SCIENTIFIC OPINION

efsa JOURNAL

ADOPTED: 21 March 2023

doi: 10.2903/j.efsa.2023.7954

Safety and efficacy of a feed additive consisting of endo-1,4-β-glucanase produced by *Trichoderma citrinoviride* IMI 360748 (Hostazym C) for use in all poultry species for fattening and reared for laying/breeding, ornamental birds and piglets (weaned and suckling) (Huvepharma NV)

EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP), Vasileios Bampidis, Giovanna Azimonti, Maria de Lourdes Bastos, Henrik Christensen, Birgit Dusemund, Mojca Durjava, Maryline Kouba, Marta López-Alonso, Secundino López Puente, Francesca Marcon, Baltasar Mayo, Alena Pechová, Mariana Petkova, Fernando Ramos, Yolanda Sanz, Roberto Edoardo Villa, Ruud Woutersen, Montserrat Anguita, Jaume Galobart, Jordi Tarrés-Call, Elisa Pettenati and Jordi Ortuño

Abstract

Following a request from the European Commission, the EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP) was asked to deliver a scientific opinion on the safety and efficacy of the feed additive containing endo-1,4-β-glucanase produced by *Trichoderma citrinoviride* IMI 360748 (Hostazym® C). The product is authorised as a zootechnical additive (functional group: digestibility enhancers) for use in chickens for fattening, minor poultry species for fattening and weaned piglets. This scientific opinion concerns the request for the renewal of the authorisation for the use in those species/categories, and the extension of use to chickens reared for laying, turkeys reared for breeding, minor poultry species reared for laying or breeding, ornamental birds and suckling piglets. The applicant provided evidence that the additive currently in the market complies with the conditions of the authorisation. There is no new evidence that would lead the Panel to reconsider previous conclusions that the additive is safe for the target species, the consumers, and the environment under the authorised conditions of use. This conclusion also applies to the target species for which a request for an extension of use is made. The additive is considered not a skin corrosive or eye irritant, but it should be considered a skin sensitiser. The Panel cannot conclude on the potential of the additive to be a skin irritant. Due to the proteinaceous nature of the active substance, the additive is considered a respiratory sensitiser. The Panel considers that the additive has the potential to be efficacious at 500 CU/kg complete feed in all poultry for fattening, reared for laying or breeding, and ornamental birds, and at 350 CU/kg complete feed in piglets (weaned and suckling, for the period in which solid feed is given).

Keywords: zootechnical additives, digestibility enhancers, Hostazym® C, endo-1,4-β-glucanase, *Trichoderma citrinoviride*, renewal, extension of use

Requestor: European Commission

Question number(s): EFSA-Q-2021-00157

Correspondence: feedap@efsa.europa.eu

Panel members: Vasileios Bampidis, Giovanna Azimonti, Maria de Lourdes Bastos, Henrik Christensen, Birgit Dusemund, Mojca Durjava, Maryline Kouba, Marta López-Alonso, Secundino López Puente, Francesca Marcon, Baltasar Mayo, Alena Pechová, Mariana Petkova, Fernando Ramos, Yolanda Sanz, Roberto Edoardo Villa and Ruud Woutersen.

Legal notice: Relevant information or parts of this scientific output have been blackened in accordance with the confidentiality requests formulated by the applicant pending a decision thereon by the European Commission. The full output has been shared with the European Commission, EU Member States and the applicant. The blackening will be subject to review once the decision on the confidentiality requests is adopted by the European Commission.

Declarations of interest: If you wish to access the declaration of interests of any expert contributing to an EFSA scientific assessment, please contact interestmanagement@efsa.europa.eu.

Acknowledgements: The Panel wishes to thank the following for the support provided to this scientific output: Angelica Amaduzzi, Stefani Fruk, Maria Vittoria Vettori and the FEEDAP Working Groups on Toxicology and Microbiology.

