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## Safety and efficacy of a feed additive consisting of *Pediococcus acidilactici* CNCM I-4622 for all animal species (Danstar Ferment AG)

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### Abstract

Following a request from the European Commission, the Panel on Additives and Products or Substances used in Animal Feed (FEEDAP) was asked to deliver a scientific opinion on the safety and efficacy of *Pediococcus acidilactici* CNCM I-4622 when used as a technological additive (acidity regulator and hygiene condition enhancers) for all animal species. The product is intended for use in mash compound feeds and/or solid feed materials used for the preparation of liquid feeds at a minimum inclusion level of  $1 \times 10^9$  CFU/kg feed. The bacterial species is considered by EFSA to be eligible for the qualified presumption of safety (QPS) approach. As the identity of the strain has been clearly established and it did not show acquired resistance to antibiotics of human and veterinary importance, the use of this strain in animal nutrition is considered safe for the target species, consumers and the environment. The additive is considered to be a respiratory sensitiser but is not irritant to eyes/skin or a skin sensitiser. *Pediococcus acidilactici* CNCM I-4622 at  $1 \times 10^9$  CFU/kg complete feed showed the potential to reduce the pH and the growth of coliforms in liquid feeds. *Pediococcus acidilactici* CNCM I-4622 is compatible with halofuginone, diclazuril, decoquinone and nicarbazine at the highest authorised levels for chickens for fattening.

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**Keywords:** technological additive, hygiene condition enhancer, acidity regulator, *Pediococcus acidilactici* CNCM I-4622, safety, QPS, efficacy

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## 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 Danstar Ferment AG, represented in the EU by Lallemand SAS,<sup>2</sup> for the authorisation of the additive consisting of *Pediococcus acidilactici* CNCM I-4622, when used as a feed additive for all animal species (category: technological additives; functional group: acidity regulator and hygiene condition 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 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 7 May 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 *Pediococcus acidilactici* CNCM I-4622, when used under the proposed conditions of use (see **Section 3.1.4**).

### 1.2. Additional information

The subject of the assessment is a preparation consisting of viable cells of *P. acidilactici* CNCM I-4622, intended for use as a technological additive (functional group: acidity regulator and hygiene condition enhancers) for all animal species.

EFSA issued several opinions on the safety and efficacy of an additive based on the same active agent (Bactocell®) when used in feed for salmonids (EFSA, 2009a), shrimps (EFSA, 2009b), weaned piglets (EFSA FEEDAP Panel, 2010a) and laying hens (EFSA FEEDAP Panel, 2010b) and one on the efficacy for all fish (EFSA FEEDAP Panel, 2012a). A further opinion on the safety and efficacy of Bactocell® when used in water for drinking for weaned piglets, pigs for fattening, laying hens and chickens for fattening was adopted in 2012 (EFSA FEEDAP Panel, 2012b). In 2016, the Panel re-evaluated the product for pigs for fattening and chickens for fattening and further assessed it for minor porcine species and minor avian species (EFSA FEEDAP Panel, 2016). In 2019, the Panel assessed the application for renewal of authorisation of Bactocell® when used in weaned piglets, pigs for fattening, minor porcine species (weaned and for fattening), chickens for fattening, laying hens and minor avian species for fattening and for laying and its extension of use to all growing pigs and all avian species (EFSA FEEDAP Panel, 2019a). In the same year, the Panel also assessed the application for renewal of authorisation of Bactocell® as a feed additive for all fish and shrimps and its extension of use for all crustaceans (EFSA FEEDAP Panel, 2019b). An opinion on the safety and efficacy of the same active agent when used as a silage additive was adopted in 2012 (EFSA FEEDAP Panel, 2012c).

The additive is currently authorised for use in the European Union as a silage additive (1 k2104)<sup>3</sup> and as a zootechnical additive (4d1712)<sup>4</sup> for use in feed and/or in water for drinking in several terrestrial and aquatic species.

<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> Danstar Ferment AG, represented in the EU by Lallemand SAS, 19 rue des Briquetiers BP59, 31,702, Blagnac Cedex, France.

