WORK PROGRAMME of EURL for

MYCOTOXINS & PLANT TOXINS

PERIOD: 1/1/2021 – 31/12/2022

Version 1.1
(date 13/09/2021

CONTACT DETAILS

Wageningen Food Safety research
Wageningen University & Research
Akkermaalsbos 2
6708 WB Wageningen, Netherlands

Dr Monique de Nijs
eurl.mycotoxins-planttoxins@wur.nl
Direct number +31(0)317480370
Secretary +31(0)317480307

SUMMARY

INTRODUCTION

Legal functions and duties

The functions and duties of the EU Reference Laboratory are described in Article 94 of Regulation (EC) No 2017/625 of the European Parliament and of the Council of 7 April 2017 (Official Journal of the European Union L 95/I, 7.04.2017, pp 1-141) and its amendments.

The general objective of the Commission for the period 2021 is "to contribute to a high level of protection for consumers and the environment while favouring competitiveness and the creation of jobs[1]". This general objective is elaborated in four operation objectives which are the foundation of the EURL work programme for 2021.

The EURL mycotoxins & plant toxins work programme is divided in 4 parts, linked to the five operation objectives (last objective not applicable). For each operational objective individual tasks have been formulated which are described in more detail for the year 2021.

Structure work programme EURL mycotoxins & plant toxins based on Regulation (EU) 625/2017 article 94.

[1] Commission implementing decision of 24.7.2015 on the adoption of the work programme of the Commission for the years 2015 and 2016 and on the financing of the Union contribution to the European Union Reference Laboratories

Regulation (EU) 625/2017 Art 94(2):
European Union reference laboratories designated in accordance with Article 93(1) shall be responsible for the following tasks insofar as they are included in the reference laboratories' annual or multiannual work programmes that have been established in conformity with the objectives and priorities of the relevant work programmes adopted by the Commission in accordance with Article 16 of Regulation (EU) No 2021/690:
(taking into account Art 147 of (EU) 625/2017)

1 TO ENSURE AVAILABILITY AND USE OF HIGH QUALITY METHODS AND TO ENSURE HIGH QUALITY PERFORMANCE BY NRLs.

Please, provided activities related to Regulation (EU) 2017/625:
(Number of Sub-activity boxes can be adjusted by EURL)

- *Art. 94.2.a* ***Providing national reference laboratories with details and guidance on the methods of laboratory analysis, testing or diagnosis, including reference methods.***
- *Art. 94.2.b* ***Providing reference materials to national reference laboratories***
- *Art. 94.2.c* ***Coordinating the application by the national reference laboratories and, if necessary, by other official laboratories of the methods referred to in point (a), in particular, by organising regular inter-laboratory comparative testing or proficiency tests and by ensuring appropriate follow-up of such comparative testing or proficiency tests in accordance, where available, with internationally accepted protocols, and informing the Commission and the Member States of the results and follow-up to the inter-laboratory comparative testing or proficiency tests.***
- *Art. 94.2.l* ***Where relevant for their area of competence, cooperate among themselves and with the Commission, as appropriate, to develop methods of analysis, testing or diagnosis of high standards.***

Sub-activity 1.1 ***Providing national reference laboratories with details and guidance on the methods of laboratory analysis, testing or diagnosis, including reference methods (a)***

Sub-activity 1.1.1 *Updating the information on methods for the EURL mycotoxins & plant toxins website*

Objectives:	The EURLMP website is designed and shaped to accommodate relevant information on analytical methods to the NRLs.
Description:	Results from the method development will be made available in the EURLMP_method format.
Expected Output:	EURLMP_method(s) of the developed analytical method(s) are online available.
Duration:	2021-2022

Sub-activity 1.1.2 *Collaboration other EURLs*

Objectives:	Collaboration EURLs on contaminants.
Description:	To make use of existing experiences and tools as well as exploit synergy potentials a team was formed in 2019 with EURL-MN, EURL-PC and EURL-POPs. A list of subjects that need mutual attention is determined and the priorities are defined.
Expected Output:	- One meeting per year with the commission, video meeting(s) if necessary; - Documents on various issues a.o. number of significant digits, uncertainty will be shared when available.
Duration:	2021-2022

Sub-activity 1.1.3 AQC group EURL-NRLs mycotoxins & plant toxins

Objectives:	Review relevant issues to ensure quality of analysis at the NRLs
Description:	The working group analytical quality assurance (AQC) of the EURL mycotoxins & plant toxins will be consulted when necessary. This group consists of maximum 4 representatives from NRLs and will discuss the items related to quality. E.g. performance characteristics, validation, LOQ, LOD etc.
Expected Output:	to be determined.
Duration:	2021-2022

