

ADOPTED: 17 March 2020

doi: 10.2903/j.efsa.2020.6063

Assessment of the application for renewal of authorisation of AviPlus[®] as a feed additive for all porcine species (weaned), chickens for fattening, chickens reared for laying, minor poultry species for fattening, minor poultry species reared for laying

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 Kos 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, Orsolya Holczknecht, Jordi Tarrés-Call, Elisa Pettenati, Fabiola Pizzo and Paola Manini

Abstract

AviPlus[®] is an additive containing a mixture of sorbic acid, citric acid, thymol and vanillin. The applicant requested for the renewal of the authorisation for AviPlus[®] when used as a feed additive in all porcine species (weaned), chickens for fattening, chickens reared for laying, minor poultry species for fattening, minor poultry species reared for laying. The applicant has provided evidence that the additive in the market complies with the conditions of the authorisation. The Panel on Additives and Products or Substances used in Animal Feed (FEEDAP Panel) confirms that the use of AviPlus[®] under the current authorized conditions of use is safe for the target species, the consumers, the users and the environment. There is no need for assessing the efficacy of the additive in the context of the renewal of the authorisation.

© 2020 European Food Safety Authority. *EFSA Journal* published by John Wiley and Sons Ltd on behalf of European Food Safety Authority.

Keywords: zootechnical additives, AviPlus[®], renewal, safety, efficacy, poultry, pigs

Requestor: European Commission

Question number: EFSA-Q-2019-00590

Correspondence: feedap@efsa.europa.eu

Panel members: Giovanna Azimonti, Vasileios Bampidis Maria de Lourdes Bastos, Henrik Christensen, Birgit Dusemund, Mojca Kos 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.

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, Kos 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, Holczknecht O, Tarrés-Call J, Pettenati E, Pizzo F and Manini P, 2020. Scientific Opinion on the assessment of the application for renewal of authorisation of AviPlus® as a feed additive for all porcine species (weaned), chickens for fattening, chickens reared for laying, minor poultry species for fattening, minor poultry species reared for laying. *EFSA Journal* 2020;18(4):6063, 8 pp. <https://doi.org/10.2903/j.efsa.2020.6063>

ISSN: 1831-4732

© 2020 European Food Safety Authority. *EFSA Journal* published by John Wiley and Sons Ltd on behalf of European Food Safety Authority.

This is an open access article under the terms of the [Creative Commons Attribution-NoDerivs License](https://creativecommons.org/licenses/by/4.0/), which permits use and distribution in any medium, provided the original work is properly cited and no modifications or adaptations are made.



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



Table of contents

Abstract.....	1
1. Introduction.....	4
1.1. Background and Terms of Reference as provided by the requestor.....	4
1.2. Additional information.....	4
2. Data and methodologies.....	4
2.1. Data.....	4
2.2. Methodologies.....	5
3. Assessment.....	5
3.1. Characterisation of the additive.....	5
3.1.1. Conditions of use.....	5
3.2. Safety.....	6
3.2.1. Conclusions on safety.....	6
3.3. Efficacy.....	6
3.4. Post-market monitoring.....	6
4. Conclusions.....	6
5. Documentation as provided to EFSA/Chronology.....	7
References.....	7
Abbreviations.....	8

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. 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 VetAgro SPA² for renewal of the authorisation of the product AviPlus®, a preparation of citric acid, sorbic acid, thymol and vanillin, when used as a feed additive for chickens for fattening, chickens reared for laying, all minor avian species for fattening and reared for laying, weaned piglets, weaned *Suidae* other than *Sus scrofa domesticus* (category: zootechnical additives; functional group: other zootechnical 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 23 October 2019.

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 AviPlus®, a preparation of citric acid, sorbic acid, thymol and vanillin, when used under the proposed conditions of use (see Section 3.1.1).

1.2. Additional information

AviPlus®, a preparation of protected microbeads® containing citric acid, sorbic acid, thymol and vanillin, is currently authorised as a zootechnical feed additive for weaned piglets³ and for chickens for fattening, chicken reared for laying, all minor avian species for fattening and reared for laying and weaned *Suidae* other than *S. scrofa domesticus*.⁴

The EFSA Scientific Panel on Additives and Products or Substances used in Animal Feed (FEEDAP) issued two opinions on the safety and efficacy of AviPlus® for weaned piglets (EFSA FEEDAP Panel, 2010) and for chickens and minor avian species for fattening and reared for laying and minor porcine species (weaned) (EFSA FEEDAP Panel, 2012a). In 2019, EFSA issued a third opinion on the safety and efficacy of AviPlus® for turkeys for fattening, turkeys reared for breeding and suckling piglets (EFSA FEEDAP Panel, 2019).

