



**QUEEN'S  
UNIVERSITY  
BELFAST**

## **Safety and efficacy of a feed additive consisting of chromium propionate (KemTRACE™ chromium) for all growing poultry species (KEMIN EUROPA N.V)**

Villa, R. E., Azimonti, G., Bonos, E., Christensen, H., Durjava, M., Dusemund, B., Gehring, R., Glandorf, B., Kouba, M., López-Alonso, M., Marcon, F., Nebbia, C., Pechová, A., Prieto-Maradona, M., Röhe, I., Theodoridou, K., Galobart, J., Vettori, M. V., Ortuño, J., ... EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP) (2025). Safety and efficacy of a feed additive consisting of chromium propionate (KemTRACE™ chromium) for all growing poultry species (KEMIN EUROPA N.V). *EFSA Journal*, 23(1), Article e9148. <https://doi.org/10.2903/j.efsa.2025.9148>

**Published in:**  
EFSA Journal

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

**Queen's University Belfast - Research Portal:**  
[Link to publication record in Queen's University Belfast Research Portal](#)

### **Publisher rights**

© 2025 European Food Safety Authority and the authors.  
This is an open access article published under a Creative Commons Attribution-NoDerivs License (<https://creativecommons.org/licenses/by-nd/4.0/>), which permits reproduction and redistribute in any medium, provided the author and source are cited and any subsequent modifications are not distributed.

### **General rights**

Copyright for the publications made accessible via the Queen's University Belfast Research Portal is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

### **Take down policy**

The Research Portal is Queen's institutional repository that provides access to Queen's research output. Every effort has been made to ensure that content in the Research Portal does not infringe any person's rights, or applicable UK laws. If you discover content in the Research Portal that you believe breaches copyright or violates any law, please contact [openaccess@qub.ac.uk](mailto:openaccess@qub.ac.uk).

### **Open Access**

This research has been made openly available by Queen's academics and its Open Research team. We would love to hear how access to this research benefits you. – Share your feedback with us: <http://go.qub.ac.uk/oa-feedback>

# Safety and efficacy of a feed additive consisting of chromium propionate (KemTRACE™ chromium) for all growing poultry species (KEMIN EUROPA N.V)

**EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP) | Roberto Edoardo Villa | Giovanna Azimonti | Eleftherios Bonos | Henrik Christensen | Mojca Durjava | Birgit Dusemund | Ronette Gehring | Boet Glandorf | Maryline Kouba | Marta López-Alonso | Francesca Marcon | Carlo Nebbia | Alena Pechová | Miguel Prieto-Maradona | Ilen Röhe | Katerina Theodoridou | Jaume Galobart | Maria Vittoria Vettori | Jordi Ortuño | Fabiola Pizzo | Jordi Tarrés-Call**

**Correspondence:** [feedap@efsa.europa.eu](mailto:feedap@efsa.europa.eu)

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

## Abstract

Following a request from the European Commission, EFSA was asked to deliver a scientific opinion on the safety and efficacy of chromium propionate as zootechnical feed additive for all growing poultry species. The safety and efficacy of chromium propionate has been assessed previously in 2021 by the Panel and it was concluded that the additive is considered safe for chickens for fattening and chickens reared for laying/breeding at the proposed use level 0.2–0.4 mg Cr/kg complete feed, but the conclusion was not extrapolated to other growing species. During that assessment, the EU Reference Laboratory for feed additives (EURL) was not in a position to recommend the method for official control for the quantification of the organic chromium content in premixtures and feedingstuffs. The applicant subsequently proposed a new method of analyses, incorporating a tracer in the composition of a premixture, which has been evaluated by EURL and recommended as official method for the quantification of the organic chromium content in premixtures and feedingstuffs. The safety of the use of the microtracer has been assessed in 2024. The Panel considered that the use of the microtracer as proposed in the conditions of use would not introduce safety concerns for the target animals, the consumers and terrestrial environmental compartment, but no conclusion could be made for the groundwater. The microtracer should be considered a dermal and respiratory sensitiser. In the current assessment, the FEEDAP Panel concluded that the additive is safe for turkeys for fattening at the maximum proposed supplementation level of 0.4 mg Cr/kg feed, but a margin of safety cannot be established. This conclusion can be extended to turkeys reared for reproduction, but cannot be extrapolated to other growing poultry species. The use of the additive according to the proposed conditions of use causes no concern for consumer safety. The conclusions made previously for user safety remain the same: the additive does not present a risk by inhalation, the additive is irritant to the eyes, not irritant to the skin and is not a skin sensitiser. The use of the additive is considered safe for the environment. The previous conclusion on efficacy remains valid.

