

ADOPTED: 5 May 2021

doi: 10.2903/j.efsa.2021.6613

Assessment of the feed additive consisting of *Lactiplantibacillus plantarum* (formerly *Lactobacillus plantarum*) DSM 21762 for all animal species for the renewal of its authorisation (Lactosan GmbH & Co KG)

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Abstract

Following a request from the European Commission, the Panel on Additives and Products or Substances used in Animal Feed (FEEDAP) was asked to deliver a scientific opinion on the assessment of the application for renewal of authorisation of *Lactiplantibacillus plantarum* (formerly *Lactobacillus plantarum*) DSM 21762, as a technological additive for all animal species. The applicant has provided evidence that the additive currently in the market complies with the existing conditions of authorisation. There was no new evidence that would lead the FEEDAP Panel to reconsider its previous conclusions. Thus, the Panel concluded that the additive remains safe for all animal species, consumer and the environment under the authorised conditions of use. The additive was not irritant to skin and eyes but is considered a skin and respiratory sensitiser. The present application for renewal of the authorisation did not include a proposal for amending or supplementing the conditions of the original authorisation that would have an impact on the efficacy of the additive. Therefore, there was no need for assessing the efficacy of the additive in the context of the renewal of the authorisation.

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Keywords: technological additive, silage additive, *Lactiplantibacillus plantarum* DSM 21762, safety, efficacy, QPS, renewal

Requestor: European Commission

Question number: EFSA-Q-2020-00602

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Declarations of interest: The declarations of interest of all scientific experts active in EFSA's work are available at <https://ess.efsa.europa.eu/doi/doiweb/doisearch>.

Acknowledgements: The Panel wishes to acknowledge the contribution of Yolanda García Cazorla to this opinion.

Suggested citation: EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), Bampidis V, Azimonti G, Bastos ML, Christensen H, Dusemund B, Fašmon Durjava M, Kouba M, López-Alonso M, López Puente S, Marcon F, Mayo B, Pechová A, Petkova M, Ramos F, Sanz Y, Villa RE, Woutersen R, Saarela M, Galobart J, Gregoretto L, Revez J and Brozzi R, 2021. Scientific Opinion on the assessment of the feed additive consisting of *Lactiplantibacillus plantarum* (formerly *Lactobacillus plantarum*) DSM 21762 for all animal species for the renewal of its authorisation (Lactosan GmbH & Co KG). EFSA Journal 2021;19(5):6613, 7 pp. <https://doi.org/10.2903/j.efsa.2021.6613>

ISSN: 1831-4732

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The EFSA Journal is a publication of the European Food Safety Authority, a European agency funded by the European Union.



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1. Introduction

1.1. Background and Terms of Reference

Regulation (EC) No 1831/2003¹ establishes the rules governing the Community authorisation of additives for use in animal nutrition. In particular, Article 14(1) of that Regulation lays down that an application for renewal shall be sent to the Commission at the latest one year before the expiry date of the authorisation.

The European Commission received a request from Lactosan GmbH & Co.KG² for authorisation of the product *Lactiplantibacillus plantarum* (formerly *Lactobacillus plantarum*) DSM 21762, when used as a feed additive for all animal species (category: technological additives; functional group: silage additives).

According to Article 7(1) of Regulation (EC) No 1831/2003, the Commission forwarded the application to the European Food Safety Authority (EFSA) as an application under Article 14(1) (renewal of the authorisation). The particulars and documents in support of the application were considered valid by EFSA as of 16 November 2020.

According to Article 8 of Regulation (EC) No 1831/2003, EFSA, after verifying the particulars and documents submitted by the applicant, shall undertake an assessment in order to determine whether the feed additive complies with the conditions laid down in Article 5. EFSA shall deliver an opinion on the safety for the target animals, consumer, user and the environment and on the efficacy of the product *Lactiplantibacillus plantarum* DSM 21762, when used under the proposed conditions of use (see Section 3.1.3).

