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**EURL Evaluation Report on the Analytical Methods  
submitted in connection with the Application for the  
Authorisation of Feed Additives according to  
Regulation (EC) No 1831/2003**

Dossier related to: FAD-2011-0021 - CRL/110002

Feed additive: Lantharenol®

Active Substance(s): Lanthanum carbonate octahydrate

Rapporteur Laboratory: Centro di Referenza Nazionale per la  
Sorveglianza ed il Controllo degli  
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## EXECUTIVE SUMMARY

In the current application authorisation is sought under articles 4(1) for *Lanthanum carbonate octahydrate* under category/functional group 4(d) "zootechnical additives"/"other zootechnical additives", according to the classification system of Annex I of Regulation (EC) No 1831/2003. Authorisation is sought for the use of the *feed additive* for dogs. The feed additive is already authorised for the use for cats.

*Lanthanum carbonate octahydrate* is a white powder consisting of 43 to 49% lanthanum and 27 to 33% carbonate. The *additive* is intended to be incorporated directly in *feedingstuffs*, to achieve a concentration of 1.5 to 7.5 g/kg *feedingstuffs*.

For the determination of *carbonate* in the *feed additive* the EURL recommends for official control the Community method (Commission Regulation (EC) No 152/2009, Annex III – O) based on the carbonate decomposition in hydrochloric acid.

For the quantification of *lanthanum* in the *feed additive* and in *feedingstuffs* the Applicant submitted a single-laboratory validated and further verified method based on Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES). Based on the performance characteristics presented the EURL recommends for official control the sample preparation described in the EN 15510 or in the CEN/TS 15621 standards before applying ICP-AES for the determination of *lanthanum* in the *feed additive* and *feedingstuffs*.

Further testing or validation of the methods to be performed through the consortium of National Reference Laboratories as specified by Article 10 (Commission Regulation (EC) No 378/2005) is not considered necessary.

## KEYWORDS

*Lanthanum carbonate octahydrate*, zootechnical, cats and dogs.

## 1. BACKGROUND

In the current application authorisation is sought under articles 4(1) (new use for an additional animal species) for *Lanthanum carbonate octahydrate* under category/functional group 4(d) "zootechnical additives"/"other zootechnical additives" [1], according to the classification system of Annex I of Regulation (EC) No 1831/2003. Authorisation is sought for the use of the *feed additive* for dogs [1]. The feed additive is already authorised for the use for cats [2].

*Lanthanum carbonate octahydrate* (chemical formula:  $\text{La}_2(\text{CO}_3)_3 \cdot 8\text{H}_2\text{O}$  with a molecular mass of 602 g) is a white powder [3] consisting of 43 to 49% lanthanum and 27 to 33% carbonate [4]. The *additive* is intended to be incorporated directly in *feedingstuffs*, to achieve a concentration of 1.5 to 7.5 g/kg *feedingstuffs* [4].

## 2. TERMS OF REFERENCE

In accordance with Article 5 of Regulation (EC) No 378/2005, as last amended by Regulation (EC) No 885/2009, on detailed rules for the implementation of Regulation (EC) No 1831/2003 of the European Parliament and of the Council as regards the duties and the tasks of the European Union Reference Laboratory concerning applications for authorisations of feed additives, the EURL is requested to submit a full evaluation report to the European Food Safety Authority for each application or group of applications. For this particular dossier, the methods of analysis submitted in connection with *Lanthanum carbonate octahydrate*, and their suitability to be used for official controls in the frame of the authorisation, were evaluated.

## 3. EVALUATION

### *Identification /Characterisation of the feed additive*

#### *Qualitative and quantitative composition of impurities in the additive*

When required by EU legislation, analytical methods for official control of undesirable substances in the additive (e.g. arsenic, cadmium, lead, mercury, mycotoxins, and dioxins) are available from the respective European Union Reference Laboratories [5].

#### *Description of the analytical methods for the determination of the active substance in feed additive and feedingstuffs*

For the determination of *Lanthanum carbonate octahydrate* in the *feed additive*, the Applicant proposed two analytical methods: - one for carbonates and one for lanthanum.