Sub-activity 1.2 ***Follow up on requests from NRLs for reference materials (b)***

Objectives:	Providing NRLs with materials upon request.
Description:	EURL mycotoxins and plant toxins can distribute to NRLs left-over material from PTs or from collaborative testing as long as supply lasts and without a guarantee on the quality and analyte content of the materials.
Expected Output:	Shipment of samples to NRLs if requested
Duration:	2021-2022

Sub-activity 1.3 ***Organisation of proficiency tests and follow-up of the results (c)***

Sub-activity 1.3.1 *Organisation of PTs*

Objectives:	Organisation of 3 PTs for routine methods. Below are mentioned the suggestions of the EURL and the NRLs.
Description:	**2021: EURLPT-MP06 MYCO** - Multi-mycotoxins in food and feed: DON/ZEN/FUMB1/FUMB2/T2/HT2 **2021-2022: EURLPT-MP07 PA** - PT on PAs in food - Regulation (EU) 2020/2040; - 2021-Q4: Prepare PT samples, test for homogeneity, send invitations

	- Ship samples early in January 2022 - 2022-Q3: reporting **2022: EURLPT-MP08 - Choose one of the following:** - Opium alkaloids - Hydrocyanic acid - Citrinin in red yeast rice food supplements - *Alternaria* toxins - other subjects of interest
Expected Output:	Two or three PT reports
Duration:	2021-2022

Sub-activity 1.3.2 *Follow-up and communication of the PT results*

Objectives:	Implementation of the follow-up protocol of the EU DG SANTÉ for proficiency testing[2].
Description:	There will be a follow-up on the performance of each NRL in the organised PTs. Also, each PT will be evaluated by the participants. The results of the PTs as well as upcoming PTs will be discussed in the annual workshop.
Expected Output:	- Follow-up report of each PT - Evaluation report of each PT - Presentation at annual workshop
Duration:	2021-2022

Sub-activity 1.4 Development and validation of analytical methods (I)

Sub-activity 1.4.1 *Method development and extension*

Objectives:	To develop and investigate new methods and the scope of the analytical methods. This may involve: new mycotoxins or plant toxins, extension with new matrices or additional compounds, lowering LOQs (triggered by e.g. EFSA opinions), investigate the potential and usefulness of new technologies.
Description:	**2021** **1.4.1a Method CEN EN 16160 hydrocyanic acid.** Issues were discovered in 2020 with regard to the enzyme used in the CEN method for quantification of hydrocyanic acid in animal feed. A project was started to identify the cause of this deviation in 2020 which continued in 2021. In 2021 new enzymes are tested in several matrices, including food matrices. All samples will be also analysed for cyanogenic glycosides using the LC-MS/MS method. 2021: M1-M11 Method development M9-M12 Reporting **1.4.1b. Method development *Alternaria* toxins** The Commission is preparing a recommendation for monitoring of *Alternaria* toxins in food matrices. In 2020, the EURL started with the development of a QuEChERS-based LC-MS/MS method for the quantification of the *Alternaria* toxins: alternariol, alternariol monomethyl ether, tenuazonic acid, tentoxin at the required low LOQ. Matrices involved were: processed tomatoes, figs, grain based foods and sunflower

2 https://eurlcefas.org/media/4149/protocol_for_management_of_underperformance_in_comparative_testing_and_or_lack_of_collaboration_of_national_reference_laboratories.pdf

seeds & oil. In 2021, the scope of the method will be further expanded for the matrices sesame seed, paprika powder and, if possible, also the tree nuts.

2021 M1-M6 Method development and validation (validation report and WFSR SOP)
M9-M10 Reporting and writing EURLMP_method

1.4.1c. Quinolizidine alkaloids (QA)

In 2019, EFSA published the opinion on quinolizidine alkaloids in food and feed (EFSA 2019: 5860). Following the recommendations in this opinion, the Commission has asked the EURL mycotoxins & plant toxins to make an update in 2021 regarding available methods for analysis of QAs in lupine and in various foods and feeds. Both LC-MS/MS based confirmation methods and screening tests. Therefore, a desk study will be performed on analytical methods described in the literature for quantifying QA. Special attention is paid to validated methods for the individual QA and to possible screening methods in both food and feed. The results will be evaluated and reported to NVWA and the Commission. The method for quantification developed at WFSR will be further optimized based on the results from the literature study and the scope will be expanded with animal feed. This method will be validated and made available as EURLMP_method.