## KEYWORDS

chromium propionate, efficacy, KemTRACE™ chromium, other zootechnical additives, poultry, safety, zootechnical additives

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

© 2025 European Food Safety Authority. *EFSA Journal* published by Wiley-VCH GmbH on behalf of European Food Safety Authority.

## CONTENTS

Abstract.....	1
1. Introduction .....	3
1.1. Background and Terms of Reference.....	3
1.2. Additional information .....	3
2. Data and Methodologies.....	3
2.1. Data.....	3
2.2. Methodologies.....	4
3. Assessment.....	4
3.1. Characterisation .....	4
3.1.1. Characterisation of the additive and the active substance.....	4
3.1.2. Conditions of use.....	4
3.2. Safety.....	5
3.2.1. Safety for the target species.....	5
3.2.1.1. Turkeys for fattening.....	5
3.2.1.2. Conclusions on safety for all growing poultry species.....	6
3.2.2. Safety for the consumer, user and environment .....	6
3.3. Efficacy.....	6
3.4. Post-market monitoring.....	7
4. Conclusions.....	7
Abbreviations .....	7
Acknowledgements .....	7
Requestor.....	7
Question number .....	7
Copyright for non-EFSA content.....	7
Panel members .....	7
Legal notice .....	7
References.....	8

## 1 | INTRODUCTION

### 1.1 | Background and Terms of Reference

Regulation (EC) No 1831/2003<sup>1</sup> establishes the rules governing the Community authorisation of additives for use in animal nutrition. In particular, 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 Kemin Europa N.V.<sup>2</sup> for the authorisation of the additive containing chromium propionate (trade name: KemTrace™ Chromium), when used as a feed additive for all growing poultry (category: zootechnical additives; functional group: other zootechnical additives; claim: improvement of growth parameters and carcass traits).

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 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 11 October 2022.

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 chromium propionate when used under the proposed conditions of use (see Section 3.1.2).

### 1.2 | Additional information

The additive KemTRACE™ Chromium is a preparation containing chromium propionate and is currently not authorised in the EU. The FEEDAP Panel previously issued opinions on safety and efficacy of chromium propionate as zootechnical additive for all growing poultry species (EFSA FEEDAP Panel, 2021, 2025).

## 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<sup>3</sup> in support of the authorisation request for the use of KemTRACE™ Chromium as a feed additive.

In accordance with Article 38 of the Regulation (EC) No 178/2002<sup>4</sup> 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,<sup>5</sup> a non-confidential version of the dossier has been published on Open.EFSA.<sup>6</sup>

According to Article 32c(2) of Regulation (EC) No 178/2002 and to the Decision of EFSA's Executive Director laying down the practical arrangements on pre-submission phase and public consultations, EFSA carried out a public consultation on the non-confidential version of the technical dossier from 17 August to 7 September 2023 for which no comments were received.

The confidential version of the technical dossier was subject to a target consultation of the interested Member States from 11 October 2022 to 11 January 2023; the comments received were considered for the assessment.

The FEEDAP Panel used the data provided by the applicant together with data from other sources, such as previous risk assessments by EFSA or other expert bodies, peer-reviewed scientific papers, other scientific reports and experts' knowledge, to deliver the present output.

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 chromium propionate in animal feed are valid and applicable for the current application. However, during the assessment, the EURL delivered an addendum to the original report to recommend a method of analysis for the quantification of chromium propionate in feedingstuffs based on the enumeration of the particles of a microtracer.<sup>7</sup> EFSA has verified the updated EURL report.

<sup>1</sup>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.

<sup>2</sup>Kemin Europa N.V, Toekomstlaan 42, 2200 Herentals, Belgium.

<sup>3</sup>Dossier reference: FEED-2022-6191.

<sup>4</sup>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.