<sup>3</sup> Regulation (EU) No 1119/2012 of 29 November 2012 concerning the authorisation of preparations of *Pediococcus acidilactici* CNCM MA 18/5 M DSM 11673, *Pediococcus pentosaceus* DSM 23376, NCIMB 12455 and NCIMB 30168, *Lactobacillus plantarum* DSM 3676 and DSM 3677 and *Lactobacillus buchneri* DSM 13573 as feed additives for all animal species. OJ L 330, 30.11.2012, p. 14.

<sup>4</sup> Regulation (EU) 2020/151 of 4 February 2020 concerning the authorisation of *Pediococcus acidilactici* CNCM I-4622 as a feed additive for all porcine species for fattening and for breeding other than sows, all avian species, all fish species and all crustaceans and repealing Regulations (EC) No 911/2009, (EU) No 1120/2010 and (EU) No 212/2011 and Implementing Regulations (EU) No 95/2013, (EU) No 413/2013 and (EU) 2017/2299 (holder of authorisation Danstar Ferment AG represented in the Union by Lallemand SAS). OJ L 33, 5.2.2020, p. 12.

## 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>5</sup> in support of the authorisation request for the use of *Pediococcus acidilactici* CNCM I-4622 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 active agent in animal feed are valid and applicable for the current application.<sup>6</sup>

### 2.2. Methodologies

The approach followed by the FEEDAP Panel to assess the safety and the efficacy of active substance (trade name of the product) is in line with the principles laid down in Regulation (EC) No 429/2008<sup>7</sup> and the relevant guidance documents: Guidance on studies concerning the safety of use of the additive for users/workers (EFSA FEEDAP Panel, 2012a,b,c,d), 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, 2019c).

## 3. Assessment

The additive under assessment is a preparation of *Pediococcus acidilactici* CNCM I-4622,<sup>8</sup> intended for use as a technological additive (functional groups: acidity regulator and hygiene condition enhancers) in mash compound feeds and/or solid feed materials used for the preparation of liquid feeds for all animal species and categories.

### 3.1. Characterisation

#### 3.1.1. Characterisation of the active agent

The active agent was isolated from natural pasture and is deposited in the Collection Nationale de Cultures de Microorganismes (CNCM) with the accession number CNCM I-4622.<sup>9</sup> It has not been genetically modified.<sup>10</sup>

Taxonomical identification was confirmed by phylogenetic analysis.<sup>11</sup> The phylogenetic trees were performed with the codon tree method and included the genomes of CNCM I-4622, seven type strains of *Pediococcus* spp. including *P. acidilactici* DSM 20284<sup>T</sup>, and three additional *Pediococcus* spp. genomes, covering a representative number of species. The analysis showed that the closest genome was that of the *P. acidilactici* type strain. Additionally, a broader sequence comparison was made using 49 genome sequences within the *Pediococcus* spp. which were assigned 'good' genome quality. For this larger panel, CNCM I-4622 clustered with the other 11 *P. acidilactici* genome sequences, confirming the results obtained with the codon tree approach.

*Pediococcus acidilactici* CNCM I-4622 was tested for antibiotic susceptibility [REDACTED].<sup>12</sup> The battery of antibiotics used included those recommended by EFSA for *Pediococcus* spp. (EFSA FEEDAP Panel, 2018a). [REDACTED]

<sup>5</sup> FEED dossier reference: FAD-2020-0095.

<sup>6</sup> The full report is available on the EU Science Hub: [https://joint-research-centre.ec.europa.eu/publications/fad-2013-0031\\_en](https://joint-research-centre.ec.europa.eu/publications/fad-2013-0031_en)

<sup>7</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>8</sup> The strain has also been deposited as DSM 11673 and CNCM MA 18/5 M.

<sup>9</sup> Technical dossier/Section II/Annex\_II\_4b. The strain has also been deposited as CNCM MA 18/5 M and DSM 11673.

<sup>10</sup> Technical dossier/Section II/Annex\_II\_4a.

<sup>11</sup> Technical dossier/Section II/annex\_II\_4c\_conf.

<sup>12</sup> Technical dossier/Section II/annex\_II\_5\_conf.

Therefore, the strain is considered to be susceptible to all the relevant antibiotics.

The whole genome sequence of the strain was searched for antibiotic resistance genes

<sup>13</sup> No hits of concern were identified.