2021 M8 Literature study methods QA
M5-M10 Method development and validation
M11-M12 Reporting and writing EURLMP_method

2022

1.4.1d Distribution of co-harvested plant parts in laboratory samples

New legislation on plant toxins in food has been introduced recently and new legislation is proposed (Reg. (EC) No 1881/2006). However, the contamination from co-harvested plant parts can be distributed in-homogenously throughout the batch, e.g. one piece of PA containing leave can end up in one teabag. There is currently an urgent need for knowledge on distribution of PA containing plant parts in cumin seeds in laboratory samples. The project will start in 2022 in cooperation with the Netherlands Food and Consumer Product Safety Authority and the WR research group on statistics, to gain insight into how a large laboratory sample (several kg) of cumin seed should be subsampled for laboratory testing. A strategy will be designed and tested.

2022 M1-M12 Results on the distribution of contamination of PA in cumin seeds.

1.4.1e OTA in cured meat and cheese

Ochratoxin A (OTA) is produced in grains during the field period and in (raw materials for) food during transport and storage after harvesting. Cured meats and cheeses can become contaminated with environmental moulds during ripening, of which some can produce OTA during the ripening or storage time. The European Food Safety Authority (EFSA) published an opinion on OTA in 2020 showing that OTA can be genotoxic and carcinogenic (EFSA Journal 2020;18(5):6113). EFSA concluded that the exposure of the population to OTA is higher than previously estimated and that there can be a significant contribution of OTA from meat products and cheese. Since OTA can diffuse into the product from the outside, it is important to sample the crust and inside separately. In 2021 a literature study was carried out by the EURL on available analytical methods. In 2022, the analytical method will be adjusted and validated for cured meat and cheese. An

EURL_methode will be made available to the NRLs. If possible, a limited survey will be carried out on relevant matrices cured meat and cheese.

2022 M1-6 Method development and validation
M11-M12 Reporting and writing EURLMP_method

1.4.1f Analytical method for hydroxyanthracene derivatives in food

EFSA published an opinion in 2018 on the safety of hydroxyanthracene derivatives (HAD) for use in food (EFSA Journal 2018;16(1):5090). EFSA concluded that HAD should be regarded as genotoxic and carcinogenic unless proven otherwise. The safety concerns are on both the plant parts consumed and the plant extracts containing HAD. In March 2021 the Commission issued Regulation (EU) 2021/468, amending Annex III of regulation (EC) No 1925/2006. To part A - the Prohibited substances - are added: *Aloe*-emodin, emodin, danthron and all preparations in which these substances are present, as well as the preparations of leaves of *Aloe* species that contain HAD. To Part C - Substances under Community scrutiny - are added: preparations containing HAD derived from bark, leaves, fruits or root of some *Rheum* and *Rhamnus* species or *Cassia senna*. On request of the Commission the EURL performed a literature search in 2020 on available straightforward and validated analytical methods for HAD (published on the EURLMP website). This concerns the compounds: *Aloe*-emodin, emodin, danthron, physcion, chrysophanol, rhein, aloin A and B, and sennosides. Analytical standards of these substances have been purchased in 2021. In 2022, the analytical method will be developed and validated for HAD in *Aloe* containing food products. The method will be made available as EURLMP_method.

2022 M1-M6 Method development and validation
M9-M11 Reporting and writing EURLMP_method

2 TO PROVIDE SCIENTIFIC AND TECHNICAL ASSISTANCE TO NRLs

Please, provided activities related to Regulation (EU) 2017/625:
(Number of Sub-activity boxes can be adjusted by EURL)

- *Art. 94.2.d* ***Coordinating practical arrangements necessary to apply new methods of laboratory analysis, testing or diagnosis, and informing national reference laboratories of advances in this field.***
-
- *Art. 94.2.e* ***Conducting training courses for staff from national reference laboratories and, if needed, from other official laboratories, as well as of experts from third countries.***
-
- *Art. 94.2.g* ***Providing information on relevant national, Union and international research activities to national reference laboratories.***

Sub-activity 2.1 ***Practical arrangements to apply methods, and inform NRLs (d)***

Sub-activity 2.1.1 *Website development and maintenance*

Objectives:	Provide information to NRLs necessary to apply new methods.
Description:	The EURL mycotoxins & plant toxins website will be maintained with continued efforts to further implement its use within the NRL/OL network. EURL PT and scientific reports will be published on the website. Developments with respect to legislation will be monitored and updated.
Expected Output:	- Website with information updated. - Relevant EU legislation on mycotoxins and plant toxins available on website.
Duration:	2021-2022