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

<sup>6</sup><https://open.efsa.europa.eu/dossier/FEED-2022-6191>.

<sup>7</sup>The full report is available on the EURL website: [https://joint-research-centre.ec.europa.eu/publications/fad-2019-0076\\_en](https://joint-research-centre.ec.europa.eu/publications/fad-2019-0076_en).

## 2.2 | Methodologies

The approach followed by the FEEDAP Panel to assess the safety and the efficacy of the additive is in line with the principles laid down in Regulation (EC) No 429/2008<sup>8</sup> and the relevant guidance documents: 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, 2018), Guidance on the assessment of the safety of feed additives for the environment (EFSA FEEDAP Panel, 2019) and Guidance on the assessment of the safety of feed additives for the users (EFSA FEEDAP Panel, 2023).

## 3 | ASSESSMENT

The additive chromium propionate (trade name: KemTRACE™ Chromium) is intended to be used as a zootechnical feed additive (functional group: other zootechnical additives; claim: improvement of growth parameters and carcass traits) for all growing poultry species. Unless otherwise indicated, chromium in the opinion refers to chromium(III).

The FEEDAP Panel already assessed this additive when used in feed for all growing poultry species (EFSA FEEDAP Panel, 2021). In that opinion, the additive was fully characterised, and the Panel concluded that the use of the additive at proposed conditions of use is safe for the consumers and the environment, as well as for chickens for fattening and chickens reared for laying/breeding. However, the Panel could not conclude on the safety for other growing poultry species. The Panel considered that the additive is corrosive to the eyes, but it is not a skin irritant nor a skin sensitiser. Finally, the Panel concluded that the additive has the potential to be efficacious as a zootechnical additive in chickens for fattening at the supplementation level of 0.4 mg Cr/kg feed. This conclusion was extended to chickens reared for laying and chickens reared for breeding and extrapolated to other poultry species for fattening and reared for laying/breeding.

In the same opinion (EFSA FEEDAP Panel, 2021), the Panel noted that the EU Reference Laboratory (EURL) for feed additives was not able to recommend the method proposed by the applicant for official control of the added content of chromium propionate/organic chromium in premixtures and feedingstuffs. The applicant subsequently developed an indirect method of analysis to allow the quantification of added chromium propionate/organic chromium in premixtures/feed, by incorporating a microtracer to a premix containing the additive, which was assessed by the EURL, and recommended for official control purposes.<sup>9</sup>

In the present application, the applicant has provided new information on the safety of the target species and on the use of a microtracer in the formulation of a commercial premixture. Therefore, the present opinion will focus mainly on these new aspects.

### 3.1 | Characterisation

#### 3.1.1 | Characterisation of the additive and the active substance

The additive KemTRACE™ Chromium is a liquid preparation containing 29%–32% of the compound 'chromium propionate', 37% propionic acid, 14%–17% sodium propionate, 2% propylene glycol and 15% water; the additive contains  $\geq 7\%$  organic chromium.

The active substance is chromium propionate. The additive and the active substance have been fully characterised by the FEEDAP Panel in the previous opinion (EFSA FEEDAP Panel, 2021), and no new data on the characterisation of the additive or the active substance have been provided.

To allow for the quantification of the chromium propionate in premix and feedingstuffs, the applicant proposes the addition of the microtracer [REDACTED] via premixture (see Conditions of use). The microtracer [REDACTED] has been fully characterised in the recent opinion of the FEEDAP Panel (EFSA FEEDAP Panel, 2025).

#### 3.1.2 | Conditions of use

The additive KemTRACE™ Chromium is intended to be used in compound feed for all growing poultry species to provide a minimum of 0.2 mg and a maximum of 0.4 mg organic Cr/kg complete feed. The additive is intended to be used via the premixture<sup>10</sup> KemTRACE® Chromium 0.4%, which contains the microtracer. The supplementation level of 0.2 and 0.4 mg Cr/kg feed would correspond to 0.5 mg and 1 mg microtracer per kg feed, respectively.

<sup>8</sup>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.

<sup>9</sup>[https://joint-research-centre.ec.europa.eu/reports-and-technical-documentation/fad-2019-0076\\_en](https://joint-research-centre.ec.europa.eu/reports-and-technical-documentation/fad-2019-0076_en).