### 3.1.2. Characterisation of the additive

The active agent *Pediococcus acidilactici* CNCM I-4622 is grown

<sup>14</sup>

to reach a minimum concentration of  $1.0 \times 10^{10}$  colony forming units (CFU) per gram of additive. Analysis of five batches of the additive showed a mean value of  $1.5 \times 10^{10}$  CFU/g additive (range  $1.3\text{--}1.7 \times 10^{10}$  CFU/g additive).<sup>15</sup>

Specifications are set for *Escherichia coli* ( $\leq 10$  CFU/g), coliforms ( $\leq 1,000$  CFU/g) and *Salmonella* spp. (no detection in 25 g). Analysis of five batches of the additive showed compliance with these limits.<sup>16</sup> No data on Enterobacteriaceae, yeasts and filamentous fungi were provided.

Analysis of three batches of the additive tested for the content of arsenic, cadmium, mercury, lead and aflatoxins B1, B2, G1 and G2 showed values below the respective level of detection/quantification of the analytical methods,<sup>17</sup> except for one batch that showed arsenic and lead levels of 0.02 mg/kg; and a second batch that showed an aflatoxin B1 level of 0.3  $\mu\text{g/kg}$ .<sup>18</sup>

The levels of the impurities described above do not raise safety concerns.

The dusting potential of three batches of the additive was determined using the Stauber–Heubach method and showed values on average of 46.4 mg airborne dust/m<sup>3</sup> of air (range 39.7–50.4 mg/m<sup>3</sup>).<sup>19</sup>

### 3.1.3. Stability

Three batches of the additive formulated with two different carriers were stored in sealed aluminium bags at 25°C and at 4°C up to 24 months.<sup>20</sup> No losses ( $< 0.5 \text{ Log}_{10}$ ) in viability were observed at the end of the storage period in any batch or tested conditions, except for one batch at 25°C that showed losses up to 0.6 Log.

The stability of the additive (three batches) was studied in commercial vitamin/mineral premixtures for chickens for fattening and pigs (one each) when supplemented at the rate of 0.3% (corresponding to  $3 \times 10^7$  CFU/g) and stored at 20°C for 6 months in aluminium sachets.<sup>21</sup> No viability losses were observed ( $< 0.5 \text{ Log}_{10}$ ) in both premixtures.

The stability of *Pediococcus acidilactici* CNCM I-4622 from one batch of the additive (formulated with lactose) was studied in compound feeds for chickens for fattening and pigs for fattening (one mash and four pelleted feeds in both cases).<sup>22</sup> The additive was incorporated to the compound feeds at the intended level of  $1 \times 10^9$  CFU/kg. The compound feeds were stored in paper bags at 21°C/65% RH for a period of 3 months. At the end of the experimental period, the *Pediococcus* spp. counts showed differences of up to 0.9  $\text{Log}_{10}$  for chicken feed and up to 0.7  $\text{Log}_{10}$  for pig feed compared to initial counts.

<sup>13</sup> Technical dossier/Section II/Annex II\_4c\_conf and Supplementary information January 2022/2022-01-024\_EFSA\_Reply\_Sin\_letter, 2022-02-14\_efs\_a\_reply\_sin\_letter\_final, Annex\_1\_appendiced\_conf, Appendix\_4a\_conf.xlsx, Appendix\_4b\_updated\_conf, Appendix\_5a\_conf and Appendix\_5b\_conf.

<sup>14</sup> Technical dossier/ Supplementary information January 2022/2022-01-024\_EFSA\_Reply\_Sin\_letter.

<sup>15</sup> Technical dossier/Section II/Annex II.2.

<sup>16</sup> Technical dossier/Section II/Annex II.2.

<sup>17</sup> Analyses conducted with different methods with LOD: mg/kg were 0.05 for arsenic, cadmium and mercury; 0.1 for lead; in  $\mu\text{g/kg}$  were 0.1 for aflatoxin B 1, B2, G1 and G2 for two batches and LOQ: mg/kg were 0.001 for cadmium, 0.005 for mercury; 0.01 for lead and 0.01 for arsenic; in  $\mu\text{g/kg}$  were 0.6 for aflatoxin B 1, B2, G1 and G2 for the third batch.

<sup>18</sup> Technical dossier/Supplementary information January 2022/Annex\_2 and FAD-2020-0095\_Additional\_submission\_140222.