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, 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, Anguita M, Galobart J, Tarrés-Call J, Pettenati E and Ortuño J, 2023. Scientific Opinion on the safety and efficacy of a feed additive consisting of endo-1,4-β-glucanase produced by Trichoderma citrinoviride IMI 360748 (Hostazym C) for use in all poultry species for fattening and reared for laying/breeding, ornamental birds and piglets (weaned and suckling) (Huvepharma NV). EFSA Journal 2023;21(4):7954, 10 pp. https://10.0.11.87/j.efsa.2023.7954

ISSN: 1831-4732

Table of contents

1. Introduction

1.1. Background and Terms of Reference

Regulation (EC) No 1831/2003[1] 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; whereas Article 4(1) of that Regulation lays down that any person seeking authorisation for a feed additive or for a new use of feed additive shall submit an application in accordance with Article 7.

The European Commission received a request from Huvepharma NV[2] for the renewal of the authorisation of the additive consisting of endo-1,4-β-glucanase produced by *Trichoderma citrinoviride* IMI 360748[3] (Hostazym C), when used as a feed additive for chickens for fattening, minor poultry species for fattening and weaned piglets and for the extension of the authorisation to be used in feed for turkeys for fattening, turkeys reared for breeding, chickens reared for laying, minor poultry species reared for laying or breeding, ornamental birds and sucking piglets (category: zootechnical additives; functional group: digestibility enhancers).

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) and under Article 4(1) (authorisation of a feed additive or new use of a feed additive). EFSA received directly from the applicant the technical dossier in support of this application. The particulars and documents in support of the application were considered valid by EFSA as of 28/7/2021.

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 feed additive consisting of endo-1,4-β-glucanase produced by *T. citrinoviride* IMI 360748 (Hostazym C), when used under the proposed conditions of use (see **Section 3.1.2**).

1.2. Additional information

EFSA issued two opinions on the safety and efficacy of this product when used in feed for chickens for fattening, all other birds for fattening and weaned piglets (EFSA FEEDAP Panel, 2013a,b, 2015).

The additive is currently authorised for use in feed for chickens for fattening, minor poultry species for fattening and weaned piglets (4a1616).[4]

2. Data and Methodologies

2.1. Data

The present assessment is based on data submitted by the applicant in the form of a technical dossier[5] in support of the authorisation request for the use of endo-1,4-β-glucanase produced by *T. citrinoviride* IMI 360748 (Hostazym C) as a feed additive.

The dossier was received on 17/3/2021, and the general information and supporting documentation are available at https://open.efsa.europa.eu/questions/EFSA-Q-2021-00157.

The FEEDAP Panel used the data provided by the applicant together with data from other sources, such as previous risk assessments by EFSA.

[1] Regulation (EC) No 1831/2003 of the European Parliament and of the Council of 22 September 2003 on the additives for use in animal nutrition. OJ L 268, 18.10.2003, p. 29.
[2] Huvepharma NV, Uitbreidingstraat 80, 2600 Antwerp (Belgium).
[3] Previously referred as *Trichoderma citrinoviride* Bisset IM SD142.
[4] Commission implementing Regulation (EU) 2015/2035 of 10 December 2015 concerning the authorisation of a preparation of endo-1,4-β-glucanase (EC 3.2.1.4) produced by *T. citrinoviride* Bisset (IM SD142) as a feed additive for chickens for fattening, minor poultry species for fattening and weaned piglets, and amending Regulations (EC) No 2148/2004 and (EC) No 1520/2007 (holder of authorisation Huvepharma NV).
[5] FEED dossier reference: FAD-2021-0023.

The European Union Reference Laboratory (EURL) considered that the conclusions and recommendations reached in the previous assessment regarding the methods used for the control of the endo-1,4-β-glucanase in animal feed are valid and applicable to the current application.[6]

2.2. Methodologies

The approach followed by the FEEDAP Panel to assess the safety and the efficacy of endo-1,4-β-glucanase produced by *T. citrinoviride* IMI 360748 (Hostazym C) is in line with the principles laid down in Regulation (EC) No 429/2008[7] and the relevant guidance documents: Guidance on studies concerning the safety of use of the additive for users/workers (EFSA FEEDAP Panel, 2012), Guidance on the renewal of the authorisation of feed additives (EFSA FEEDAP Panel, 2013a,b), Guidance on the assessment of the safety of feed additives for the consumer (EFSA FEEDAP Panel, 2017a), Guidance on the identity, characterisation and conditions of use of feed additives (EFSA FEEDAP Panel, 2017b), Guidance on the assessment of the safety of feed additives for the target species (EFSA FEEDAP Panel, 2017c), Guidance on the assessment of the efficacy of feed additives (EFSA FEEDAP Panel, 2018a), Guidance on the characterisation of microorganisms used as feed additives or as production organisms (EFSA FEEDAP Panel, 2018b) and Guidance on the assessment of the safety of feed additives for the environment (EFSA FEEDAP Panel, 2019).