<sup>10</sup>024-03-26\_ADR(3)\_Reply.

### 3.2 | Safety

#### 3.2.1 | Safety for the target species

The safety of the chromium propionate for the target species has been previously assessed by the FEEDAP Panel (EFSA FEEDAP Panel, 2021). The Panel concluded that the additive is safe for chickens for fattening at the maximum supplementation level of 0.4 mg Cr/kg feed from KemTrace™ Chromium, but a margin of safety could not be established. This conclusion was extended to chickens reared for laying/breeding but could not be extrapolated to other poultry for fattening and reared for laying/reproduction.

The applicant recently introduced the use of a microtracer in the composition of the premix KemTRACE® Chromium 0.4%, to allow the quantification of added chromium propionate in the premix/feedingstuffs.<sup>11</sup> The safety of the use of the microtracer has been assessed in the previous Panel opinion (EFSA FEEDAP Panel, 2025). The Panel did not identify any concern for the target species, from the use of microtracer in the composition of the premix KemTRACE® Chromium 0.4% at proposed conditions of use.

In the current dossier, the applicant provided a tolerance study in turkeys for fattening, which is assessed below.

##### 3.2.1.1 | Turkeys for fattening

[REDACTED]

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

TABLE 2



The Panel notes that the level of thrombocytes was about one order of magnitude higher than those usually found in the literature for avian species (Jones, 1999; Samour, 2009). The significantly higher counts of red blood cells in the 12x group did not result in an increase of the haematocrit ( ) and were accompanied by a lower, non-significant, mean corpuscular volume compared to the control group ( ). No other differences were observed in the blood haematology and biochemistry parameters or in the organs' relative weight between groups.

The Panel considers the effects seen in thrombocytes and erythrocytes as adverse effects of the additive at the 12x overdose. Moreover, the Panel notes that the overall performance of the turkeys in the study was lower than the standards for the breed, which reduces the sensitivity of the study.

Considering all the above, the Panel concludes that the additive is tolerated in turkeys for fattening at the maximum proposed level of 0.4 mg Cr/kg complete feed. No margin of safety can be established. This conclusion can be extended to turkeys reared for reproduction.

### 3.2.1.2 | Conclusions on safety for all growing poultry species

Based on two tolerance trials in chickens for fattening and one tolerance trial in turkeys for fattening, the Panel concludes that the additive is safe at the proposed conditions of use in chickens for fattening and reared for laying/reproduction and turkeys for fattening and reared for reproduction. The previous studies on chickens for fattening did not allow to establish a margin of safety with respect to the maximum recommended level of 0.4 mg Cr/kg complete feed. No further data have been submitted that would support the safety for poultry species other than chickens or turkeys. Therefore, the Panel cannot conclude on the safety of the additive for minor poultry for fattening or reared for laying/reproduction.

### 3.2.2 | Safety for the consumer, user and environment

The safety of the additive KemTrace™ Chromium for the consumers, users and the environment was already assessed in the previous opinion of the FEEDAP Panel (2021). In that opinion, the Panel concluded that the use of KemTrace™ Chromium under the proposed conditions of use is safe for consumers and the environment. No concerns for the users are expected following inhalation exposure, based on the acute inhalation study with rats. The additive is corrosive to the eyes, but not irritant to the skin and is not a skin sensitiser.

No new information has been provided in the present submissions with regard to the additive, and therefore, the Panel reiterates its previous conclusions.

The safety of the use of the microtracer which is added to the formulation of the premix KemTRACE® Chromium 0.4% has been assessed in a recent opinion of the Panel (EFSA FEEDAP Panel, 2025). The Panel concluded that the use of the microtracer does not raise concern for the consumer. The microtracer should be considered a dermal and respiratory sensitiser; any exposure of users to the microtracer via skin or the respiratory tract is considered a risk. The use of the microtracer in animal nutrition according to the proposed conditions is not expected to pose a risk for the terrestrial environmental compartment; however, no conclusion could be made for the groundwater<sup>19</sup> (EFSA FEEDAP Panel, 2025).

