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Efficacy of the feed additive consisting of 6-phytase (produced by *Komagataella phaffii* CGMCC 7.19) (Nutrase P) for chickens for fattening, other poultry for fattening or reared for laying and ornamental birds (Nutrex N.V.)

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Abstract

Following a request from the European Commission, EFSA was asked to deliver a scientific opinion on the efficacy of 6-phytase produced by *Komagataella phaffii* CGMCC 7.19 (Nutrase P) as a zootechnical feed additive for chickens for fattening, other poultry for fattening or reared for laying and ornamental birds. In a previous opinion, the FEEDAP Panel concluded on the efficacy of Nutrase P for the target species at the level of 1,500 phytase units (FTU)/kg but could not conclude at the minimum recommended use level of 500 FTU/kg complete feed. The applicant has provided supplementary information, consisting in the statistical re-analysis of the long-term study assessed in the original opinion, in order to support the efficacy of the additive at the minimum recommended level of 500 FTU/kg complete feed. Considering the previously submitted studies and the re-analysis of the long-term study, the Panel concluded that the additive has a potential to be efficacious for chickens for fattening, other poultry for fattening or reared for laying and ornamental birds under the proposed conditions of use.

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1. Introduction

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

Regulation (EC) No 1831/2003¹ establishes the rules governing the Community authorisation of additives for use in animal nutrition and, in particular, Article 9 defines the terms of the authorisation by the Commission.

The applicant, Nutrex b.v., is seeking a Community authorisation of 6-phytase (produced by *Komagataella phaffii* CGMCC 7.19) (Nutrase P) as a feed additive to be used as digestibility enhancer and other zootechnical additive in chickens for fattening, other poultry species for fattening or reared for laying and ornamental birds (Table 1).

Table 1: Description of the additive

Category of additive	Zootechnical additives
Functional group of additive	Digestibility enhancers
Description	6-phytase (produced by <i>Komagataella phaffii</i> CGMCC 7.19) (Nutrase P)
Target animal category	Chickens for fattening, other poultry species for fattening or reared for laying and ornamental birds
Applicant	Nutrex b.v.
Type of request	New opinion

On 4 May 2022, the Panel on Additives and Products or Substances used in Animal Feed (FEEDAP) of the European Food Safety Authority (EFSA), in its opinion on the safety and efficacy of a feed additive consisting of 6-phytase (produced by *Komagataella phaffii* CGMCC 7.19) (Nutrase P), concluded that the additive is efficacious as digestibility enhancer in chickens for fattening, other poultry species for fattening or reared for laying and ornamental birds at the level of 1,500 FTU/kg complete feed.

On 26 September 2022, the applicant requested the possibility to demonstrate that the additive is efficacious at a lower level of 500 FTU/kg complete feed.

The Commission gave the possibility to the applicant to submit supplementary information and data in order to complete the assessment and to allow a revision of the EFSA's opinion. The new data have been received by the Commission on 25 May 2023.

In view of the above, the Commission asks EFSA to deliver a new opinion on 6-phytase (produced by *Komagataella phaffii* CGMCC 7.19) (Nutrase P) as a feed additive for chickens for fattening, other poultry species for fattening or reared for laying and ornamental birds based on the supplementary information and data submitted by the applicant, in accordance with Article 29(1)(a) of Regulation (EC) No 178/2002.

1.2. Additional information

The additive, with the trade name Nutrase P, is a preparation containing 6-phytase produced by a genetically modified strain of *Komagataella phaffii* (CGMCC 7.19). The FEEDAP Panel adopted two opinions on the safety and efficacy of this product when used in feed for chickens for fattening, other poultry species for fattening or reared for laying, and ornamental birds (EFSA FEEDAP Panel, 2020, 2022). The additive is currently not authorised in the European Union.

2. Data and methodologies

2.1. Data

The present assessment is based on data submitted by the applicant in the form of supplementary information² to a previous application on the same product.³ The dossier was received on 1/6/2023

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 Dossier reference: EFSA-Q-2023-00376.