3. Assessment

The product Hostazym C, containing endo-1,4-β-glucanase (IUBMB EC 3.2.1.6) produced by a non-genetically modified strain of *T. citrinoviride* (IMI 360748), is currently authorised as a zootechnical additive (functional group: digestibility enhancers) for use in feed for chickens for fattening, minor poultry species for fattening and weaned piglets. The applicant requested the renewal of the above authorisation. In addition, the applicant requested the extension of its use in feed for chickens reared for laying, turkeys for fattening, turkeys reared for breeding, other minor poultry species reared for laying or breeding, ornamental birds, and suckling piglets.

3.1. Characterisation

3.1.1. Characterisation of the additive

The authorised additive Hostazym® C consists of an endo-1,4-β-glucanase produced by a non-genetically modified strain of *T. citrinoviride* (IMI 360748).

The applicant declared that no changes in the manufacturing process and composition of the additive have been applied since the authorisation of the product.

Three formulations are described by the applicant: Hostazym® C 2000 MG (solid, granulated) containing the purified enzyme concentrate ([redacted]), pregelatinised starch ([redacted]) and wheat meal ([redacted]), with a minimum activity of 2,000 CU[8]/g of product; Hostazym® C 7000 MG (solid, granulated) containing the enzyme concentrate ([redacted]), pregelatinised starch ([redacted]) and wheat meal ([redacted]), with a minimum activity of 7,000 CU/g of product; and Hostazym® C 2000 L (liquid) containing the purified enzyme concentrate ([redacted]), sorbitol ([redacted]), propylene glycol ([redacted]) and water ([redacted]), with a minimum activity of 2,000 CU/g of product.

Analytical data to confirm the enzyme activity were provided for five batches of each formulation of the additive,[9] showing the following average values (in CU/g): 2,872 (range 2,550–3,100) for 2,000 MG; 8,200 (range 8,100–8,320) for 7,000 MG; and 2,271 (range 2,050–2,400) for 2,000 L.

Three batches of each formulation of the additive were analysed for chemical and microbial impurities.[10] The values of lead, arsenic and mercury in all batches analysed of the three formulations were below the respective limit of detection (LOD),[11] except for one batch of 2,000 MG, showing 0.20 mg arsenic/kg, and one batch of 7,000 MG, showing 0.06 mg arsenic/kg. The content of

[6] The full report is available on the EU Science Hub website https://joint-research-centre.ec.europa.eu/system/files/2019-06/m1-fa_pm_fs-fad-2010-0062.pdf

[7] 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.

[8] One cellulase unit releases 0.128 μmol of reducing sugar, glucose equivalents, per minute under defined conditions (30–50°C).

[9] Technical dossier/SIn_200922/Annexes_RTQ_05, 08 and 11.

[10] Technical dossier/SIn_200922/Annexes_RTQ_07, 10 and 13.

[11] LOD (mg/kg) – Cd: 0.010; Lead: 0.05; Arsenic: 0.04; Mercury: 0.005.

cadmium in the solid forms of the additive was on average 0.06 mg/kg (range 0.02–0.14 mg/kg) and 0.04 mg/kg (range 0.03–0.05 mg/kg) for the 2,000 MG and 7,000 MG, respectively. Cadmium was not detected in any batch of the liquid form.