### 3.3 | Efficacy

The efficacy of the additive has been previously assessed (EFSA FEEDAP Panel, 2021). The FEEDAP Panel concluded that the additive (KemTRACE™ Chromium) has the potential to be efficacious as a zootechnical additive in chickens for fattening at the supplementation level of 0.4 mg Cr/kg feed. This conclusion was extended to chickens reared for laying and chickens reared for breeding, and extrapolated to other poultry species for fattening and reared for laying/breeding.

<sup>19</sup>2024-08-13\_ADR\_Clarifications\_Reply and ADR 2024-10-14.

The addition of the microtracer in the premix KemTRACE® Chromium 0.4%, as proposed in the conditions of use, is not expected to have any impact on the efficacy of the additive, and therefore, there is no need to reassess the efficacy and previous conclusion is still valid.

### 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<sup>20</sup> and good manufacturing practice.

## 4 | CONCLUSIONS

The FEEDAP Panel concludes that the additive KemTrace™ Chromium is safe for turkeys for fattening at the maximum proposed supplementation level of 0.4 mg Cr/kg feed, but a margin of safety cannot be established. This conclusion can be extended to turkeys reared for reproduction, but cannot be extrapolated to other growing poultry species.

The use of the feed additive under the proposed conditions of use is of no concern for consumers or the environment.

No concern for users following inhalation exposure during handling of the additive is expected. The additive is corrosive to the eyes, but not irritant to the skin and not a skin sensitiser.

Previous conclusion on efficacy remains valid. The FEEDAP Panel concluded that the additive KemTrace™ Chromium has the potential to be efficacious as a zootechnical additive in chickens for fattening at the supplementation level of 0.4 mg Cr/kg feed. This conclusion was extended to chickens reared for laying/breeding and extrapolated to other poultry species for fattening and reared for laying/breeding.

The Panel considers that the use of the microtracer in the premix KemTRACE® Chromium 0.4% would not introduce safety concerns for the target animals, the consumers and terrestrial environmental compartment; however, no conclusion could be made for the groundwater. The microtracer should be considered a dermal and respiratory sensitiser.

### ABBREVIATIONS

BW body weight

DM dry matter

EURL European Union Reference Laboratory

FEEDAP EFSA Scientific Panel on Additives and Products or Substances used in Animal Feed

LOD limit of detection

LOQ limit of quantification

### ACKNOWLEDGEMENTS

The Panel wishes to thank the following for the support provided to this scientific output name: Anita Radovnikovic.

### REQUESTOR

European Commission

### QUESTION NUMBER

EFSA-Q-2022-00350

### COPYRIGHT FOR NON-EFSA CONTENT

EFSA may include images or other content for which it does not hold copyright. In such cases, EFSA indicates the copyright holder and users should seek permission to reproduce the content from the original source.

### PANEL MEMBERS

Roberto Edoardo Villa, Giovanna Azimonti, Eleftherios Bonos, Henrik Christensen, Mojca Durjava, Birgit Dusemund, Ronette Gehring, Boet Glandorf, Maryline Kouba, Marta López-Alonso, Francesca Marcon, Carlo Nebbia, Alena Pechová, Miguel Prieto-Maradona, Ilen Röhe, and Katerina Theodoridou.

### 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 EFSA. The full output has been shared with the European Commission, EU Member States (if applicable) and the applicant. The blackening may be subject to review once the decision on the confidentiality requests is adopted by EFSA and in case it rejects some of the confidentiality requests.

<sup>20</sup>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 268, 24.9.2003, p. 1.