2. Data and methodologies

2.1. Data

The present assessment is based on data submitted by the applicant in the form of a technical dossier⁵ in support of the authorisation request for the use of AviPlus® (a preparation of citric acid, sorbic acid, thymol and vanillin) as a feed additive.

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 citric acid, sorbic acid and thymol in animal feed are valid and applicable for the current application.⁶

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 VetAgro SPA, Via Porro 2 - 42124 Reggio Emilia – Italy.

³ Commission Regulation (EU) No 1117/2010 of 2 December 2010 concerning the authorisation of a preparation of citric acid, sorbic acid, thymol and vanillin as a feed additive for weaned piglets (holder of the authorisation Vetagro SpA). OJ L 317, 3.12.2010, p. 3.

⁴ Commission Implementing Regulation (EU) No 849/2012 of 19 September 2012 concerning the authorisation of the preparation of citric acid, sorbic acid, thymol and vanillin as a feed additive for chickens for fattening, chickens reared for laying, all minor avian species for fattening and reared for laying and weaned *Suidae* other than *Sus scrofa domesticus* (holder of the authorisation Vetagro SpA). OJ L 253, 20.9.2012, p. 8.

⁵ FEED dossier references: FAD-2019-0054.

⁶ The full report is available on the EURL website: <https://ec.europa.eu/jrc/sites/jrcsh/files/FinRep-FAD-2008-0049.pdf>

2.2. Methodologies

The approach followed by the FEEDAP Panel to assess the safety and the efficacy of AviPlus® (a preparation of citric acid, sorbic acid, thymol and vanillin) is in line with the principles laid down in Regulation (EC) No 429/2008⁷ and the relevant guidance documents: Guidance on the renewal of the authorisation of feed additives (EFSA FEEDAP Panel, 2013).

3. Assessment

The additive AviPlus® is a preparation of citric acid, sorbic acid, thymol and vanillin and is currently authorised as a zootechnical additive (functional group other zootechnical additives) for use in chickens for fattening, chickens reared for laying, all minor avian species for fattening and reared for laying, and in weaned piglets and weaned Suidae other than *S. scrofa domesticus*.

The current application is for the renewal of the authorisation of AviPlus® for use in feed for the above mentioned species.

3.1. Characterisation of the additive

The additive AviPlus® is authorised as a preparation of protected microbeads containing a minimum of 250 g citric acid/kg, 167 g sorbic acid/kg, 17 g thymol/kg and 10 g vanillin/kg. In addition to the active substances, the additive also contains hydrogenated triglycerides of vegetable origin (≥ 480 g/kg), lecithin as an emulsifier (10 g/kg) and silicon dioxide⁸ as an additional anticaking agent (38 g/kg).

The applicant declared that the manufacturing process and the composition of the additive have not been modified since the previous authorisation and provided data from recent batches on the composition of the additive to support this statement. The applicant stated that only sources of citric acid that are authorised for use in food and feed are used in the manufacturing of the additive. The applicant is currently using citric acid produced by two *Aspergillus niger* strains [REDACTED] which have been evaluated by the EFSA FEEDAP Panel in 2015 (EFSA FEEDAP Panel, 2015a).

The batch-to-batch variation was studied in three recent batches of AviPlus®.⁹ The concentration of citric acid was on average 259 g/kg (range: 257–263 g/kg), that of sorbic acid was 176 g/kg (173–178 g/kg), thymol and vanillin were, respectively, 21 g/kg and 12 g/kg in all batches.

Purity specifications include chemical contaminants, lead (≤ 10 mg/kg), cadmium (≤ 1 mg/kg), mercury (≤ 0.1 mg/kg) and arsenic (≤ 2 mg/kg), as well as microbial purity (aerobic count, anaerobic plate count, yeast, and mould < 10 colony forming units (CFU)/g), and absence of *Salmonella* spp. (negative in 25 g). Compliance with these specifications was demonstrated in at least three recent batches of AviPlus®.¹⁰ Purity data submitted included also information on dioxins (0.15–0.19 ng/kg), dioxin-like p-olychlorinated biphenyls (0.02 ng/kg) and hexachlorobenzene (0.03–0.10 μ g/kg). Microbiological purity also included coliforms, *Escherichia coli*, *Listeria monocytogenes* and *Staphylococcus coagulase test-positive* (< 10 CFU/g).