The content of aflatoxins B1, B2, G1 and G2, deoxynivalenol, ochratoxin A and zearalenone was analysed in the same three batches of each form of the additive. The only mycotoxin detected in the solid form was deoxynivalenol, with an average content of 164 mg/kg (range 153–176 mg/kg) and 160 mg/kg (range 130–180 mg/kg) for the 2,000 and 7,000 MG, respectively. No mycotoxins were detected in any batch of the liquid form.[12]

Regarding the microbiological contamination, Enterobacteriaceae and *Salmonella* spp. were not detected (in 25 g) in three batches of each formulation. Total yeasts and filamentous fungi showed an average value of 2,667 (range 1,000–5,000) colony-forming units (CFU)/g in 2,000 MG, 3,667 (range 3,000 – 4,000) CFU/g in 7,000 MG and < 100 CFU/mL in 2,000 L.[10]

The FEEDAP Panel considers that the microbial contamination and the amounts of the detected impurities do not raise safety concerns.

No new data have been provided regarding the physico chemical properties or stability of the additive. Since no changes have been introduced in the additive or its manufacturing process, the data described in previous opinions still apply (EFSA FEEDAP Panel, 2013a,b).

The glucanase present in the additive is produced by a non-genetically modified strain of *T. citrinoviride* which is deposited at the CABI-IMI Culture Collection with the accession number IMI 360748 [redacted]

The taxonomic identification of the production strain IMI 360748 as *T. citrinoviride* was achieved by analysis of the [redacted] and showed best matches with strains of *T. citrinoviride*.[13]

The capacity of the production strain to produce antimicrobials was tested in culture supernatants obtained from the fermentation of three industrial-scale batches of the additive, with disc-diffusion agar method against the following reference strains: *Staphylococcus aureus* ATCC 25923, *Enterococcus faecalis* ATCC 29212, *Escherichia coli* ATCC 25922, *Bacillus subtilis* subsp. *spizizenii* ATCC 6633 and *Pseudomonas aeruginosa* ATCC 27853.[14] No antimicrobial activity was detected.

Since some *Trichoderma* species are known to be capable of producing potentially toxic compounds, the presence of peptaibols was analysed in three batches of the intermediate enzyme concentrate, showing an average content of [redacted].[15] The Panel concludes that the production strain *T. citrinoviride* IMI 360748 produces peptaibols. However, considering the low concentration of peptaibols detected in the intermediate enzyme concentrate and the dilution factor applied to obtain the final formulation (ca. 10–35 times), the carryover in the additive is unlikely to raise safety concerns. In addition, no peptaibols were detected in five replicated samples of feed materials (wheat or corn) when supplemented with the maximum proposed concentration of the additive in feed (500 CU/kg of Hostazym® C).[16] This would be further supported by the absence of antimicrobial activity in the supernatant of the production strain and the results of the toxicological and tolerance studies previously evaluated (EFSA FEEDAP Panel, 2013a,b, 2015).

The presence of viable cells of the production strain was investigated in three batches of the intermediate enzyme concentrate ([redacted]) tested in triplicate.[17] [redacted] No viable cells of the production strain were found in an intermediate product representative of the final formulations.

[12] LOD (μg/kg; both solid and liquid forms) – Aflatoxin B1: 1; Aflatoxin B2: 1; Aflatoxin G1: 1; Aflatoxin G2: 1; Deoxynivalenol: 100; Ochratoxin A: 1; Zearalenone: 5.
[13] Technical dossier/SIn_140223/Annex RTQ.II_01.
[14] Technical dossier/SIn_200922/Annex RTQ_17.
[15] Technical dossier/SIn_200922/Annex RTQ_14.
[16] Technical dossier/SIn_200922/Annex RTQ_15.
[17] Technical dossier/SIn_200922/Annex RTQ_18.

3.1.2. Conditions of use

The additive is currently authorised for use in feed as a zootechnical additive (digestibility enhancers) for chickens for fattening and minor poultry species for fattening at a proposed minimum concentration of 500 CU/kg complete feed; and for weaned piglets at a proposed minimum concentration of 350 CU/kg complete feed.

Other provisions as stated in the authorisation are:

- In the directions for use of the additive and premixture, indicate the storage conditions and stability to pelleting.
- For safety: breathing protection, glasses and gloves shall be used during handling.
- For use in weaned piglets until ~ 35 kg.

The applicant has not asked to modify these conditions of use.