## 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, M. L., Bories, G., Chesson, A., Cocconcelli, P. S., Flachowsky, G., Gropp, J., Kolar, B., Kouba, M., López-Alonso, M., López Puente, S., Mantovani, A., Mayo, B., Ramos, F., Saarela, M., ... Innocenti, M. L. (2017a). Guidance on the assessment of the safety of feed additives for the consumer. *EFSA Journal*, 15(10), 5022. <https://doi.org/10.2903/j.efsa.2017.5022>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), Rychen, G., Aquilina, G., Azimonti, G., Bampidis, V., Bastos, M. L., Bories, G., Chesson, A., Cocconcelli, P. S., Flachowsky, G., Gropp, J., Kolar, B., Kouba, M., López-Alonso, M., López Puente, S., Mantovani, A., Mayo, B., Ramos, F., Saarela, M., ... Innocenti, M. L. (2017b). Guidance on the identity, characterisation and conditions of use of feed additives. *EFSA Journal*, 15(10), 5023. <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, M. L., Bories, G., Chesson, A., Cocconcelli, P. S., Flachowsky, G., Gropp, J., Kolar, B., Kouba, M., López-Alonso, M., López Puente, S., Mantovani, A., Mayo, B., Ramos, F., Saarela, M., ... Martino, L. (2017c). Guidance on the assessment of the safety of feed additives for the target species. *EFSA Journal*, 15(10), 5021. <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, M. L., Bories, G., Chesson, A., Cocconcelli, P. S., Flachowsky, G., Gropp, J., Kolar, B., Kouba, M., López-Alonso, M., López Puente, S., Mantovani, A., Mayo, B., Ramos, F., Saarela, M., ... Martino, L. (2018). Guidance on the assessment of the efficacy of feed additives. *EFSA Journal*, 16(5), 5274. <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., 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, R. E., Woutersen, R., Brock, T., de Knecht, J., ... Azimonti, G. (2019). Guidance on the assessment of the safety of feed additives for the environment. *EFSA Journal*, 17(4), 5648. <https://doi.org/10.2903/j.efsa.2019.5648>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), Bampidis, V., Azimonti, G., Bastos, M. L., Christensen, H., Dusemund, B., Fasmon Durjava, M., Kouba, M., Lopez-Alonso, M., Lopez Puente, S., Marcon, F., Mayo, B., Pechova, A., Petkova, M., Ramos, F., Sanz, Y., Villa, R. E., Woutersen, R., Bories, G., ... Lopez-Galvez, G. (2021). Scientific Opinion on the safety and efficacy of a feed additive consisting of chromium propionate (KemTRACE™ Chromium) for all growing poultry species (Kemin Europa NV). *EFSA Journal*, 19(4), 6546. <https://doi.org/10.2903/j.efsa.2021.6546>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), Bampidis, V., Azimonti, G., Bastos, M. L., Christensen, H., Durjava, M., Dusemund, B., Kouba, M., López-Alonso, M., López Puente, S., Marcon, F., Mayo, B., Pechová, A., Petkova, M., Ramos, F., Villa, R. E., Woutersen, R., Brantom, P., Chesson, A., ... Galobart, J. (2023). Guidance on the assessment of the safety of feed additives for the users. *EFSA Journal*, 21(12), e8469. <https://doi.org/10.2903/j.efsa.2023.8469>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), Villa, R. E., Azimonti, G., Bastos, M. L., Christensen, H., Durjava, M., Dusemund, B., Gehring, R., Glandorf, B., Kouba, M., López-Alonso, M., Marcon, F., Nebbia, C., Pechová, A., Prieto-Maradona, M., Röhe, I., Theodoridou, K., Galobart, J., Vettori, M. V., ... Tarrés-Call, J. (2025). Safety of the use of a microtracer with the feed additive consisting of chromium propionate (KemTRACETM Chromium) for all growing poultry species. *EFSA Journal*, 23(1), 9149. <https://doi.org/10.2903/j.efsa.2025.9149>
- Jones, M. P. (1999). Avian clinical pathology. *Veterinary Clinics of North America: Exotic Animal Practice*, 2(3), 663–687.
- Samour, J. (2009). Chapter 22, Diagnostic value of hematology. In H. Jt & T. Lightfoot (Eds.), *Clinical Avian Medicine*. Spix Publishing

**How to cite this article:** EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), Villa, R. E., Azimonti, G., Bonos, E., Christensen, H., Durjava, M., Dusemund, B., Gehring, R., Glandorf, B., Kouba, M., López-Alonso, M., Marcon, F., Nebbia, C., Pechová, A., Prieto-Maradona, M., Röhe, I., Theodoridou, K., Galobart, J., Vettori, M. V., ... Tarrés-Call, J. (2025). Safety and efficacy of a feed additive consisting of chromium propionate (KemTRACE™ chromium) for all growing poultry species (KEMIN EUROPA N.V). *EFSA Journal*, 23(1), e9148. <https://doi.org/10.2903/j.efsa.2025.9148>