For the determination of *carbonate* in the *feed additive* the Applicant submitted the Eur. Ph. Method (2.3.1) [6] in which gases released by contact with dilute acetic acid and heating, react with barium hydroxide solution. Additionally, the Applicant provided experimental data for the quantification of *carbonate* in the *feed additive* [7] obtained using electrochemical/volumetric analysis, in which samples are blended with boric acid and carbonate-free water. Carbonate is driven off by adding acid and passes as CO<sub>2</sub> in the carbon determination apparatus vessel using oxygen as a carrier gas. The Applicant applied this method for the quantification of *carbonate* in the *feed additive* [8] and reported performance characteristics presented in Table 1.

The EURL recommends instead for official control the Community method (Commission Regulation (EC) No 152/2009, Annex III – O) based on the carbonate decomposition in hydrochloric acid to determine *carbonate* in the *feed additive*.

For the identification of *lanthanum* in the *feed additive*, the Applicant provided a qualitative test [9] in which the element is identified by precipitation of Lanthanum acetate; a solution of KI/I<sub>2</sub> is added to acidified samples and, after reaction with an Ammonia solution, a deep blue deposit can be observed and compared to a reference standard solution.

For the quantification of *lanthanum* in the *feed additive* and in *feedingstuffs* (cats & dogs) the Applicant submitted a method based on Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES). Aqueous samples or samples soluble in water are dissolved in deionized water and nitric acid and further diluted to final volume with deionized water. The insoluble samples are weighed in the digestion vessels and mineralized using a suitable digestion procedure; they are then diluted to volume with deionized water. Instrumental determination of Lanthanum assay is performed at 379 nm (or 478 nm) using an external calibration curve build with lanthanum standard solutions [10-12].

The Applicant validated the ICP-AES method for the quantification of lanthanum in the *feed additive* [8] and *feedingstuffs* (cat dry feed) [13,14]. The ICP-AES method was further verified by a second independent laboratory [12] for *feedingstuffs* [15]. The performance characteristics obtained in the frame of the validation and verification study are presented in Table 1. While the performance characteristics presented are acceptable, the NRLs experts questioned the use of lithium borate in the digestion procedure and recommended instead validated sample treatments protocols based on pressure digestion with nitric acid (described in CEN/TS 15621 [16]) or open digestion with hydrochloric acid (described in EN 15510 [17]).

Based on the performance characteristics presented the EURL recommend for official control:

- the Community method (Commission Regulation (EC) No 152/2009, Annex III – O) based on the carbonate decomposition in hydrochloric acid for the quantification of *carbonate* in the *feed additive*;
- the sample preparation described in the EN 15510 or CEN/TS 15621 before applying the ICP-AES method submitted by the Applicant for the determination of *lanthanum* in the *feed additive* and *feedingstuffs*.

Further testing or validation of the methods to be performed through the consortium of National Reference Laboratories as specified by Article 10 (Commission Regulation (EC) No 378/2005) is not considered necessary.

**Table 1:** Performance characteristics submitted by the Applicant for the determination of carbonate (CO<sub>3</sub>) and lanthanum (La) in the *feed additive* and in *feedingstuffs*

	CO <sub>3</sub>	CO <sub>3</sub>	La	La	La
	[8]	[13]	[8]	[13]	[14-15]
<b>Conc. range</b>	28%	2.6%	44%	3.9%	1.5 & 7.5 mg/kg
<b>RSD<sub>r</sub></b>	1.1%	0.6%	0.6%	1.2%	0.6 - 0.8%
<b>RSD<sub>ip</sub></b>					1.5 – 5%
<b>R<sub>Rec</sub></b>	99.5%	99.6-101%			91 – 103%
<b>LOD</b>					0.2 mg/kg

#### 4. CONCLUSIONS AND RECOMMENDATIONS

In the frame of this authorisation the EURL recommends for official control:

- the Community method (Commission Regulation (EC) No 152/2009, Annex III – O) based on the carbonate decomposition in hydrochloric acid for the quantification of *carbonate* in the *feed additive*;
- the sample preparation described in the EN 15510 or EN 15621 before applying the ICP-AES method submitted by the Applicant for the determination of *lanthanum* in the *feed additive* and *feedingstuffs*.