The applicant requests the extension of use for chickens reared for laying, turkeys for fattening, turkeys reared for breeding, minor poultry species reared for laying/breeding, ornamental birds at a proposed minimum concentration of 500 CU/kg complete feed and suckling piglets (for the period in which solid feed is given) at a proposed minimum concentration of 350 CU/kg complete feed.

3.2. Safety

The safety of Hostazym® C for the target species, consumers, users and the environment, including the safety of the production strain, has been evaluated in previous opinions (EFSA FEEDAP Panel, 2013a,b, 2015). In those opinions, the Panel concluded that the additive was safe for the target species evaluated and that the use of the product as a feed additive would be of no concern for the consumers or the environment. Regarding the safety for the user, no specific studies were provided. Therefore, the product was considered a potential skin and eye irritant and a potential skin and respiratory sensitiser.

For the present dossier, the applicant (i) states that no adverse events in any of the target animal species, consumers and users have been reported to Huvepharma since the market authorisation of Hostazym® C, (ii) 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 and (iii) provided new tests to support the safety for the users. The Panel should also address the safety aspects for the new target species for which the applicant requests authorisation.

3.2.1. Literature search

The literature search was conducted in CAB Abstracts® and FSTA® covering from 2010 to 2021 and considered studies in the target species (including those for which an extension of use has been requested in the current application), consumers, users/workers, the environment, and the production strain.[18] The number of hits identified after duplicate removal was 885. Titles and abstracts were further screened against the inclusion criteria concerning the potentially harmful effects of glucanases and the production microorganism on humans and/or the target animals, resulting in 56 hits. These publications were full-text screened and six were considered for this assessment. Four of these publications were EFSA opinions on the same additive (EFSA FEEDAP Panel, 2013a,b, 2015) or in another multi-enzyme product containing the same glucanase produced by *T. citrinoviride* (EFSA FEEDAP Panel, 2017d, 2019). The other two publications assessed the supplementation of the diets of laying hens with an additive combining Hostazym® C and an endo-1,4-xylanase on the zootechnical performance and mortality of laying hens (Prytkov et al., 2020, 2021). These studies showed limitations to be supportive of the safety for the target species due to (i) the length of the trials (4 weeks in Prytkov et al., 2020); (ii) the limited number of endpoints considered; (iii) the lack of information about the enzyme activity in feed; and (iv) the combined use of the additive with other substance. Despite that, none of them had a negative effect on the birds' performance and mortality.

3.2.2. Safety for the user

The applicant provided new tests to evaluate the skin corrosion, eye irritation and skin sensitisation potential for the most concentrated form of the microgranulate presentation (Hostazym® C 7000

[18] Technical dossier/SIn_200922/Annex RTQ_20.

MicroGranulate) and for the liquid formulation (Hostazym® C 2000 Liquid). No studies investigating the skin irritation potential of the additive were submitted.

The skin corrosion potential of Hostazym® C 7000 MG and C 2000 L was investigated in an *in vitro* skin corrosion study according to OECD TG 431. The results of the test indicated that both forms of the additive tested could be categorised according to the UN GHS classification as 'Non-corrosive'.

The eye irritation potential of Hostazym® C 7000 MG and 2000 L was investigated *in vivo* using New Zealand white rabbits. The study was performed according to OECD TG 405. The irritating effect was scored according to the Draize method. According to the UN GHS classification criteria, both forms of the additive tested can be classified as non-irritant to the eyes (UN GHS 'No Category').

The skin sensitisation potential of Hostazym® C 7000 MG and 2000 L was investigated using the Local Lymph Node Assay in mice according to OECD TG 429. The results of the study indicated that the additive is a skin sensitiser.

Conclusions on user safety

The Panel notes that the conclusions reached in Hostazym® C 7000 MG apply to 2000 MG. Therefore, based on the studies provided, the formulations of the additive are neither skin corrosive nor eye irritant but should be considered skin sensitisers. The Panel cannot conclude on the potential of the formulations of the additive to be skin irritants. Due to the proteinaceous nature of the active substance (endo-1,4-β-glucanase), the additive is considered a respiratory sensitiser.

3.2.3. Safety aspects related to the new use of the additive

The current application requests for an extension of use of the additive to turkeys for fattening, turkeys reared for breeding, chickens reared for laying, minor poultry species reared for laying/breeding, ornamental birds and suckling piglets.

