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European Union Reference Laboratory for Feed Additives

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

Hydroxypropyl Cellulose

(FAD-2016-0061; CRL/100353)

European Union Reference Laboratory
Feed Additives

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

Dossier related to:	**FAD-2016-0061 - CRL/100353**
Name of Feed Additive:	***Hydroxypropyl Cellulose***
Active Agent (s):	**-**
Rapporteur Laboratory:	**European Union Reference Laboratory for Feed Additives (EURL-FA)** **JRC Geel, Belgium**
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Report checked by: Date:	**María José González de la Huebra** **18/07/2019**
Report approved by: Date:	**Christoph von Holst** **18/07/2019**

EXECUTIVE SUMMARY

In the current application authorisation is sought under Article 10 for *hydroxypropyl cellulose* under the category / functional group 1 (c,d,e,f) "technological additives" / "emulsifiers, stabilisers, thickeners and gelling agents" according to the classification system of Annex I of Regulation (EC) No 1831/2003. Specifically, authorisation is sought for the use of the *feed additive* for all animal species.

Hydroxypropyl cellulose is a white to off-white material of granules or powder. The Applicant states that the specific purity criteria set in Commission Regulation (EU) 231/2012 for the use of *hydroxypropyl cellulose* as food additive are also applicable when used as the *feed additive*.

The *feed additive* is intended to be included into *feedingstuffs* through *premixtures* with no minimum or maximum dose indicated by the Applicant.

For the identification/characterisation of the *feed additive*, the Applicant referred to Commission Regulation (EU) 231/2012, where the criteria and specific qualitative and quantitative tests/methods are indicated for checking the compliance with the criteria specified for *hydroxypropyl cellulose*: solubility and pH testing, together with four quantitative methods for the determination of the loss on drying, sulfated ash, the content of propylene chlorohydrins and the content of hydroxypropoxy groups by gas chromatography.

These tests/methods are described in the FAO JECFA *'hydroxypropyl cellulose'* monograph, the *'volume 4'* of the FAO JECFA combined compendium for food additives specifications and the European Pharmacopeia monograph (01/2015:0337).

The EURL recommends for the identification/characterisation of the *feed additive* the above mentioned methods described in the FAO JECFA *'hydroxypropyl cellulose'* monograph, the *'volume 4'* of FAO JECFA combined compendium for food additives specifications and the European Pharmacopoeia monograph (01/2015:0337).

As the accurate quantification of *hydroxypropyl cellulose* added to *premixtures* or *feedingstuffs* is not achievable experimentally the EURL cannot evaluate nor recommend any method for official control to quantify *hydroxypropyl cellulose* in *premixtures* or *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, as last amended by Regulation (EU) 2015/1761) is not considered necessary.

KEYWORDS

Hydroxypropyl cellulose, technological additives, emulsifiers, stabilisers, thickeners, gelling agents, all animal species

1. BACKGROUND

In the current application authorisation is sought under Article 10 (re-authorisation of an existing feed additive) for *hydroxypropyl cellulose* under the category / functional group 1 (c,d,e,f) "technological additives" / "emulsifiers, stabilisers, thickeners and gelling agents" according to the classification system of Annex I of Regulation (EC) No 1831/2003 [1]. Specifically, authorisation is sought for the use of the *feed additive* for all animal species [2].

Hydroxypropyl cellulose is a white to off-white material of granules or powder [3]. The Applicant states [3] that the specific purity criteria set in Commission Regulation (EU) 231/2012 [4] for the use of *hydroxypropyl cellulose* as food additive are also applicable when used as the *feed additive*.

The *feed additive* is intended to be included into *feedingstuffs* through *premixtures* with no minimum or maximum dose indicated by the Applicant [3].

2. TERMS OF REFERENCE

In accordance with Article 5 of Regulation (EC) No 378/2005, as last amended by Regulation (EU) 2015/1761, 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 *hydroxypropyl cellulose* and their suitability to be used for official controls in the frame of the authorisation were evaluated.

3. EVALUATION

Description of the analytical methods for the determination of the active substance in the feed additive, premixtures, feedingstuffs and when appropriate water (section 2.6.1 of the dossier - Annex II of Commission Regulation (EC) No 429/2008)

An evaluation of corresponding methods of analysis is not relevant for the present application.

Methods of analysis for the determination of the residues of the additive in food (section 2.6.2 of the dossier - Annex II of Commission Regulation (EC) No 429/2008)

An evaluation of corresponding methods of analysis is not relevant for the present application.

Identification/Characterisation of the feed additive (section 2.6.3 of the dossier - Annex II of Commission Regulation (EC) No 429/2008)

For the identification/characterisation of the *feed additive*, the Applicant referred to the Commission Regulation (EU) 231/2012 [4], where the criteria and specific qualitative and quantitative tests/methods are indicated for checking the compliance with the criteria specified for *hydroxypropyl cellulose*: solubility and pH testing, together with four quantitative methods for the determination of the loss on drying, sulfated ash, the content of propylene chlorohydrins and the content of hydroxypropoxy groups by gas chromatography. These tests/methods are described in the FAO JECFA *'hydroxypropyl cellulose'* monograph [5], the *'volume 4'* of the FAO JECFA combined compendium for food additives specifications [6] and the European Pharmacopeia monograph (01/2015:0337) [7].