<sup>19</sup> Technical dossier/Section II/Annex II\_3b.

<sup>20</sup> Technical dossier/Section II/Annex II\_6a and Supplementary information January 2022/2022-01-024\_EFSA\_Reply\_Sin\_letter.

<sup>21</sup> Technical dossier/Section II/Annex II\_6b.

<sup>22</sup> Technical dossier/Section II/Annex II\_6c.

The stability of *Pediococcus acidilactici* CNCM I-4622 (three batches) was studied in mash compound feed for laying hens when supplemented at  $1 \times 10^9$  CFU/kg feed and stored in standard plastic lined paper bags at room temperature for 3 months. No losses were observed ( $< 0.5 \text{ Log}_{10}$ ).<sup>23</sup>

Data on the homogenous distribution were not provided but are considered not to be necessary if the efficacy of the additive is demonstrated.

### 3.1.4. Conditions of use

The additive is intended for use in feed for all animal species at a proposed minimum inclusion level of  $1 \times 10^9$  CFU/kg feed. The additive is intended to be incorporated in mash compound feeds and/or solid feed materials used for the preparation of liquid feeds in the farms.<sup>24</sup>

## 3.2. Safety

### 3.2.1. Safety for the target species, consumers and the environment

The species *P. acidilactici* is considered by EFSA to be suitable for the Qualified Presumption of Safety (QPS) approach to safety assessment (EFSA, 2007; EFSA BIOHAZ Panel, 2021). This approach requires the identification of the strain to be conclusively established and evidence provided that the strain does not show acquired resistance to antibiotics of human and veterinary importance. In the view of the FEEDAP Panel, the identity of the strain is unambiguously established as *P. acidilactici*, and the lack of antibiotic resistance confirmed. Consequently, *P. acidilactici* CNCM I-4622 is presumed safe for the target species, consumers of products from animals fed with the additive and the environment. Since no concerns are expected from other components of the additive, the additive is also considered to be safe for the target species, consumers of products and the environment.

### 3.2.2. Safety for the user

The dusting potential (highest measured value:  $50.4 \text{ mg/m}^3$ ) indicates that exposure by inhalation cannot be excluded. Owing to the proteinaceous nature of the active agent, the additive is considered a respiratory sensitiser.

An acute skin irritation study was performed according to [REDACTED] is considered non-irritant to skin.<sup>25</sup>

An acute eye irritation study was performed according to [REDACTED]<sup>26</sup>

[REDACTED] the additive is non-irritant for the eye.

A local lymph node assay was performed to assess the skin sensitisation potential. The study was performed according to [REDACTED]. The results showed that the active agent is not a dermal sensitiser.<sup>27</sup>

Once an active agent has been authorised as a feed additive, different formulations can be placed on the market with reference to that authorisation. For this specific product, the excipients used in the preparation of the final formulation are not expected to introduce additional risks.

#### 3.2.2.1. Conclusions on safety for the user

On the basis of the studies submitted the additive is considered to be a respiratory sensitiser, but not irritant to eyes/skin or a skin sensitiser.

## 3.3. Efficacy

A total of seven experiments were submitted to support the efficacy of the additive as acidity regulator and hygiene condition enhancer. However, four were not further considered as they either did not have control group,<sup>28</sup> used irradiated sorghum<sup>29</sup> (irradiation may have impacted the

<sup>23</sup> Technical dossier/Section II/Annex\_II\_6d and Supplementary information January 2022/2022-01-024\_EFSA\_Reply\_Sin\_letter.

<sup>24</sup> Supplementary information January 2022/2022-01-024\_EFSA\_Reply\_Sin\_letter.

<sup>25</sup> Technical dossier/Section III/ Annex\_III\_1\_dermal\_irrit\_404.

<sup>26</sup> Technical dossier/Section III/ annex\_III\_3\_eyes\_sens\_405.

<sup>27</sup> Technical dossier/Section III/ Annex\_III\_2\_skin\_sens\_429.

<sup>28</sup> Technical dossier/Section IV/Annex\_IV\_5 and Supplementary information January 2022/2022-01-024\_EFSA\_Reply\_Sin\_letter.