Sub-activity 2.1.2 *Knowledge development*

Objectives:	Stay up-to-date with legislation and analytical developments in the area of mycotoxins and plant toxins analysis.
Description:	Developments with respect to analytical methodology, (EU) legislation and the results of relevant scientific studies are monitored. Communication on issues of interest for NRLs will be through the annual workshop and the EURL website.
Expected Output:	Presentation on latest developments in a relevant area of analysis of mycotoxins and plant toxins during annual workshop.
Duration:	2021-2022

Sub-activity 2.1.3 *Updating and publication of the list of NRLs*

Objectives:	To have an updated list of NRLs in the competence field of the EURL.
Description:	Update, verify and publish on the website regularly.
Expected Output:	Up-to-date list of NRLs on mycotoxins and plant toxins in food and feed.
Duration:	2021-2022

Sub-activity 2.1.4 *Providing analytical assistance to NRLs*

Objectives:	Assist NRLs with confirmatory analysis in case of technical problems or arbitration.
Description:	Analyse samples from NRLs for confirmation when there are technical problems or when there is a dispute for arbitration.
Expected Output:	Results of analysis.
Duration:	2021-2022

Sub-activity 2.2 ***Training courses for staff (e)***

Objectives:	NRL scientists are trained at EURL WFSR in an analytical method or in the area of method validation and quality assurance.
Description:	Hands-on training: General procedure is to organise 2 hands-on training sessions (2-3 days) at WFSR for max. 8 representatives of NRLs on analysis of mycotoxins and plant toxins per year. The hands-on training session on deoxynivalenol and conjugates, EURLTR-MP05 was planned for May 2020 but postponed to 2022. Travel restrictions will continue in 2021 due to COVID-19 and hands-on trainings cannot be organised. Following the on-line method validation and AQC training that was organised in October 2020, a series of 4 short (1 hour) on-line colloquium style sessions are organised in April and May 2021. During the annual Workshop 2021 on October 5-6, will be discussed if the NRLs would like an additional hands-on training in 2022 or on-line sessions. The subject will also be determined.
Expected Output:	Four on-line trainings sessions of max 1.5 h per session.
Duration:	2021 M4-M5 4 on-line trainings sessions. 2022 Hands-on training EURLTR-MP05 on analysis of DON and conjugates. If possible, one additional hands-on training on a subject to be defined.

Sub-activity 2.3 ***Information to relevant national, Union and international research activities to NRLs (g)***

Sub-activity 2.3.1 *Organisation of workshop*

Objectives:	To inform NRLs on new methods, legislation, discuss work programmes and PTs.
Description:	One representative of each member state and a selected number of representatives of third countries (one per country) meet, usually in the Netherlands, for information exchange, to discuss new topics in the area of mycotoxins and plant toxins and define the research and PT subjects for next year. Duration is 2 days (noon day 1 to early afternoon day 2). It will be organised on-line in 2021 due to COVID-19 and in person in 2022.
Expected Output:	Presentations and report.
Duration:	2021 October 5-6 On-line. 2022 October XX Hybrid, in-person and on-line.

Sub-activity 2.3.2 *Missions to NRLs*

Objectives:	Missions to NRLs in member states on request.
Description:	Missions will be undertaken to specific NRLs on the basis of their individual needs, e.g. in order to discuss and evaluate the results of a proficiency test or for analytical support. A visit will only be scheduled after consultation with the Commission.
Expected Output:	Visit report.
Duration:	On request.

3 TO PROVIDE SCIENTIFIC AND TECHNICAL ASSISTANCE TO THE EUROPEAN COMMISSION AND OTHER ORGANISATIONS

Please, provided activities related to Regulation (EU) 2017/625:
(Number of Sub-activity boxes can be adjusted by EURL)

- *Art. 94.2.f* ***Providing scientific and technical assistance to the Commission within the scope of their mission.***

- *Art. 94.2.h* ***Collaborating within the scope of their mission with laboratories in third countries and with the European Food Safety Authority (EFSA), the European Medicines Agency (EMA) and the European Centre for Disease Prevention and Control (ECDC).***

- *Art. 94.2.i* ***Assisting actively in the diagnosis of outbreaks in Member States of foodborne, zoonotic or animal diseases, or of pests of plants, by carrying out confirmatory diagnosis, characterisation and taxonomic or epizootic studies on pathogen isolates or pest specimens.***

Sub-activity 3.01 ***Technical and scientific assistance to the Commission (f)***

