



Annual Report of preparatory activities for the evaluation of toxicity studies supporting the GM food/feed safety assessment, performed during the period 28/11/2018 to 5/12/2019

Beltoft, Vibe Meister; Nørby, Karin Kristiane; Thyregod, Camilla

Published in:
EFSA Supporting Publications

Link to article, DOI:
[10.2903/sp.efsa.2020.EN-1857](https://doi.org/10.2903/sp.efsa.2020.EN-1857)

Publication date:
2020

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):
Beltoft, V. M., Nørby, K. K., & Thyregod, C. (2020). Annual Report of preparatory activities for the evaluation of toxicity studies supporting the GM food/feed safety assessment, performed during the period 28/11/2018 to 5/12/2019. *EFSA Supporting Publications*, 17(5), Article 1857E. <https://doi.org/10.2903/sp.efsa.2020.EN-1857>

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Annual Report of preparatory activities for the evaluation of toxicity studies supporting the GM food/feed safety assessment, performed during the period 28/11/2018 to 5/12/2019

Vibe Beltoft, Karin Nørby and Camilla Thyregod

National Food Institute, Technical University of Denmark

Abstract

This report describes the tasks performed in the period 28/11/2018 to 5/12/2019 under the EFSA contract OC/EFSA/GMO/2018/02, Lot 2 on toxicological studies and animal feeding studies included in applications for market authorisation of genetically modified feed/plants under Regulation (EC) No 1829/2003. The tasks cover the check for study adherence to relevant EFSA guidance documents and to OECD Test Guideline no 407 (2008), OECD Test Guideline no 408 (1998) and OECD Principles on Good Laboratory Practice. During the period covered by this report, preparatory work has been performed on five applications for GM plants submitted under Regulation (EC) No 1829/2003 for a total of two 28-day studies on newly expressed proteins and six 90-day studies in rodents on GM food/feed, using comprehensive checklist templates.

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Key words: OC/EFSA/GMO/2018/02 Lot 2, GMO-toxicity, compliance

Question number: EFSA-Q-2020-00330

Correspondence: GMO_secretariat_applications@efsa.europa.eu

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Suggested citation: Vibe Beltoft, Karin Nørby and Camilla Thyregod, 2020. Annual Report of preparatory activities for the evaluation of toxicity studies supporting the GM food/feed safety assessment, performed during the period 28/11/2018 to 5/12/2019. EFSA supporting publication 2020:EN-1857. 9 pp. doi:10.2903/sp.efsa.2020.EN-1857

ISSN: 2397-8325

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Summary

This annual report provides a summary of the work performed by the National Food Institute at DTU (here defined as Contractor) in the context of the Framework Contract No OC/EFSA/GMO/2018/02 - Lot 2, signed on 23/11/2018 (here defined as Framework Contract) for the period November 28, 2018 – December 5, 2019.

In the context of the Framework Contract, the Contractor provided preparatory work on toxicological studies and animal feeding studies in the context of applications on genetically modified (GM) plants, in accordance with the deliverables defined in Lot 2 tasks.

Based on comprehensive checklists developed by the Contractor in collaboration with the EFSA GMO Unit, the Contractor has reviewed the adherence to respective relevant guidelines of studies related to six applications for GM plants submitted under Regulation (EC) No 1829/2003, and provided a complete overview of each study covering abstract, summary, statistics, reports of compliance and deviations to the respective relevant guidelines.

This preparatory work was performed on two 28-day studies on newly expressed proteins and six 90-day studies in rodents on GM food/feed. The aim of this work was to contribute to support the evaluation of GM plants submitted under Regulation (EC) No 1829/2003 by the Panel on Genetically Modified Organisms (GMO).

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1. Introduction

1.1. Background and Terms of Reference as provided by the requestor

Genetically modified organisms (GMOs) are subject to a risk analysis and regulatory approval before entering the market in the European Union (EU). In this process, the role of the European Food Safety Authority (EFSA) is to assess and provide scientific advice to risk managers on any possible risk that the deployment of GMOs may pose to human health, animal health and the environment.

The risk assessment of genetically modified (GM) plants includes a comparative analysis in which appropriate methods are used to compare the GM plant with its conventional counterpart. The underlying assumption of the comparative approach is that traditionally cultivated non-GM plants have gained a history of safe use for consumers and/or animals. This approach enables to place the importance of risks posed by a GM plant and derived food/feed products in the context of those posed by its comparator, by assessing whether intentionally and unintentionally modified properties of the GM plant alter the level of risk or give rise to additional risks. The relevance of the observed intended and unintended changes to human and animal health is further assessed by investigating the toxicological, allergenic and nutritional properties of the GM plant.