<sup>29</sup> Technical dossier/Section IV/Annex\_IV\_3.

background microbiota), included a too high incubation temperature<sup>30</sup> and/or were poorly reported (e.g. no counts at time zero, no raw data and statistical output<sup>31,32</sup>). The remaining three studies are described below.



**Table 1:** Effect of *Pediococcus acidilactici* CNCM I-4622 [redacted]

[redacted]	[redacted]	[redacted]	[redacted]		
			[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

\*: Means in the same column within a feed are significantly different compared to control with  $p < 0.05$ .



<sup>30</sup> Technical dossier/Section IV/Annex\_IV\_2 and Supplementary information January 2022/2022-01-024\_EFSA\_Reply\_Sin\_letter.  
<sup>31</sup> Technical dossier/Section IV/Annex\_IV\_4 and Supplementary information January 2022/2022-01-024\_EFSA\_Reply\_Sin\_letter.  
<sup>32</sup> Technical dossier/Section IV/Annex\_IV\_5 and Supplementary information January 2022/2022-01-024\_EFSA\_Reply\_Sin\_letter.  
<sup>33</sup> Technical dossier/Section IV/Annex\_IV\_6 and Supplementary information January 2022/2022-01-024\_EFSA\_Reply\_Sin\_letter, Annex 3, Annex 4 and Annex 5.  
<sup>34</sup> Technical dossier/Supplementary information January 2022/2022-01-024\_EFSA\_Reply\_Sin\_letter, Annex 6, Annex 7, Annex 9, Annex 11 and FAD-2020-0095\_Additional submission\_140222/Annex\_1\_report\_lan\_study\_2\_conf.  
<sup>35</sup> Technical dossier/Supplementary information January 2022/2022-01-024\_EFSA\_Reply\_Sin\_letter, Annex 6, Annex 8, Annex 10, Annex 12 and Additional submission\_140222/Annex\_2\_report\_lan\_study\_3\_conf.



**Table 2:** Effect of *Pediococcus acidilactici* CNCM I-4622

Feed	Strain	pH	Coliforms (log CFU/g)			
			Control	10 <sup>7</sup> CFU	10 <sup>8</sup> CFU	10 <sup>9</sup> CFU
1	A	Control	7.2	7.5	7.8	8.1
		10 <sup>7</sup> CFU	7.1*	7.4	7.7	8.0
		10 <sup>8</sup> CFU	7.0*	7.3	7.6	7.9
	B	Control	7.3	7.6	7.9	8.2
		10 <sup>7</sup> CFU	7.2*	7.5	7.8	8.1
		10 <sup>8</sup> CFU	7.1*	7.4	7.7	8.0
2	A	Control	7.4	7.7	8.0	8.3
		10 <sup>7</sup> CFU	7.3*	7.6	7.9	8.2
		10 <sup>8</sup> CFU	7.2*	7.5	7.8	8.1
	B	Control	7.5	7.8	8.1	8.4
		10 <sup>7</sup> CFU	7.4*	7.7	8.0	8.3
		10 <sup>8</sup> CFU	7.3*	7.6	7.9	8.2
3	A	Control	7.6	7.9	8.2	8.5
		10 <sup>7</sup> CFU	7.5*	7.8	8.1	8.4
		10 <sup>8</sup> CFU	7.4*	7.7	8.0	8.3
	B	Control	7.7	8.0	8.3	8.6
		10 <sup>7</sup> CFU	7.6*	7.9	8.2	8.5
		10 <sup>8</sup> CFU	7.5*	7.8	8.1	8.4

\*: Means in the same column within a feed are significantly different compared to control with  $p < 0.05$ .

[Redacted text block]

Overall, the addition of *Pediococcus acidilactici* CNCM I-4622 at the recommended inclusion level led to a significantly lower pH in five feeds and limited the growth of coliforms in four feeds in comparison with controls. This was observed in liquid feeds with 22% DM.

### 3.3.1. Compatibility with coccidiostats

In a previous opinion on the use of a zootechnical additive containing the same active agent (Bactocell PA) in feed for chickens for fattening and minor avian species, the compatibility of *Pediococcus acidilactici* CNCM I-4622 with the coccidiostats halofuginone, diclazuril, decoquinat and nicarbazin at the highest authorised levels for chickens for fattening was established (EFSA FEEDAP Panel, 2016).<sup>36</sup> Conclusions previously drawn apply to the current application, provided that the maximum authorised concentration of the coccidiostats for the other species (when maximum authorised concentrations exist), are equal or lower than those for chickens for fattening.