Regarding the safety for the target species, the FEEDAP Panel evaluated tolerance trials in previous opinions which showed that chickens for fattening and weaned piglets tolerated well a level of 75,000 CU/kg feed. The Panel considers that the conclusions from chickens for fattening can be extrapolated to turkeys for fattening, turkeys reared for breeding, chickens reared for laying, minor avian species reared for laying/breeding, ornamental birds and the conclusions reached in weaned piglets can be extended to suckling piglets. Therefore, the Panel concludes that the additive is safe for all poultry species for fattening and reared for laying/breeding, and ornamental birds at 500 CU/kg, and for suckling and weaned piglets at 350 CU/kg feed.

Since the proposed extension of use to the new species/categories would not introduce risks not already evaluated in the previous opinions, the Panel considers that the conclusions of the previous assessments regarding the safety for the consumers and environment still apply to the present assessment. Therefore, the additive is considered safe for the consumers and the environment.

3.2.4. Conclusions on safety

Based on the information provided by the applicant and the fact that the manufacturing and composition of the additive have not been modified, the FEEDAP Panel concludes that there is no evidence to reconsider the conclusions reached in the previous opinion on the safety of the additive for chickens for fattening, minor poultry species for fattening and weaned piglets. Therefore, the Panel concludes that the additive remains safe under the approved conditions for those target species, consumers and the environment.

The Panel concludes that the additive is safe for all poultry species for fattening and reared for laying/breeding, and ornamental birds at 500 CU/kg, and for suckling and weaned piglets at 350 CU/kg feed. The use of the additive in these target species is considered safe for the consumer and the environment.

The additive is not an eye irritant, but it should be considered a skin and respiratory sensitiser. No conclusion can be drawn on the skin irritancy potential of the additive.

3.3. Efficacy

The present application for renewal of the authorisation does not include a proposal for amending or supplementing the conditions of use for those species/categories for which there is an authorisation. Therefore, there is no need to assess the efficacy of the additive in the context of the renewal of the authorisation.

The current application includes the extension of use to turkeys for fattening, turkeys reared for breeding, chickens reared for laying, minor poultry species reared for breeding and laying, and ornamental birds at 500 CU/kg feed, and to suckling piglets at 350 CU/kg. The FEEDAP Panel has concluded in a previous opinion that the additive is efficacious in chickens for fattening at 500 CU/kg feed and weaned piglets at 350 CU/kg (EFSA FEEDAP Panel, 2013a,b). The Panel considers that the conclusions reached in chickens for fattening can be extended to all poultry species for fattening, reared for laying/breeding and ornamental birds, and those reached in piglets can be extended to suckling piglets (in the period for which solid feed is given).

3.4. Post-market monitoring

The FEEDAP Panel considers that there is no need for specific requirements for a post-market monitoring plan other than those established in the Feed Hygiene Regulation[19] and Good Manufacturing Practice.

4. Conclusions

The applicant provided evidence that the additive currently in the market complies with the conditions of the authorisation.

The Panel concludes that the additive remains safe in chickens for fattening, minor poultry species for fattening and weaned piglets at the authorised conditions of use. These conclusions can be extended to all poultry species for fattening, reared for laying/breeding and ornamental birds at 500 CU/kg, and for suckling piglets at 350 CU/kg feed.

The use of the feed additive in animal nutrition is safe for the proposed conditions of use for consumers and the environment.

The additive is not a skin corrosive or eye irritant, but it should be considered a skin and respiratory sensitiser. No conclusion can be reached for the skin irritancy of the additive.

There is no need for the assessment of efficacy for chickens for fattening, minor poultry species for fattening and weaned piglets. The additive has the potential to be efficacious in all poultry species for fattening, reared for laying/breeding and ornamental birds at 500 CU/kg feed, and in suckling piglets at 350 CU/kg feed.