Regulation (EU) No 503/2013¹ gives provisions and data requirements for the presentation and preparation of applications for market authorisation of GM food/feed, in accordance with Regulation (EC) No 1829/2003². Data requirements for the risk assessment of GM plants and derived food/feed products are laid down, including indications on the methodological approach supporting the statistical evaluation of the comparative analysis of GM plant field trials, and on the conduct of toxicity studies supporting the GM food/feed safety assessment.

Regulation (EU) 503/2013 provides general information and technical details how to design, conduct and interpret toxicity studies supporting the GM food/feed safety assessment. These are based on international standards and EFSA guidance documents. Checking the compliance of GMO toxicity studies (e.g. 28-day and 90-day toxicity studies in rodents) with respect to this regulatory framework is a prerequisite for their assessment.

This contract was awarded by EFSA to: National Food Institute, Technical University of Denmark.

Contractor: Vibe Beltoft

Contract title: Preparatory support for the statistical evaluation of the comparative analyses of GM plant field trials, and for the evaluation of toxicity studies supporting the GM food/feed safety assessment, LOT2: Preparatory support for the evaluation of toxicity studies supporting the GM food/feed safety assessment.

Contract number: OC/EFSA/GMO/2018/02

¹ Commission Implementing Regulation (EU) No 503/2013 of 3 April 2013 on applications for authorisation of genetically modified food and feed in accordance with Regulation (EC) No 1829/2003 of the European Parliament and of the Council and amending Commission Regulations (EC) No 641/2004 and (EC) No 1981/2006.

² Regulation (EC) No 1829/2003 of the European Parliament and of the Council of 22 September 2003 on genetically modified food and feed.

2. Data and Methodologies

2.1. Data for Lot 2 – toxicological studies and animal feeding studies

In accordance with the purpose of Lot 2 of the Contract, data submitted to the Contractor included 28-day repeated oral toxicity studies in rodents on newly expressed proteins and 90-day feeding studies in rodents on whole food/feed.

2.2. Methodologies

In accordance with the scope of this contract, the Contractor was requested to check that toxicological studies and animal feeding studies provided in GMO applications submitted under Regulation (EC) No 1829/2003 fulfilled requirements of EFSA GMO Panel Guidance (EFSA 2011a); the EFSA Scientific Committee Guidance on conducting repeated-dose 90-day oral toxicity study in rodents on whole food/feed (EFSA, 2011b) and the 'Explanatory statement for its applicability' (EFSA, 2014a); the EFSA Guidance on statistical reporting (2014b) and Regulation (EU) No 503/2013. The check also included verification that technical requirements by other relevant regulations and guidelines (including Directive 2004/10/EC³, OECD Principles of GLP⁴, Regulation (EC) 440/2008⁵) are fulfilled.

The Contractor provided for each study submitted by EFSA:

1. detailed description of the adherence of the toxicological studies to the appropriate guidelines;
2. identification of potential lack of adherence to the appropriate guideline documents in the toxicological studies that can result in questions to complement their assessment;
3. a report highlighting the main issues in terms of design of the study and adherence to relevant guidelines and legislation; this covered abstract, summary, reports of compliance and deviations to the respective relevant guidelines

The Contractor also provided for each study submitted by EFSA:

4. a separate report a detailed description of the adherence of the applied statistics to the appropriate guidelines
5. identification of potential lack of adherence to the appropriate guideline documents in the toxicological studies concerning the statistics applied by applicant that can result in questions to complement their assessment
6. a report highlighting the main issues of the statistics applied by the applicant identifying potential lack of adherence to the appropriate guideline

A kick-off meeting with EFSA representatives (Procurement team and the scientific officers acting as contact persons for the contract) took place in Parma 24-25 January 2019. Templates for the compliance checklist of 28-day toxicity studies on newly expressed proteins and of 90-day toxicity studies in rodents on whole food/feed towards the relevant EFSA guidance documents and OECD Technical guidance documents were developed, as was a template for compliance check of the statistical analysis applied by the applicant on the toxicity studies. These templates supported the check for adherence of 28- and 90-day studies on GM food/feed in rodents, and the statistical analysis of these, to the recommendations

³ EC, 2004. Directive 2004/10/EC of the European Parliament and of the Council of 11 February 2004 on the harmonisation of laws, regulations and administrative provisions relating to the application of the principles of good laboratory practice and the verification of their applications for tests on chemical substances. Official Journal of the European Union, L50, 44-59.