The density (1,187.7–1,190.7 kg/m³), bulk density (690.6–710.1 kg/m³) and tapped density (738.6–755.4 g/cm³) were determined in three recent batches of AviPlus®.¹¹ Particle size distribution determined in the same batches showed that less than 0.42% of particles has a diameter < 356 μ m.¹² The dusting potential ranged between 0.095 and 0.110 g/m³.¹³

3.1.1. Conditions of use

AviPlus® is currently authorised for use in feed for the target species as follow:

- chickens for fattening, chickens reared for laying, all minor avian species for fattening and reared for laying at a minimum recommended level of 200 mg/kg complete feed, and

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 Currently under re-evaluation.

⁹ Technical dossier/Section II_Annex_II_1_3_10.

¹⁰ Technical dossier/Section II_Annex_II_1_4_1.3.

¹¹ Technical dossier/Section II_Annex_II_1_5_4.

¹² Technical dossier/Section II_Annex_II_1_5_3.

¹³ Technical dossier/Section II_Annex_II_1_5_5.

- weaned piglets and weaned Suidae other than *S. scrofa domesticus* at a minimum recommended level of 1,000 mg/kg complete feed.

The authorisation, under other provisions foresees:

- For safety: breathing protection, glasses and gloves shall be used during handling.

The applicant proposes to keep the same conditions of use as authorised.

3.2. Safety

The safety of AviPlus® for the target species, consumers, users and the environment has been evaluated in previous opinions (EFSA FEEDAP Panel, 2010, 2012a). The Panel concluded that the additive is safe for weaned piglets and minor porcine species (weaned) up to 3,000 mg/kg complete feed and for chickens for fattening, chickens reared for laying, all minor species for fattening and reared for laying up to 500 mg/kg complete feed. The Panel also concluded that the use of the product as a feed additive raises no concern for consumer safety or for the environment. Concerns for the user were limited to its potential for dermal irritation/sensitization and eye irritation.

The applicant performed a literature search on the safety of the additive covering the period 2010–2019.¹⁴ The search included the databases CAB Abstracts, Veterinary Science Database and Medline and the search terms: 'AviPlus®', 'citric acid', 'sorbic acid', 'thymol', 'vanillin', 'safety', 'toxicity'. The search identified 12 hits, 8 of which were EFSA opinions (EFSA FEEDAP Panel, 2010, 2012a,b, 2014, 2015a,b; EFSA CEF Panel, 2013, 2016). Four publications were considered relevant, although none regarded the additive under assessment. These publications investigated the teratogenic effects of citric acid on *Xenopus laevis* embryos (Pekmezekmek et al., 2013), the dietary intake of sorbic acid by total diet studies in Taiwan (Hsieh et al., 2012; Ling et al., 2015) and the antimicrobial properties of thymol (Kissels et al., 2017). In none of these publications adverse events or safety issues concerning the additive were reported.

In addition, the applicant claims that no adverse effects have been reported in the framework of its global monitoring plan.¹⁵

3.2.1. Conclusions on safety

Based on the above and the fact that the manufacturing process, the composition of the additive and the conditions of use for the species/categories for which the additive is authorised have not been modified, the Panel considers that there is no evidence to reconsider the conclusions reached in previous assessments. The FEEDAP Panel concludes that AviPlus® remains safe for the target species, the consumer and the environment under the conditions of use currently authorised. The additive should be considered as a potential skin/eye irritant, and a skin/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.

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 Regulation¹⁶ and Good Manufacturing Practice.

4. Conclusions

The applicant has provided data demonstrating that the additive currently in the market complies with the conditions of authorisation.

¹⁴ Technical dossier/Section III.

¹⁵ Technical dossier/Section III/Annex_III_1.

¹⁶ Regulation (EC) No 1831/2003 of the European Parliament and of the Council of 22 September 2003 laying down requirements for feed hygiene. OJ L 35, 8.2.2005, p. 1.

The FEEDAP Panel concludes that AviPlus® (a preparation of citric acid, sorbic acid, thymol and vanillin) remains safe for chickens for fattening, chickens reared for laying, all minor avian species for fattening and reared for laying, weaned piglets and weaned Suidae other than *S. scrofa domesticus*, the consumers and the environment under the conditions of use currently authorised. The additive is considered as a potential skin/eye irritant and a skin/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
07/08/2019	Dossier received by EFSA. AviPlus® (preparation of sorbic acid, citric acid, thymol and vanillin) for AviPlus® (Preparation of citric acid, sorbic acid, thymol and vanillin) for all porcine species (weaned), chickens for fattening, chickens reared for laying, minor poultry species for fattening, minor poultry species reared for laying. Submitted by VetAgro S.p.A
11/09/2019	Reception mandates from the European Commission (piglets)
23/10/2019	Application validated by EFSA – Start of the scientific assessment
05/12/2019	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>
23/01/2020	Reception of supplementary information from the applicant - Scientific assessment re-started
28/01/2020	Comments received from Member States
17/03/2020	Opinion adopted by the FEEDAP Panel. End of the Scientific assessment