1.2. Additional information

The additive is a preparation containing viable cells of *Lactiplantibacillus plantarum* (formerly *Lactobacillus plantarum*) DSM 21762. It is currently authorised as a feed additive in the European Union (1k2071).³

EFSA has adopted one opinion on the safety and efficacy of this product for all animal species (EFSA FEEDAP Panel, 2011).

2. Data and methodologies

2.1. Data

The present assessment is based on data submitted by the applicant in the form of a technical dossier⁴ in support of the authorisation request for the use of *Lactiplantibacillus plantarum* DSM 21762 as a feed additive.

The European Union Reference Laboratory (EURL) considered that the conclusions and recommendations reached in the previous assessment are valid and applicable for the current application.⁵

2.2. Methodologies

The approach followed by the FEEDAP Panel to assess the safety and the efficacy of *Lactiplantibacillus plantarum* DSM 21762 is in line with the principles laid down in Regulation (EC) No 429/2008⁶ and the relevant guidance documents: Guidance on the characterisation of microorganisms used as feed additives or as production organisms (EFSA FEEDAP Panel, 2018), and Guidance on the renewal of the authorisation of feed additives (EFSA FEEDAP Panel, 2013).

¹ Regulation (EC) No 1831/2003 of the European Parliament and of the Council of 22 September 2003 on additives for use in animal nutrition. OJ L 268, 18.10.2003, p. 29.

² Lactosan GmbH & Co.KG, Industriestraße West 5, A-8605 Kapfenberg, Austria.

³ Commission Implementing Regulation (EU) No 868/2011 of 31 August 2011 concerning the authorisation of a preparation of *Lactobacillus plantarum* (DSM 21762) and of a preparation of *Lactobacillus buchneri* (DSM 22963) as feed additives for all animal species. OJ L 226, 1.9.2011, p. 2.

⁴ FEED dossier reference: FAD-2020-0052.

⁵ The full report is available on the EURL website: <https://ec.europa.eu/jrc/sites/jrcsh/files/FinRep-FAD-2010-0109.pdf>

⁶ Commission Regulation (EC) No 429/2008 of 25 April 2008 on detailed rules for the implementation of Regulation (EC) No 1831/2003 of the European Parliament and of the Council as regards the preparation and the presentation of applications and the assessment and the authorisation of feed additives. OJ L 133, 22.5.2008, p. 1.

3. Assessment

The additive is a preparation of viable cells of a single strain of *L. plantarum* currently authorised as a technological additive (functional group: silage additives) in forages for all animal species. This assessment regards the renewal of the authorisation of *Lactobacillus plantarum* DSM 21762 for the above-mentioned species.

3.1. Characterisation

3.1.1. Characterisation of the additive

The product currently authorised consists of approximately 35–50% bacterial cells and 50–65% carriers () and cryoprotectants (). The minimum concentration of active agent (*Lactobacillus plantarum* DSM 21762) is 5×10^{11} CFU per gram of additive.

The information submitted regarding the manufacturing process lists some modifications applied to the fermentation process and composition of the additive which have been developed since the first authorisation was granted. The modifications regard the composition of the fermentation medium (e.g.). Regarding the composition of the additive, are also used as cryoprotectants, and is used in replacement of .

Analysis of three recent batches for viable lactic acid bacterial cells showed a mean value of 5.8×10^{11} CFU/g additive (range $5.5\text{--}6.2 \times 10^{11}$ CFU/g additive).⁷

Limits are set for Enterobacteriaceae (100 CFU/g), yeasts and filamentous fungi (100 CFU/g) and *Salmonella* spp. (not detected in 25 g). Analysis of the above-referred batches of the additive showed compliance with these limits.⁸ These recent batches were also tested for aflatoxins (B1, B2, G1, and G2), deoxynivalenol, zearalenone,⁹ lead, mercury, cadmium and arsenic concentration.¹⁰ Results showed levels below the respective limits of quantification.¹¹

No new data have been provided regarding the physico-chemical properties or stability of the additive. Since the changes introduced in the additive and its manufacturing process are not expected to have a significant effect on these characteristics, the data described in the previous opinion still apply.