³ Dossier reference: FAD-2019-0005.

and the general information and supporting documentation are available on Open.EFSA at <https://open.efsa.europa.eu/questions/EFSA-Q-2023-00376>.

In accordance with Article 38 of the Regulation (EC) No 178/2002⁴ and taking into account the protection of confidential information and of personal data in accordance with Articles 39 to 39e of the same Regulation, and of the Decision of EFSA's Executive Director laying down practical arrangements concerning transparency and confidentiality,⁵ a non-confidential version of the supplementary information has been published on Open.EFSA.

2.2. Methodologies

The approach followed by the FEEDAP Panel to assess the efficacy of 6-phytase produced by *K. phaffii* CGMCC 7.19 (Nutrase P) is in line with the principles laid down in Regulation (EC) No 429/2008⁶ and the relevant guidance documents: Guidance on the assessment of the efficacy of feed additives (EFSA FEEDAP Panel, 2018).

3. Assessment

The additive, with the trade name Nutrase P, containing 6-phytase produced by a genetically modified strain of *K. phaffii* (CGMCC 7.19), is intended to be used as a zootechnical feed additive (functional group: digestibility enhancers) in feed for chickens for fattening, other poultry for fattening or reared for laying and ornamental birds.

In 2020, the FEEDAP Panel issued an opinion on the safety and efficacy of Nutrase P and could not conclude on the safety and the efficacy of the additive at the recommended use level of 250 phytase units (FTU)/kg complete feed. The applicant provided supplementary information to address the limitations identified in that assessment and proposed to increase the minimum recommended use level to 500 FTU/kg complete feed. In a second opinion adopted in 2022, the FEEDAP Panel concluded that the additive does not pose any safety concern regarding the safety for the target species, consumers and the environment, but should be considered as a respiratory sensitiser. Additionally, the FEEDAP Panel concluded that the additive is efficacious in chickens for fattening, other poultry for fattening or reared for laying, and ornamental birds at 1,500 FTU/kg complete feed.

In the current submission, the applicant provided supplementary information to support the efficacy of Nutrase P at the minimum recommended use level of 500 FTU/kg complete feed.

3.1. Efficacy

In a previous opinion, the Panel evaluated two long-term trials designed to study the effect of Nutrase P on the performance of chickens for fattening and on phosphorus utilisation (EFSA FEEDAP Panel, 2020). In one of the trials (trial 1), the animals fed Nutrase P at 1,500 FTU/kg complete feed showed a significant higher phosphorus retention compared to those receiving the control diet. In the other trial (trial 2), a higher final body weight and body weight gain were observed at a supplementation level of 250 FTU/kg complete feed, and a higher phosphorus retention was shown at 250 FTU/kg and 500 FTU/kg complete feed. In a second opinion (EFSA FEEDAP Panel, 2022), the Panel assessed a third tolerance/efficacy study (trial 3) in chickens for fattening, in which the effect of the additive on the zootechnical performance, phosphorus retention and bone mineralisation was evaluated. In this opinion, a higher final body weight in animals fed Nutrase P at 100,000 FTU/kg feed was reported, while the birds receiving the additive at 500 FTU/kg showed higher phosphorus retention, higher tibia ash and phosphorus content compared to the control. Considering all the studies available, the FEEDAP Panel concluded that the additive is efficacious at 1,500 FTU/kg complete feed.

In the current submission, the applicant has provided statistical re-analyses of the long-term study 'trial 1' assessed in the first opinion (EFSA FEEDAP Panel, 2020), in order to support the efficacy of the additive at the minimum recommended level of 500 FTU/kg complete feed instead of the level currently considered efficacious of 1,500 FTU/kg. In trial 1, a total of 216 one-day-old female chickens

⁴ Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. OJ L 31, 1.2.2002, p. 1–48.