Sub-activity 3.1.1 *Advise on performance characteristics*

Objectives:	Advise on revision of performance characteristics on mycotoxins in food and feed (Reg (EC) No 401/2006) and on plant toxins (new).
Description:	With the EURL on contaminants (1.1.2) and the EURLMP-AQC group (1.1.3) and the evaluate performance requirements (e.g. recovery, precision) as laid down in Reg (EC) No 401/2006 against actual performance of today's analytical capabilities. Discuss the proposals with all NRLs. Prepare an advice on updating performance criteria for analytical methods for official control of plant toxins in food and feed.
Expected Output:	- Meeting of AQC group. - Advice on performance characteristics of mycotoxin and plant toxins in food and feed.
Duration:	2021-2022

Sub-activity 3.1.2 *Technical and scientific support to the Commission*

Objectives:	Technical and scientific support to the Commission.
Description:	Technical and scientific advice on analytical methods in relation to upcoming legislation will be given to the Commission when requested. This includes attending 6 meetings of the Commission Working Group on Agricultural Contaminants and one meeting per year of the EC mycotoxin workshop.
Expected Output:	Formal and informal advice upon request, attending the meetings.
Duration:	2021-2022

Sub-activity 3.2 ***Collaboration with laboratories in third countries, European and international organisations (h)***

Sub-activity 3.2.1 *Collaboration with third countries, European and international organisations*

Objectives:	Collaboration with European and international organisations.
Description:	No actions foreseen in 2021 and 2022
Expected Output:	Not relevant
Duration:	Not foreseen

Sub-activity 3.2.2 *Participation in symposia workshops and seminars*

Objectives:	Dissemination of scientific results.
Description:	2021 Mycotoxin Workshop on- line; World Mycotoxin Forum - two on line sessions. 2022 World Mycotoxin Forum; Mycotoxin Workshop; ISOPP.
Expected Output:	Report, presentations and posters
Duration:	2021-2022

Sub-activity 3.3 ***To ensure a sound and efficient management of the EURL funding cycle (i)***

Sub-activity 3.3.1 *EURL management*

Objectives:	Manage EURL mycotoxins & plant toxins.
Description:	Management of the EURL will be conducted to timely report the scientific results according to the work programme and within the budget. Discuss scientific, planning or budget issues and amendments with the Commission a soon as they arise.
Expected Output:	Timely and within budget delivery of results according to work programme.
Duration:	2021-2022

Sub-activity 3.3.2 *EURL Work programme*

Objectives:	Design the annual EURL work programme for 2021-2022.
Description:	Compilation of the annual work programme and budget forecast for 2022. Wishes and questions from NRLs and the Commission in the area of analysis will be inventoried during the annual workshop. The subjects will be discussed with the Commission and a work programme with corresponding budget forecast will be compiled.
Expected Output:	Work Programme and budget forecast 2023/4 submitted in time.
Duration:	2021

Sub-activity 3.3.3 *EURL report and cost statement*

Objectives:	Prepare annual report 2021 and 2022.
Description:	Compilation of the results of the annual work programme and budget for 2021 and 2022.
Expected output:	EURL annual scientific report 2021-2022 and cost statement 2021-2022 in time.
Duration:	2022 M2 Interim 2023 M3 final

4 REAGENTS AND REFERENCE COLLECTIONS

Please, provided activities related to Regulation (EU) 2017/625:
(Number of Sub-activity boxes can be adjusted by EURL)

- *Art. 94.2.*j ***Coordinating or performing tests for the verification of the quality of reagents and lots of reagents used for the diagnosis of foodborne, zoonotic or animal diseases and pests of plants.***

- *Art. 94.2.k* ***Where relevant for their area of competence, establishing and maintaining:***
  - ***i. reference collections of pests of plants and/or reference strains of pathogenic agents;***
  - ***ii. reference collections of materials intended to come into contact with food used to calibrate analytical equipment and provide samples thereof to national reference laboratories;***
  - ***iii. up-to-date lists of available reference substances and reagents and of manufacturers and suppliers of such substances and reagents.***

List of commercial providers of CRM and analytical standards

Sub-activity 4.01 ***Up-to-date lists of available reference substances and reagents and of manufacturers and suppliers of such substances and reagents (kiii)***

Objectives:	Provide NRLs with up-to-date list of reference materials and analytical standards, that are commercially available or have been acquired by the EURL.
Description:	The inventory with details on reference materials and analytical standards available from the EURL and from commercial providers will be updated. An update will be made of the list of available CEN methods on mycotoxins and plant toxins and will be placed on the website. An update will be made of the list of available training courses in the field of mycotoxins and plant toxins analysis and will be placed on the website.
Expected Output:	Updated tables with commercially available reference materials and analytical standards on internet.
Duration:	2021 M3 2022 M3

5 REQUIREMENTS RELATED TO OTHER LEGISLATION

Please specify applicable legislation:
(Number of Sub-activity boxes can be adjusted)

REMARKS