3.1.2. Characterisation of the active agent

The active agent was isolated from natural silage. It is deposited in the Deutsche Sammlung von Mikroorganismen und Zellkulturen (DSMZ) with the accession number DSM 21762.¹² It has not been genetically modified.

The taxonomical identification was achieved by using the whole genome sequence (WGS).¹³ The with the type strain and the 16S rRNA gene sequence comparison using showed high identity and coverage with different *L. plantarum* strains in the NCBI database. These results allow to conclude on the identity of the strain under assessment as *L. plantarum*.

The bacterial strain was tested for antibiotic susceptibility using a broth microdilution method.¹⁴ The battery of antibiotics used included those recommended by EFSA (EFSA FEEDAP Panel, 2018). All the minimum inhibitory concentration values were below the corresponding EFSA cut-off values for . Therefore, the strain is considered to be susceptible to all the relevant antibiotics.

The WGS of the strain was searched for acquired antibiotic resistance genes in the databases

⁷ Technical dossier/Section II/Annex II.1-2 Batch.

⁸ Technical dossier/Section II/Annex II_1_3 Purity.

⁹ Technical dossier/Section II/Annex II_1_4 Mykotox.

¹⁰ Technical dossier/Section II/Annex II_1_5 heavy met.

¹¹ Limit of quantification: aflatoxins (B1, B2, G1, and G2): 0.03 µg/kg, deoxynivalenol 10 µg/kg, zearalenone 5 µg/kg, Pb 0.10 mg/kg, Hg 0.10 mg/kg, Cd 0.03 mg/kg and As 0.10 mg/kg.

¹² Technical dossier/Supplementary information April 2021/Annex_21762.

¹³ Technical dossier/Section II/Annex II 2-4.

¹⁴ Technical dossier/Section II/Annex II 2-5.

¹⁵ No hits were identified.

3.1.3. Conditions of use

The additive is currently authorised for use in forages for all animal species at a minimum inclusion level of 1×10^8 CFU/kg fresh material.

Under other provisions of the authorisation, it is specified that:

- In the directions for use of the additive and premixture, indicate the storage temperature and storage life.
- The minimum dose of the additive may be adapted when used in combination with other microorganisms as silage additives
- For safety: it is recommended to use breathing protection and gloves during handling.

The applicant has requested to maintain the same conditions of use.

3.2. Safety

In the previous opinion the Panel concluded that following the qualified presumption of safety (QPS) approach, the use of this strain in the production of silage was considered safe for target species, consumers and the environment (EFSA FEEDAP Panel, 2011). In the context of this application, the identity of the strain as *L. plantarum* was confirmed and evidence that the strain does not show acquired antimicrobial determinants for antibiotics of human and veterinary importance was provided. Consequently, the conclusions already reached are still valid and *Lactobacillus plantarum* DSM 21762 is safe for the target species, consumers and the environment.

The safety for the user was evaluated by the FEEDAP Panel in the previous assessment (EFSA FEEDAP Panel, 2011). The Panel concluded: 'Evidence of a lack of irritancy was provided for one formulation of the additive. It is unlikely that given the nature of the alternative food grade excipients, different results would be obtained for other formulations containing *Lactobacillus plantarum* DSM 21762. Given the proteinaceous nature of the active agent, its potential to be a skin/respiratory sensitiser cannot be excluded'. No additional data were provided in the current application.

The applicant declares that no adverse effects on the health of workers have been observed in the production plant or during usage of the additive.¹⁶

The applicant performed a literature search in order to provide evidence that in the light of the current knowledge the additive remains safe under the approved conditions for target species, consumers, users and the environment. The literature search was conducted in June 2020 without time restrictions.¹⁷ The search term used was '*Lactobacillus plantarum* DSM 21762' and the strategy followed was reported. The applicant searched in a total of seven relevant databases: Agricola, Agris, Google scholar, Ingenta, PubMed, Science Direct and World Cat Library. The literature search retrieved 16 hits. However, none was considered relevant because they either regarded other products (six publications) or referred to the previous EFSA FEEDAP Scientific opinion (five hits) or to the authorisation of the additive (five hits).