⁵ Decision available online: <https://www.efsa.europa.eu/en/corporate-pubs/transparency-regulation-practical-arrangements>

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.

(Ross 308) were caged in groups of six birds and allocated to six dietary treatments (six replicates per treatment). Two basal diets, starter and grower, based on maize and soybean meal, were either not supplemented (control) or supplemented with Nutrase P to provide 125, 250, 500 or 1,500 FTU/kg complete feed. A positive control was also included. Pelleted diets were offered *ad libitum* up to day 35. Feed intake was measured throughout the study, body weight was measured on days 0, 14 and 35 (cage basis) and feed to gain ratio calculated. Water intake was measured per pen from day 15 to 17 and from day 29 to 31. Mortality was checked every day. For the evaluation of the phosphorus utilisation, total excreta was collected quantitatively during five consecutive days starting on day 20 and analysed for phosphorus content and the phosphorus retention calculated. The data on phosphorus retention were subjected to analysis of variance (ANOVA) using the Bonferroni test for the multiple comparisons of means. Significance level was set at 0.05.

In the previous submission, the data on phosphorus retention showed a significant effect of the diet but the comparison of the means showed differences only between the control and the 1,500 U/kg group. In the current submission, the group means for phosphorus retention were reanalysed using a Dunnett's test. The results of the new analysis showed a significant higher phosphorus retention at 500 (62.8%) and 1,500 FTU/kg (65.1%) compared to the control (59.4%). The phosphorus retention at 250 FTU/kg (62.5%) was not different to the control group.

In summary, one trial in chickens for fattening showed an improved performance and phosphorus retention at 250 FTU/kg (trial 2) and two other trials at 500 FTU/kg complete feed (trials 1 and 3). Therefore, the Panel concludes that Nutrase P has the potential to be efficacious as a zootechnical additive (digestibility enhancer) when supplemented at the minimum recommended level of 500 FTU/kg complete feed in chickens for fattening. These conclusions are extended/extrapolated to other poultry for fattening or reared for laying and ornamental birds.

4. Conclusions

The additive is considered to be efficacious improving phosphorus retention when used in diets for chickens for fattening, other poultry for fattening or reared for laying and ornamental birds, at the minimum recommended level of 500 FTU/kg complete feed.

References

- 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, Borjes 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, 2018. 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), Bampidis, V, Azimonti, G, Bastos, ML, Christensen, H, Dusemund, B, Kouba, M, Fašmon Durjava, M, López-Alonso, M, López Puente, S, Marcon, F, Mayo, B, Pechová, A, Petkova, M, Ramos, F, Sanz, Y, Villa, RE, Woutersen, R, Cocconcelli, PS, Glandorf, B, Herman, L, Maradona Prieto, M, Rychen, G, Saarela, M, Anguita, M, Galobart, J, Gregoretto, L, Innocenti, M, Lopez-Galvez, G, Pettenati, E, Sofianidis, K, Brozzi, R and Vettori, MV, 2020. Scientific Opinion on the safety and efficacy of Nutrase P (6-phytase) for chickens for fattening, other poultry for fattening, reared for laying and ornamental birds. *EFSA Journal* 2020;18(11):6282, 17 pp. <https://doi.org/10.2903/j.efsa.2020.6282>
- 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, Dierick, N, Anguita, M, Galobart, J, Ortuño, J and Pettenati, E, 2022. Scientific Opinion on the safety and efficacy of the feed additive consisting of 6-phytase (produced by *Komagataella phaffii* CGMCC 7.19) (Nutrase P) for chickens for fattening, other poultry for fattening or reared for laying and ornamental birds (Nutrex N.V.). *EFSA Journal* 2022;20(6):7343, 9 pp. <https://doi.org/10.2903/j.efsa.2022.7343>

Abbreviations

ANOVA	analysis of variance
CGMCC	China General Microbiological Culture Collection Centre
FEEDAP	Panel on Additives and Products or Substances used in Animal Feed
FTU	phytase units