### 3.3.2. Conclusions on efficacy

*Pediococcus acidilactici* CNCM I-4622 at  $1 \times 10^9$  CFU/kg complete feed showed the potential to reduce the pH and the growth of coliforms in liquid feeds.

*Pediococcus acidilactici* CNCM I-4622 is compatible with halofuginone, diclazuril, decoquinat and nicarbazin at the highest authorised levels for chickens for fattening.

## 4. Conclusions

The additive consisting of *Pediococcus acidilactici* CNCM I-4622 is safe for all species, consumers and the environment.

The additive is considered to be a respiratory sensitiser, but not irritant to eyes/skin or a skin sensitiser.

*Pediococcus acidilactici* CNCM I-4622 at  $1 \times 10^9$  CFU/kg complete feed showed a potential to reduce the pH and the growth of coliforms in liquid feeds.

*Pediococcus acidilactici* CNCM I-4622 is compatible with halofuginone, diclazuril, decoquinat and nicarbazin at the highest authorised levels for chickens for fattening.

## 5. Documentation provided to EFSA/Chronology

Date	Event
19/11/2020	Dossier received by EFSA. <i>Pediococcus acidilactici</i> CNCM I-4622 for all animal species. Submitted by Danstar Ferment AG represented in the EU by Lallemand SAS
30/11/2020	Reception mandate from the European Commission
07/05/2022	Application validated by EFSA – Start of the scientific assessment
01/10/2021	Request of supplementary information to the applicant in line with Article 8(1)(2) of Regulation (EC) No 1831/2003 – Scientific assessment suspended. <i>Issues: characterisation/efficacy</i>
14/02/2022	Reception of supplementary information from the applicant - Scientific assessment re-started
10/05/2022	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: efficacy</i>
12/05/2022	Reception of supplementary information from the applicant - Scientific assessment re-started
20/05/2022	Comments received from Member States
	Opinion adopted by the FEEDAP Panel. End of the Scientific assessment

## References

- EFSA (European Food Safety Authority), 2007. Opinion of the Scientific Committee on a request from EFSA on the introduction of a Qualified Presumption of Safety (QPS) approach for assessment of selected microorganisms referred to EFSA. EFSA Journal 2007;5(12):587, 16 pp. <https://doi.org/10.2903/j.efsa.2007.587>
- EFSA (European Food Safety Authority), 2009a. Opinion of the Scientific Panel on additives and products or substances used in animal feed (FEEDAP) on the safety and efficacy of Bactocell PA (*Pediococcus acidilactici*) as feed additive for fish. EFSA Journal 2009;7(4):1037, 13 pp. <https://doi.org/10.2903/j.efsa.2009.1037>
- EFSA (European Food Safety Authority), 2009b. Opinion of the Scientific Panel on additives and products or substances used in animal feed (FEEDAP) on the safety and efficacy of Bactocell PA (*Pediococcus acidilactici*) as feed additive for shrimp. EFSA Journal 2009;7(4):1038, 12 pp. <https://doi.org/10.2903/j.efsa.2009.1038>

<sup>36</sup> Technical dossier/Section II/Annex\_II\_8\_compat\_coccid\_conf.