References

- EFSA CEF Panel (EFSA Panel on Food Contact Materials, Enzymes, Flavourings and Processing Aids), 2013. Scientific Opinion on the safety evaluation of the active substances citric acid (E330) and sodium hydrogen carbonate (E500ii), used as carbon dioxide generators, together with liquid absorbers cellulose and polyacrylic acid sodium salt crosslinked, in active food contact materials. EFSA Journal 2013;11(4):3152, 10 pp. <https://doi.org/10.2903/j.efsa.2013.3152>
- EFSA CEF Panel (EFSA Panel on Food Contact Materials, Enzymes, Flavourings and Processing Aids), 2016. Scientific opinion on the safety assessment of the active substances citric acid and sodium hydrogen carbonate for use in active food contact materials. EFSA Journal 2016;14(7):4529, 7 pp. <https://doi.org/10.2903/j.efsa.2016.4529>
- EFSA FEEDAP Panel (EFSA Panel on additives and products or substances used in animal feed), 2010. Scientific Opinion on the safety and efficacy of AviPlus® as feed additive for weaned piglets. EFSA Journal 2020;8(6):1633, 15 pp. <https://doi.org/10.2903/j.efsa.2010.1633>
- EFSA FEEDAP Panel (EFSA Panel on additives and products or substances used in animal feed), 2012a. Scientific Opinion on the safety and efficacy of AviPlus® as feed additive for chickens and minor avian species for fattening and reared for laying and minor porcine species (weaned). EFSA Journal 2012;10(5):2670, 11 pp. <https://doi.org/10.2903/j.efsa.2012.2670>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2012b. Scientific Opinion on the safety and efficacy of benzyl alcohols, aldehydes, acids, esters and acetals (chemical group 23) when used as flavourings for all animal species. EFSA Journal 2012;10(7):2785, 30 pp. <https://doi.org/10.2903/j.efsa.2012.2785>
- 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), 2014. Scientific Opinion on the safety and efficacy of sorbic acid and potassium sorbate when used as technological additives for all animal species. EFSA Journal 2014;12(7):3792, 18 pp. <https://doi.org/10.2903/j.efsa.2014.3792>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2015a. Scientific Opinion on the safety and efficacy of citric acid when used as a technological additive (preservative) for all animal species. EFSA Journal 2015;13(2):4009, 16 pp. <https://doi.org/10.2903/j.efsa.2015.4009>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2015b. Scientific Opinion on the safety and efficacy of sorbic acid and potassium sorbate when used as technological additives for all animal species based on two dossiers from Nutrinova Nutrition Specialties & Food Ingredients GmbH. EFSA Journal 2015;13(9):4239, 15 pp. <https://doi.org/10.2903/j.efsa.2015.4239>

- 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, 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, Anguita M, Galobart J, Holczknecht O, Tarrés-Call J, Pettenati E, Pizzo F and Manini P, 2019. Scientific Opinion on the safety and efficacy of AviPlus® as a feed additive for turkeys for fattening, turkeys reared for breeding and suckling piglets. EFSA Journal 2019;17(7):5795, 7 pp. <https://doi.org/10.2903/j.efsa.2019.5795>
- Hsieh DPH, Huang HY, Ling MP, Chen YS, Huang LL, Wu CH, Ni SP, Hung HC and Chiang CF, 2012. Total dietary studies and food safety assessment in Taiwan-food preservatives as an illustration. Journal of Food and Drug Analysis, 20, 744–763.
- Kissels W, Wu X and Santos RR, 2017. Short communication: interaction of the isomers carvacrol and thymol with the antibiotics doxycycline and tilmicosin: *in vitro* effects against pathogenic bacteria commonly found in the respiratory tract from calves. Journal of Dairy Sciences, 100, 1–5.
- Ling MP, Lien KW, Wu CH, Ni SP, Huang HY and Hsieh DPH, 2015. Dietary exposure estimates for the food preservatives benzoic acid and sorbic acid in the total diet in Taiwan. Journal of Agricultural Food Chemistry, 63, 2074–2082.
- Pekmezekmek AB, Binokay US, Akillioglu K and Sertdemir Y, 2013. Evaluation of E330-induced developmental toxicity using FETAX. Turkish Journal of Biology, 37, 265–272.

Abbreviations

CEF	EFSA Panel on Food Contact Materials, Enzymes, Flavourings and Processing Aids
CFU	colony forming unit
EURL	European Union Reference Laboratory
FEEDAP	EFSA Panel on Additives and Products or Substances used in Animal Feed