⁴ OECD, 1998. Principles of Good Laboratory Practice (GLP) and Compliance Monitoring. <http://www.oecd.org/document>

⁵ COUNCIL REGULATION (EC) No 440/2008 of 30 May 2008 laying down test methods pursuant to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

given by EFSA guidance documents; to OECD TG 408 (1998 and 2018); to OECD 407 (2008); to GLP (OECD, 1998, EC, 2004), incorporated into Implementing Regulation (EU) No 503/2013.

3. Assessment/results

Using the agreed checklists, in the period covered by this report (28/11/2018 to 5/12/2019) the Contractor finalised the assessment of the adherence to relevant guidelines of two 28-day studies and six 90-day studies included in five GM plant applications submitted to EFSA under Regulation No 1829/2003 (Table 1).

Table 1: EFSA contract OC/EFSA/GMO/2018/02, Lot 2. Studies evaluated by the Contractor during the period 28/11/2018 to 5/12/2019.

Application no	EFSA-Q-no	Study type	Submission date ^a
AP153-1	EFSA-Q-2018-00781	90-day	25-02-2019
AP149	EFSA-Q-2018-00292	90-day	18-03-2019
		90-day	
AP153-2	EFSA-Q-2018-00781	28-day	27-05-2019
		28-day	
AP132	EFSA-Q-2016-00195	90-day	20-06-2019
		90-day	
AP159	EFSA-Q-2019-00419	90-day	14-11-2019

a. Date of submission of the studies by EFSA to the Contractor.

4. Conclusions

Based on comprehensive checklists developed by the Contractor in collaboration with the EFSA GMO Unit, in the period covered by this report (28/11/2018 to 5/12/2019) the Contractor has reviewed the adherence to the respective relevant guidelines of studies related to five applications for GM plants submitted under Regulation (EC) No 1829/2003, and provided a complete overview of each study covering abstract, summary, statistics, reports of compliance and deviations to the respective relevant guidelines. This preparatory work was performed on two 28-day studies on newly expressed proteins and six 90-day studies in rodents on GM food/feed.

References

- Commission Implementing Regulation (EU) No 503/2013 of 3 April 2013 on applications for authorisation of genetically modified food and feed in accordance with Regulation (EC) No 1829/2003 of the European Parliament and of the Council and amending Commission Regulations (EC) No 641/2004 and (EC) No 1981/2006
- DIRECTIVE 2004/10/EC of the European Parliament and of the Council of 11 February 2004 on the harmonisation of laws, regulations and administrative provisions relating to the application of the principles of good laboratory practice and the verification of their applications for tests on chemical substances
- EFSA, 2011a. EFSA Panel on Genetically Modified Organisms (GMO): Scientific Opinion on Guidance for risk assessment of food and feed from genetically modified plants. EFSA Journal 2011; 9(5): 2150. [37 pp.] doi:10.2903/j.efsa.2011.2150.
- EFSA, 2011b. EFSA Scientific Committee: EFSA guidance on conducting repeated-dose 90-day oral toxicity study in rodents on whole food/feed. EFSA Journal 2011;9(12):2438 [21 pp.] doi:10.2903/j.efsa.2011.2438
- EFSA, 2014a. Explanatory statement for the applicability of the Guidance of the EFSA Scientific Committee on conducting repeated-dose 90-day oral toxicity study in rodents on whole food/feed for GMO risk assessment. EFSA Journal 2014;12(10):3871, 25 pp., doi:10.2903/j.efsa.2014.3871
- EFSA, 2014b. Guidance on statistical reporting. EFSA Journal 2014; 12(12):3908, 18pp
- OECD Principles of Good Laboratory Practice (as revised in 1997) Environment Directorate Organisation for Economic Co-operation and Development Paris 1998
- OECD guidelines for the testing of chemicals 407 (2008) - Repeated Dose 28-Day Oral Toxicity Study in Rodents
- OECD guideline for the testing of chemicals 408 (1998) - Repeated Dose 90-day Oral Toxicity Study in Rodents
- OECD guideline for the testing of chemicals 408 (2018) - Repeated Dose 90-day Oral Toxicity Study in Rodents