Therefore, the FEEDAP Panel concludes that there is no new evidence that would lead to reconsider the previous conclusions that *Lactobacillus plantarum* DSM 21762 is safe for the target species, consumers and the environment under the authorised conditions of use. Regarding user safety *Lactobacillus plantarum* DSM 21762 is not irritant to skin and eyes but is considered a skin and respiratory sensitiser.

3.3. Efficacy

The present application for renewal of the authorisation does not include a proposal for amending or supplementing the conditions of the original authorisation that would have an impact on the efficacy of the additive. Therefore, there is no need for assessing the efficacy of the additive in the context of the renewal of the authorisation.

¹⁵ Technical dossier/Section II/Annex II 2-6.

¹⁶ Technical dossier/Section III.

¹⁷ Technical dossier/Section III/Annex III_3.

4. Conclusions

The applicant has provided evidence that the additive currently on the market complies with the existing conditions of authorisation.

There is no new evidence that would lead the FEEDAP Panel to reconsider its previous conclusions. Thus, the Panel concludes that the additive remains safe for all animal species, consumer and the environment under the authorised conditions of use. Regarding user safety *Lactiplantibacillus plantarum* DSM 21762 is not irritant to skin and eyes but is considered a skin and respiratory sensitiser.

There is no need for assessing the efficacy of the additive in the context of the renewal of the authorisation.

5. Documentation as provided to EFSA/Chronology

Date	Event
02/07/2020	Dossier received by EFSA. <i>Lactobacillus plantarum</i> DSM 21762. Submitted by Lactosan GmbH & Co. KG
09/07/2020	Reception mandate from the European Commission
16/11/2020	Application validated by EFSA – Start of the scientific assessment
10/06/2020	Reception of the Evaluation report of the European Union Reference Laboratory for Feed Additives
17/02/2021	Comments received from Member States
29/03/2021	Request of supplementary information to the applicant in line with Article 8(1)(2) of Regulation (EC) No 1831/2003 – Scientific assessment suspended. <i>Issues: characterisation</i>
09/04/2021	Reception of supplementary information from the applicant - Scientific assessment re-started
05/05/2021	Opinion adopted by the FEEDAP Panel. End of the Scientific assessment

References

- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2011. Scientific Opinion on the safety and efficacy of *Lactobacillus plantarum* (DSM 21762) as a silage additive for all species. EFSA Journal 2011;9(3):2113, 11 pp. <https://doi.org/10.2903/j.efsa.2011.2113>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2013. Guidance on the renewal of the authorisation of feed additives. EFSA Journal 2013;11(10):3431, 8 pp. <https://doi.org/10.2903/j.efsa.2013.3431>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), Rychen G, Aquilina G, Azimonti G, Bampidis V, Bastos ML, Bories G, Chesson A, Cocconcelli PS, Flachowsky G, Gropp J, Kolar B, Kouba M, López-Alonso M, López Puente S, Mantovani A, Mayo B, Ramos F, Saarela M, Villa RE, Wallace RJ, Wester P, Glandorf B, Herman L, Kärenlampi S, Aguilera J, Anguita M, Brozzi R and Galobart J, 2018. Guidance on the characterisation of microorganisms used as feed additives or as production organisms. EFSA Journal 2018;16(3):5206, 24 pp. <https://doi.org/10.2903/j.efsa.2018.5206>

Abbreviations

CFU	colony forming unit
CV	coefficient of variation
DM	dry matter
DSMZ	Deutsche Sammlung von Mikroorganismen und Zellkulturen
EURL	European Union Reference Laboratory
LOD	limit of detection
MIC	minimum inhibitory concentration
QPS	qualified presumption of safety