- EFSA BIOHAZ Panel (EFSA Panel on Biological Hazards), Koutsoumanis K, Allende A, Alvarez-Ordóñez A, Bolton D, Bover-Cid S, Chemaly M, Davies R, De Cesare A, Hilbert F, Lindqvist R, Nauta M, Peixe L, Ru G, Simmons M, Skandamis P, Suffredini E, Cocconcelli PS, Fernandez Escamez PS, Maradona MP, Querol A, Sijtsma L, Suarez JE, Sundh I, Vlak J, Barizzone F, Hempen M and Herman L, 2021. Update of the list of QPS-recommended biological agents intentionally added to food or feed as notified to EFSA 13: suitability of taxonomic units notified to EFSA until September 2020. *EFSA Journal* 2021;19(1):6377, 32 pp. <https://doi.org/10.2903/j.efsa.2021.6377>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2010a. Scientific Opinion on the safety and efficacy of Bactocell PA 10 (*Pediococcus acidilactici*) as a feed additive for piglets. *EFSA Journal* 2010;8(7):1660, 10 pp. <https://doi.org/10.2903/j.efsa.2010.1660>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2010b. Scientific Opinion on Bactocell PA 10 (*Pediococcus acidilactici*) as a feed additive for laying hens. *EFSA Journal* 2010;8(10):1865, 9 pp. <https://doi.org/10.2903/j.efsa.2010.1865>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2012a. 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), 2012b. Scientific Opinion on the efficacy of Bactocell (*Pediococcus acidilactici*) when used as a feed additive for fish. *EFSA Journal* ;10(9):2886, 6 pp. <https://doi.org/10.2903/j.efsa.2012.2886>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2012c. Scientific Opinion on the safety and efficacy of *Pediococcus acidilactici* (CNCM I-3237, CNCM MA 18/5 M—DSM 11673) and *Pediococcus pentosaceus* (DSM 23376, NCIMB 12455, NCIMB 30237 and NCIMB 30168) as silage additives for all species. *EFSA Journal* 2012;10(6):2733, 15 pp. <https://doi.org/10.2903/j.efsa.2012.2733>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2012d. Scientific Opinion on the safety and efficacy of Bactocell (*Pediococcus acidilactici*) as a feed additive for use in water for drinking for weaned piglets, pigs for fattening, laying hens and chickens for fattening. *EFSA Journal* 2012;10(7):2776, 17 pp. <https://doi.org/10.2903/j.efsa.2012.2776>
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2016. Scientific Opinion on the safety and efficacy of Bactocell PA (*Pediococcus acidilactici* CNCM MA 18/5 M) for pigs for fattening, minor porcine species, chickens for fattening and minor avian species. *EFSA Journal* 2016;14(6):4483, 15 pp. <https://doi.org/10.2903/j.efsa.2016.4483>
- 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, Lopez-Alonso M, Lopez 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, 45 pp. <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 ML, Bories G, Chesson A, Cocconcelli PS, Flachowsky G, Gropp J, Kolar B, Kouba M, Lopez-Alonso M, Lopez 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;20(7):5023, 55 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, Lopez-Alonso M, Lopez 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, Lopez-Alonso M, Lopez 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, Lopez-Alonso M, Lopez Puente S, Mantovani A, Mayo B, Ramos F, Saarela M, Villa RE, Wallace RJ, Wester P, Glandorf B, Herman L, Karenlampi 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;18(16):5206, 65 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, 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, Manini P, Pizzo F, Tarrés-Call J and Holczknecht O, 2019a. Scientific opinion Assessment of the application for renewal of authorisation of Bactocell® (*Pediococcus acidilactici* CNCM I-4622) as a feed additive for weaned piglets, pigs for fattening, minor porcine species (weaned and for fattening), chickens for fattening, laying hens and minor avian species for fattening and for laying and its extension of use to all growing pigs and all avian species. *EFSA Journal* 2019;17(4):5690, 23 pp. <https://doi.org/10.2903/j.efsa.2019.5690>
- 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, Galobart J, Gregoretto L, Innocenti M, López-Gálvez G, Sofianidis K, Vettori MV and Brozzi R, 2019b. Scientific opinion Assessment of the application for renewal of authorisation of Bactocell® (*Pediococcus acidilactici* CNCM I-4622) as a feed additive for all fish and shrimps and its extension of use for all crustacean. *EFSA Journal* 2019;17(4):5691,19 pp. <https://doi.org/10.2903/j.efsa.2019.5691>
- 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, Lopez-Alonso M, Lopez Puente S, Marcon F, Mayo B, Pechova 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, 2019c. 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>

## Abbreviations

CFU	colony forming unit
CNCM	Collection Nationale de Cultures de Microorganismes
DM	dry matter
EURL	European Union Reference Laboratory
FEEDAP	EFSA Scientific Panel on Additives and Products or Substances used in Animal Feed
GLP	good laboratory practice
LOD	limit of detection
LOQ	limit of quantification
MIC	minimum inhibitory concentration
QPS	qualified presumption of safety
OECD	Organisation for Economic Co-operation and Development