographic analysis

source	Afla B1	Afla B2	Afla G1	Afla G2	aflatoxins (sum)
Sigma, Aldrich, Fluka	T066			T066	
Biopure	T090	T090	T090	T090	
IRMM	T117	T117	T117	T117	T117
Labstruments	T175	T175	T175	T175	T175
Trilogy	T119	T119	T119	T119	T119
Aokin		T066	T066		

Sample preparation

Amount of test sample for the extraction

aflatoxins B/G	
Sample volume (g)	Laboratory Code
10	T117
25	T066
50	T090-T119-T175

Sample treatment

aflatoxins B/G	
Additives for Extraction	Laboratory Code
NaCl	T066-T090-T117-T119-T175
Solvent Extraction	
methanol	T175
methanol / water	T066-T090-T117-T119
Extraction procedure	
blending	T090
shaking	T066-T117-T119-T175
Extraction time (minutes)	
3	T090
15	T117
20	T066
30	T119
60	T175
Sample clean up	
Immunoaffinity column	T066-T090-T117-T119-T175
Sample work up	
centrifugation	T175
dilution	T117-T119

HPLC methodology and conditions

aflatoxins B/G	
Gradient	Laboratory Code
Isocratic	T090
	T066-T117-T119-T175
Column packing	
C18	T066-T090-T117-T119-T175

Injection volume (µl)	
50	T066
100	T090-T119-T175
200	T117
Column brand	
Capital	T066
Hypersil®	T119
Lichrospher®	T090
Waters	T117
Mobile phase components	
Water/THF	T117
acetonitrile / methanol / water	T066-T090
methanol/acetonitrile/water/KBr/HNO3	T119
Flow rate (ml/min)	
0,5	T117
0,8	T090
1	T066-T119-T175
Post column derivatization	
Kobra Cell™	T090-T119
Saturated Iodine solution	T117
photochemical	T066
potassium bromide	T175

aflatoxins B/G in dried figs (slurry), DF5706YB

Analytical methods used by participants

aflatoxins B/G	
Methods	Laboratory Code
Fluorimeter VICAM	T069

aflatoxins B/G	
Is the analytical method a routine one ?	Laboratory Code
YES	T069

Action level

aflatoxins B/G	
Action level µg/Kg	Laboratory Code
10	T069

Number of replicates (1 replicate = 1 extraction)

aflatoxins B/G	
Number of replicates	Laboratory Code
2	T069

Quality

aflatoxins B/G	
Quality control implemented	Laboratory Code
Regular participation to proficiency test (PT)	T069

Sample preparation

Amount of test sample

aflatoxins B/G	
Sample volume (ml)	Laboratory Code
25	T069

Sample treatment

aflatoxins B/G	
	Laboratory Code
Extraction	
0,01% Tween20/ PBS	T069
Solvent extraction	
Methanol + H2O	T069
Extraction procedure	
blending	T069
Extraction time (minutes)	
1	T069
Sample clean up	
Immunoaffinity column	T069
Sample work up	
dilution	T069

ochratoxin A in dried figs (slurry), DF5706OA

Analytical methods used by participants

ochratoxin A	
Methods	Laboratory Code
HPLC-MS/MS	T002
HPLC/FLD	T016-T060-T066-T090-T107-T117-T121-T161-T169-T175

ochratoxin A	
Is the analytical method a routine one?	Laboratory Code
YES	T002-T016-T066-T090-T107-T117-T161-T175

Action level

ochratoxin A	
Action level µg/Kg	Laboratory Code
8	T090
8,0	T117
10	T107
100	T016

Number of replicates (1 replicate = 1 extraction)

ochratoxin A	
Number of replicates	Laboratory Code
1	T016-T066-T090-T107-T117-T175
2	T169
4	T002

Recovery

ochratoxin A	
Recovery calculated by	Laboratory Code
Method Validation	T117
Spiked sample	T016-T066-T090-T175

Quality

ochratoxin A	
Quality control implemented	Laboratory Code
Control chart	T016-T090
Control chart with Reference Material (RM)	T107
Quality control material	T066
Spiked sample	T117-T175

Measurement uncertainty

ochratoxin A	
	Laboratory Code
Type of uncertainty	
expanded	T002-T016-T066-T090-T107-T117-T175
Coverage Factor	
2	T066-T090-T107-T117-T175

Reference

ochratoxin A	
Reference	Laboratory Code
Internal method	T002-T016-T090-T117
UNI EN 15829:2010	T175
r-Biopharm Application Notes	T107

Source of standards for chromatographic analysis

source	OTA
Sigma, Aldrich, Fluka	T066
Romer	T107
Biopure	T090
LGC standard	T117
Labinstruments	T175

Sample preparation

Amount of test sample for the extraction

ochratoxin A	
Sample volume (g)	Laboratory Code
10	T117
12,5	T175
25	T066-T107
50	T090