***Recommended text for the register entry (analytical method)***

For the quantification of *Carbonate* in the *feed additive*:

- Community Method (Reg. (EC) 152/2009 – Annex III-O)

For the quantification of *Lanthanum* in the *feed additive* and *feedingstuffs*:

- Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES)

**5. DOCUMENTATION AND SAMPLES PROVIDED TO EURL**

In accordance with the requirements of Regulation (EC) No 1831/2003, reference samples of *Lanthanum carbonate octahydrate* have been sent to the European Union Reference Laboratory for Feed Additives. The dossier has been made available to the EURL by EFSA.

**6. REFERENCES**

- [1] \*Application, Reference SANCO/D/2 Forw. Appl. 1831/0018-2011
- [2] COMMISSION REGULATION (EC) No 163/2008 of 22 February 2008
- [3] \*Application, Proposal for Register Entry – Annex A
- [4] \*Technical dossier, Section II: Identity, characterisation and conditions of use of the additive; Methods of analysis
- [5] Commission Regulation (EC) No 776/2006 amending Annex VII to Regulation (EC) No 882/2004 of the European Parliament and of the Council as regards to Community Reference Laboratories
- [6] \*Technical dossier, Annexes Section II, Annex II-5: Ph. Eur. 2.3.1 *Method for the determination of Carbonates and Bicarbonates*
- [7] \*Technical dossier, Annexes Section II, Annex II-6
- [8] \*Technical dossier, Annexes Section II, Annex II-30
- [9] \*Technical dossier, Annexes Section II, Annex II-4
- [10] \*Technical dossier, Annexes Section II, Annex II-3
- [11] \*Technical dossier, Annexes Section II, Annex II-26
- [12] \*Technical dossier, Annexes Section II, Annex II-34
- [13] \*Technical dossier, Annexes Section II, Annex II-31
- [14] \*Technical dossier, Annexes Section II, Annex II-32
- [15] \*Technical dossier, Annexes Section II, Annex II-36
- [16] CEN/TS 15621:2007 – *Animal feeding stuffs – Determination of cadmium, sodium, phosphorus, magnesium, potassium, sulphur, iron, zinc, copper, manganese, cobalt and molybdenum after pressure digestion by ICP-AES*
- [17] EN 15510:2007 – *Animal feeding stuffs – Determination of calcium, sodium, phosphorus, magnesium, potassium, iron, zinc, copper, manganese, cobalt, molybdenum, arsenic, lead and cadmium by ICP-AES*

\* Refers to Dossier No. FAD-2011-0021

## **7. RAPPORTEUR LABORATORY & NATIONAL REFERENCE LABORATORIES**

The Rapporteur Laboratory for this evaluation is the Centro di Referenza Nazionale per la Sorveglianza ed il Controllo degli Alimenti per Animali (C.Re.A.A), Torino, Italy. This report is in accordance with the opinion of the consortium of National Reference Laboratories as referred to in Article 6(2) of Commission Regulation (EC) No 378/2005, as last amended by Regulation (EC) No 885/2009.

## **8. ACKNOWLEDGEMENTS**

The following National Reference Laboratories contributed to this report:

- Plantedirektoratet, Laboratorium for Foder og Gødning, Lyngby (DK)
- Schwerpunktlabor Futtermittel des Bayerischen Landesamtes für Gesundheit und Lebensmittelsicherheit (LGL), Oberschleißheim (DE)
- Państwowy Instytut Weterynaryjny, Puławy (PL)
- Instytut Zootechniki w Krakowie, Krajowe Laboratorium Pasz, Lublin (PL)
- Ústřední kontrolní a zkušební ústav zemědělský (ÚKZÚZ), Praha (CZ)
- Laboratoire de Rennes, SCL L35, Service Commun des Laboratoires, Rennes (FR)
- Österreichische Agentur für Gesundheit und Ernährungssicherheit (AGES), Wien (AT)