For solubility testing, water, ethanol and ether are used while pH measurements are performed with 1 % of colloidal solution of *hydroxypropyl cellulose* [4,5,6].

For the determination of the loss on drying, an accurate amount of sample (1 to 2 g) is placed in an oven at 105 °C and kept for 3 h. After cooling down to room temperature the sample is weighed again and the difference of these masses is defined as the loss on drying [4,5,6].

For the determination of sulfated ash, a diluted sulfuric acid is added to the sample (1 g). The sample is then gently heated until most of it is volatilised. The insoluble matter is ignited at 800 ± 25 ^{o}C for 15 min. The residue is weighed after the cooling down to determine the amount of sulfate ash [4,5,6].

For the determination of propylene chlorohydrins, the sample (1 g) is mixed with diethyl ether, sonicated for 10 min and centrifuged. The solution of diethyl ether is used for gas chromatographic analysis. The analyte is detected by halogen specific detector (ECD) and the determination is performed using calibration with an external standard [6].

For the determination of the content of hydroxypropoxy groups, the sample (30 mg) is mixed with adipic acid, an internal standard (mixture of *ortho*-xylene and methylcyclohexane) and hydroiodic acid. The reaction mixture is heated at 115 ^{o}C for 70 min under continuous stirring. After the cooling down and the separation of phases the aliquot of the upper layer is taken for further analysis by gas chromatography coupled to flame ionisation detection (GC-FID). The determination of the content of hydroxypropoxy groups is performed by calibration with *iso*-propyl iodide as a standard substance [7].

The EURL recommends for the identification/characterisation of the *feed additive* the above mentioned methods described in the FAO JECFA *'hydroxypropyl cellulose'* monograph, the *'volume 4'* of FAO JECFA combined compendium for food additives specifications and the European Pharmacopoeia monograph (01/2015:0337).

As the accurate quantification of *hydroxypropyl cellulose* added to *premixtures* or *feedingstuffs* is not achievable experimentally the EURL cannot evaluate nor recommend any method for official control to quantify *hydroxypropyl cellulose* in *premixtures* or *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, as last amended by Regulation (EU) 2015/1761) is not considered necessary.

4. CONCLUSIONS AND RECOMMENDATIONS

In the frame of this authorisation the EURL recommends for the identification/characterisation of the *feed additive* the above mentioned methods described in the FAO JECFA *'hydroxypropyl cellulose'* monograph, the *'volume 4'* of FAO JECFA combined compendium for food additives specifications and the European Pharmacopeia monograph (01/2015:0337).

Since the accurate quantification of *hydroxypropyl cellulose* added to *premixtures* or *feedingstuffs* is not achievable experimentally the EURL cannot evaluate nor recommend any method for official control to quantify *hydroxypropyl cellulose* in *premixtures* or *feedingstuffs*.

Recommended text for the register entry (analytical method)

For the identification/characterisation of *hydroxypropyl cellulose* in the *feed additive*:

- The FAO JECFA *'hydroxypropyl cellulose'* monograph, the *'volume 4'* of FAO JECFA combined compendium for food additives specifications and the European Pharmacopeia monograph (01/2015:0337)

5. DOCUMENTATION AND SAMPLES PROVIDED TO EURL

In accordance with the requirements of Regulation (EC) No 1831/2003, reference samples of *hydroxypropyl cellulose* 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 SANTE_E5_FWD. APPL. 1831-0017-2019 & Annex I – submission number 1288186613418-1194

[2] *Application, proposal for Register entry – Annex A

[3] *Technical dossier, Section II: Identify, characterisation and conditions of use of the additive; methods of analysis

[4] Commission Regulation (EU) No 231/2012 of 9 March 2012, laying down specifications for food additives listed in Annexes II and III to Regulation (EC) No 1333/2008 of the European Parliament and of the Council

[5] FAO JECFA Combined Compendium of Food Additive Specifications, *'hydroxypropyl cellulose'*, Monograph No. 1 (2006)
http://www.fao.org/fileadmin/user_upload/jecfa_additives/docs/Monograph1/Additive-232.pdf
(last visited on 27/05/2019)

[6] FAO JECFA Combined Compendium for Food Additive Specifications - Analytical methods, test procedures and laboratory solutions used by and referenced in the food additive specifications, Vol. 4
http://www.fao.org/docrep/pdf/009/a0691e/a0691e.pdf (last visited on 27/05/2019)

[7] European Pharmacopoeia monograph, 01/2015:0337

*Refers to Dossier no: FAD-2016-0061

7. RAPPORTEUR LABORATORY & NATIONAL REFERENCE LABORATORIES

The Rapporteur Laboratory for this evaluation is the European Union Reference Laboratory for Feed Additives, JRC, Geel, Belgium. 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 (EU) 2015/1761.

8. ACKNOWLEDGEMENTS

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