Sample treatment

ochratoxin A	
	Laboratory Code
Additives for Extraction	
NaCl	T090
NaHCO ₃	T066-T117
Solvent Extraction	
methanol	T066
methanol / water	T090-T175
methanol/sodium bicarbonate	T107
water	T117
Extraction procedure	
blending	T090-T107
shaking	T066-T175
Extraction time (minutes)	
2	T107
3	T090
15	T117
40	T066
60	T175
Sample clean up	
Immunoaffinity column	T066-T090-T107-T117-T175
Sample work up	
filtration	T107-T117-T175

HPLC methodology and conditions

ochratoxin A	
	Laboratory Code
Gradient	T090
Isocratic	T066-T107-T117-T175
Column packing	
C18	T066-T090-T117-T175
ODS2	T107

Injection volume (µl)	
40	T066
100	T090-T107-T117
Column brand	
Capital	T066
GL Science	T107
Lichrospher®	T090
Waters	T117
Mobile phase components	
acetonitrile / methanol / water	T090
acetonitrile / water / glacial acetic acid	T066-T107-T117-T175
Flow rate (ml/min)	
0,8	T090
1	T066-T107-T175
1,0	T117

aflatoxins B/G in rice, R5707YA

Analytical methods used by participants

aflatoxins B/G	
Methods	Laboratory Code
HPLC-MS/MS	T092-T120
HPLC/FLD	T009-T052-T067-T083-T097-T122-T125-V052
LC-MS/MS	T010-T164
UHPLC	T053-T057-V053-V057
UHPLC-MS/MS	T078
UHPLC/FLD	T053-V053

aflatoxins B/G	
Is the analytical method a routine one?	Laboratory Code
NO	T057-T092
YES	T009-T010-T052-T053-T067-T078-T083-T097-T120-T122-T125-T164-V052-V053-V057

Action level

aflatoxins B/G	
Action level µg/Kg	Laboratory Code
1	T083
1,00	T120
4	T122
10	T067-T097
15,0	T052-V052
15,00	T053-V053
15	T125

Number of replicates (1 replicate = 1 extraction)

aflatoxins B/G	
Number of replicates	Laboratory Code
1	T057-T083-V057
2	T053-T067-T092-T097-T122-V053
3	T052-T125-T164-V052
4	T010
6	T120

Recovery

aflatoxins B/G	
Recovery calculated by	Laboratory Code
CRM (ERM-BD286)	T122
In-house Reference Material (RM)	T067-T083
Spiked sample	T010-T052-T053-T057-T097-T125-V052-V053-V057
result not corrected for recovery as in routine	T053-V053

Quality

aflatoxins B/G	
Quality control implemented	Laboratory Code
CRM (ERM-BD286)	T122
Control chart	T057-T097-V057
Control chart with Reference Material (RM)	T067-T083
Duplicate analyses	T120-T164
Spiked sample	T010-T052-T053-T092-T125-V052-V053

Measurement uncertainty

aflatoxins B/G	
Type of uncertainty	Laboratory Code
expanded standard	T052-T053-T057-T067-T097-T120-T125-V052-V053-V057 T010-T083-T164
Coverage Factor	
1,96	T125
2	T052-T053-T067-T097-V052-V053
2,00	T120

Reference

aflatoxins B/G	
Reference	Laboratory Code
17641:2022	T078
Internal method	T010-T052-T053-T057-T067-T083-T092-T120-T125-T164-V052-V053-V057
external standard	T122

Source of standards for chromatographic analysis

source	Afla B1	Afla B2	Afla G1	Afla G2	aflatoxins (sum)
Sigma, Aldrich, Fluka	T057-T164-V057	T057-T164-V057	T057-T164-V057	T057-T164-V057	T057-T164-V057
Trilogy Labs	T083	T083	T083	T083	T083
r-Biopharm - Rhone	T125	T125	T125	T125	T125
TRILOGY	T053-V053	T053-V053	T053-V053	T053-V053	T053-V053
Supelco	T067-T097	T067-T097	T067-T097	T067-T097	T067-T097
r-Biopharm - Rhone	T052-V052	T052-V052	T052-V052	T052-V052	T052-V052

Sample preparation

Amount of test sample for the extraction

aflatoxins B/G	
Sample volume (g)	Laboratory Code
5,0	T010-T053-T164-V053
5	T052-T057-T067-T120-T125-V052-V057
15	T097
25	T083
50	T122

Sample treatment

aflatoxins B/G	
Additives for Extraction	Laboratory Code
NaCl	T053-T067-T122-V053
Solvent Extraction	
methanol	T010
methanol / water	T052-T053-T067-T083-T097-T122-T125-V052-V053