References

EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2012. Guidance on studies concerning the safety of use of the additive for users/workers. EFSA Journal 2012;10(1):2539, 5 pp. https://doi.org/10.2903/j.efsa.2012.2539

EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2013a. 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.2013.343

EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2013b. Scientific Opinion on the safety and efficacy of Hostazym C (endo-1,4-beta-glucanase) as feed additive for chickens for fattening, all other birds for fattening and piglets (weaned). EFSA Journal 2013;11(7):3207, 18 pp. https://doi.org/10.2903/j.efsa.2013.3207

EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2015. Scientific Opinion on the safety of Hostazym C (endo-1,4-beta-glucanase) as a feed additive for chickens for fattening, all other birds for fattening and piglets (weaned). EFSA Journal 2015;13(3):4054, 9 pp. https://doi.org/10.2903/j.efsa.2015.4054

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, Anguita M, Dujardin B, Galobart J and Innocenti ML, 2017a. Guidance on the assessment of the safety of feed additives for the consumer. EFSA Journal 2017;15(10):5022, 17 pp. https://doi.org/10.2903/j.efsa.2017.5022

[19] Regulation (EC) No 183/2005 of the European Parliament and of the Council of 12 January 2005 laying down requirements for feed hygiene. OJ L 35, 8.2.2005, p. 1.

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, Anguita M, Galobart J and Innocenti ML, 2017b. Guidance on the identity, characterisation and conditions of use of feed additives. EFSA Journal 2017;15(10):5023, 12 pp. https://doi.org/10.2903/j.efsa.2017.5023

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, Anguita M, Galobart J, Innocenti ML and Martino L, 2017c. Guidance on the assessment of the safety of feed additives for the target species. EFSA Journal 2017;15(10):5021, 19 pp. https://doi.org/10.2903/j.efsa.2017.5021

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, Brantom P, Dierick N, Aguilera J, Anguita M and Additives, E.P.O. & Products or substances used in animal feed, 2017d. Safety and efficacy of FRA octazyme C dry (alpha-galactosidase, alpha-amylase, endo-1,3(4)-beta-glucanase, endo-1,4-beta-glucanase, mannan-endo-1,4-beta-mannosidase, pectinase, protease, endo-1,4-beta-xylanase) for chickens for fattening and weaned piglets. EFSA Journal 2017;15(8):4943, 20 pp. https://doi.org/10.2903/j.efsa.2017.4943

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, Anguita M, Galobart J, Innocenti ML and Martino L, 2018a. Guidance on the assessment of the efficacy of feed additives. EFSA Journal 2018;16(5):5274, 25 pp. https://doi.org/10.2903/j.efsa.2018.5274

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, 2018b. 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

EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), Bampidis V, Bastos M, Christensen H, Dusemund B, Kouba M, Kos Durjava M, López-Alonso M, López Puente S, Marcon F, Mayo B, Pechová A, Petkova M, Ramos F, Sanz Y, Villa RE, Woutersen R, Brock T, de Knecht J, Kolar B, van Beelen P, Padovani L, Tarres-Call J, Vettori MV and Azimonti G, 2019. Guidance on the assessment of the safety of feed additives for the environment. EFSA Journal 2019;17(4):5648, 78 pp. https://doi.org/10.2903/j.efsa.2019.5648

Prytkov YN, Ageev BV, Kiseleva KV, Bochkareva EV and Alieva EN, 2020. The effects of multienzyme Hostazym Combi on the productive performance in laying hens fed freshly harvested wheat. Ptitsevodstvo, 43–45.

Prytkov YN, Ageev BV, Bochkareva EV, Kiseleva KV and Alieva EN, 2021. The use of the enzymic preparation Hostazym Combi at the poultry factory of LLC "avangard". Zootekhniya, 30–32.

Abbreviations

CABI-IMI	Centre for Agriculture and Bioscience International-International Mycological Institute
EF1α	elongation factor 1 alfa
EURL	European Union Reference Laboratory
FEEDAP	EFSA Scientific Panel on Additives and Products or Substances used in Animal Feed
FSTA	Food Science and Technology Abstracts
ITS	internal transcribed spacer
LOD	limit of detection
NCBI	National Center for Biotechnology Information
OECD	Organisation for Economic Co-operation and Development
RNA	ribonucleic acid
UN GHS	United Nations Globally Harmonized System of Classification and Labelling of Chemicals