Extraction procedure	
IAC column	T125
shaking	T010-T083
ultraturrax®	T053-T122-V053
vortex	T052-T067-T120-V052
Extraction time (minutes)	
2	T053-T097-V053
3	T122
10	T010-T067
15	T083
20	T052-V052
120	T125
Sample clean up	
Immunoaffinity column	T052-T053-T067-T083-T097-T122-T125-V052-V053
Sample work up	
Elution with Methanol	T052-V052
centrifugation	T010-T120
dilution	T067
filtration	T053-T097-T125-V053

HPLC methodology and conditions

afatoxins B/G	
	Laboratory Code
Gradient	T010-T083-T120-V057
Isocratic	T052-T053-T067-T097-T122-T125-V052-V053
Column packing	
C18	T010-T052-T053-T067-T083-T097-T120-T122-T125-V052-V053
Injection volume (µl)	
8	T125
10	T052-T057-V052-V057
20,0	T010-T053-V053
20	T067-T097-T122
Column brand	
ACE	T122
AGILENT	T010
Acquity™	T083
Ascentis®	T052-V052
OTHER	T125
Poroshell (Agilent)	T125
Zorbax®	T053-T067-T097-V053
Mobile phase components	
METHANOL/WATER	T053-V053
Methanol / Water	T052-V052
Methanol/Water	T057-V057
Methanol:water	T125
acetonitrile / methanol / water	T083-T097-T122
methanol / formic acid / water	T067
water/ formic acid / ammonium acetate	T010
pH of mobile phase	
4,0	T067
7,0	T052-V052
7,4	T122
Flow rate (ml/min)	
0,8	T052-T057-V052-V057
1,0	T053-T067-T097-V053
1	T122-T125
Post column derivatization	
UVE	T052-T053-T067-T097-T122-T125-V052-V053

ochratoxin A in rice, R5707OA

Analytical methods used by participants

ochratoxin A	
Methods	Laboratory Code
HPLC-MS/MS	T092-T106
HPLC/FLD	T009-T067-T083-T097
LC-MS/MS	T010-T164
UHPLC	T057-V057

ochratoxin A	
Is the analytical method a routine one?	Laboratory Code
NO	T057-T092
YES	T009-T067-T083-T097-T106-T164-V057

Action level

ochratoxin A	
Action level µg/Kg	Laboratory Code
1,0	T083
5	T097
10	T067

Number of replicates (1 replicate = 1 extraction)

ochratoxin A	
Number of replicates	Laboratory Code
1	T057-T083-V057
2	T067-T092-T097
3	T164
4	T010

Recovery

ochratoxin A	
Recovery calculated by	Laboratory Code
In-house Reference Material (RM)	T067-T083
Spiked sample	T010-T057-T097-V057

Quality

ochratoxin A	
Quality control implemented	Laboratory Code
Control chart	T057-T097-V057
Control chart with Reference Material (RM)	T067-T083
Duplicate analyses	T164
Spiked sample	T010-T092

Measurement uncertainty

ochratoxin A	
Type of uncertainty	Laboratory Code
expanded	T057-T067-T097-V057
standard	T083-T164
Coverage Factor	
2	T067-T097

Reference

ochratoxin A	
Reference	Laboratory Code
Internal method	T010-T057-T067-T083-T092-T097-T164-V057

Source of standards for chromatographic analysis

source	OTA
Sigma, Aldrich, Fluka	T057-T164-V057
Biopure	T083
LabStandard	T097
Supelco	T067

Sample preparation

Amount of test sample for the extraction

	ochratoxin A
Sample volume (g)	Laboratory Code
5,0	T010-T164
5	T057-T067-V057
10	T097
25	T083

Sample treatment

	ochratoxin A
	Laboratory Code
Additives for Extraction	
NaCl	T067
Solvent Extraction	
methanol	T010
methanol / water	T067-T083-T097
Extraction procedure	
shaking	T010-T083
sonication	T097
vortex	T067-T097
Extraction time (minutes)	
10	T010-T067
12	T097
15	T083
Sample clean up	
Immunoaffinity column	T067-T083-T097
Sample work up	
centrifugation	T010-T097
dilution	T067

HPLC methodology and conditions

	ochratoxin A
	Laboratory Code
Gradient	T010-T083-V057
Isocratic	T067-T097
Column packing	
C18	T010-T067-T083-T097
Injection volume (µl)	
10	T057-V057
20,0	T010
20	T067
30	T097
Column brand	
Acquity™	T083
Kinetex	T097
Zorbax®	T067
Mobile phase components	
Methanol/Acetonitrile/Water/Acetic acid	T097
Methanol/Water	T057-V057
acetonitrile / methanol / water	T083
acetonitrile / water / glacial acetic acid	T067
methanol / formic acid / ammonium acetate	T010
pH of mobile phase	
4,0	T067

Flow rate (ml/min)	
0,8	T057-V057
0,9	T097
1,0	T067
Post column derivatization	
UVE	T067

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