

FINAL REGISTRATION REPORT

Part B

Section 7

Metabolism and Residues

Detailed summary of the risk assessment

Product code: **102000037599**

Product name(s): Active substance(s) **Prohexadione-Ca OD 75 (75 g/L)**

Central Zone

Zonal Rapporteur Member State: **Poland**

CORE ASSESSMENT

(Authorisation)

Applicant: **Bayer CropScience Division**

Submission date: **30/04/2021**

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M-766624-01-1

Version history

When	What
April 2021	Original Bayer submission
July 2021	Dossier sent for evaluation
January 2022	zRMS finalised evaluation
April 2022	Final version prepared by zRMS after Commenting period
July 2022	Supplementing the dRR by zRMS with the data provided by the Applicant (regarding honey) after the commenting period
October 2022	Final version prepared by zRMS after Commenting period (regarding honey)

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zRMS comments:

This report has been completed by the Applicant.

The text highlighted in grey was provided by the evaluator.

The text highlighted in blue was provided after the comment period.

The text in green relates to the evaluation of the additional data submitted by the Applicant after the commenting period.

The product Prohexadione-Ca OD 75 (75 g/L) (PRL OD 75 / Product Code 102000037599) has not been previously evaluated at zonal level. It was not the representative formulation during the renewal of approval of Prohexadione-Ca. All data and information assessed during the EU re-evaluation of Prohexadione-Ca is considered EU peer-reviewed data.

7 Metabolism and residue data (KCA section 6)

7.1 Summary and zRMS Conclusion

Critical GAP proposed for PRL OD 75 on oilseed rape: 1 appl. in max. BBCH-59, max application rate per treatment: 90 g a.s./ha, PHI- as per growth stage

Critical EU GAP on oilseed rape (EFSA Journal 2018;16(8):5397): max 2 appl. in max BBCH-59, max application rate per treatment 50 g a.s./ha, PHI-not applicable

The formulation OD has not been assessed at Community level.

The Applicant provided additional studies on the stability of the residues and magnitude of the residues of prohexadione-calcium in winter oilseed rape following application in NEU.

A new storage stability study was provided for oilseed rape at 18°C and the storage stability of prohexadione-calcium has been demonstrated for at least 6 months (183 days) in oilseed rape seeds (as well as whole plant and haulm) when stored frozen at -18°C.

All residue data reported within the present submission (maximal storage period in oilseed rape, whole plant: 161 days, 5.4 months) are covered by the storage stability data for prohexadione-calcium. Additional studies are not required.

The use on oilseed rape is covered by the evaluated at EU level metabolism studies (EFSA Journal 2010; 8(3):1555). The following residue definitions were proposed by the EU pesticides peer review and confirmed by the MRL review:

- residue for risk assessment: prohexadione and its salts, expressed as prohexadione-calcium
- residue definition for enforcement: prohexadione and its salts, expressed as prohexadione-calcium

The residue definition for enforcement set in Regulation (EC) No 396/2005 (currently in force Reg. (EU) 2021/976) is identical with the above mentioned residue definition.

Standard hydrolysis studies investigating the stability of prohexadione under conditions representative for pasteurisation, boiling/cooking and sterilisation are not available. Considering that the total calculated theoretical maximum daily intake (TMDI) is low (less than 10% of the acceptable daily intake (ADI) and residues in raw agricultural commodity (RAC) are below 0.1 mg/kg, such studies are currently not necessary.

EFSA Journal 2018;16(8):5397: Based on the results of the livestock metabolism studies, the EU pesticides peer review and the MRL review concluded that at the calculated dietary burdens prohexadione residues above the LOQ are not expected in ruminant matrices (EFSA, 2013). Compared to the MRL review, the dietary burdens calculated in the current assessment were lower for ruminants (0.7 N), but higher for swine (1.9 N) and poultry (1.6 N), when using the OECD calculator. Since the calculated exposure is still significantly lower than the lowest dose levels in metabolism studies for which no residues above the LOQ of 0.01 mg/kg were observed, EFSA concludes that residues above the LOQ are not expected in ruminant, swine and poultry matrices.

Animal residue definition for monitoring and risk assessment: prohexadione and its salts expressed as

prohexadione-calcium.

The Applicant has provided residue results from 8 independent field trials following a more critical GAP (two applications instead of one) than the critical GAP of this dRR. The residues of prohexadione-calcium in rape seed were present at or below LOQ. The results show no residue above the applicable MRL (0.015 mg/kg according to the Reg. (EU) 2021/976).

Studies on the magnitude of residues in processed commodities are not necessary because the trigger value of 0.1 mg/kg was not reached for rape seed and intakes of prohexadione-calcium from this commodity are very low (<10% of the ADI).

EFSA Journal 2018;16(8):5397: *Oilseeds can be grown in a crop rotation. According to the soil degradation studies assessed in the EU pesticides peer review, DT90 values of prohexadione are expected to be lower than 39 days which is below the trigger value of 100 days (EFSA, 2010). According to the European guidelines, further investigation of residues in rotational crops is therefore not required (European Commission, 1997b). Nevertheless, studies investigating the nature of prohexadione in rotational crops have been submitted for the EU pesticides peer review, which concluded that no quantifiable prohexadione residues are expected in rotational crops (EFSA, 2010).* The same conclusion is applicable for the use on the crops under consideration in this dRR.

The proposed use of prohexadione-calcium in the formulation Prohexadione-Ca OD 75 (75 g/L) does not represent unacceptable chronic risks for the consumer. An acute risk assessment was not performed as an ARfD has not been set.

Prohexadione-calcium is a systemic substance, oilseed rape is a melliferous plant and residues in the whole plant during the flowering period (BBCH 60-69) indicate above 0.05 mg/kg. Residues studies for flowers, leaves or nectar were not provided. It is not clear from which studies the Applicant claims that there are no residues above 0.05 mg/kg in aerial parts of the crop. Studies determining the residues of prohexadione-calcium in honey should be provided ~~—data gap—~~.

~~Prior to authorization, attention should be paid to the above mentioned lack of data and possibly indicate to the Applicant the need to provide residue trials in honey after authorization.~~

zRMS is of the opinion that the Applicant should provide a study in honey showing no residues above 0.05 mg/kg. Authorization will also be possible after completing the documentation with the study mentioned in RT by the Applicant and changing the MRL value to 0.4 mg/kg.

Authorization is not possible due to the lack of appropriate residue studies in honey.

Following the commenting process, the Applicant provided a residue study of prohexadione-calcium in honey, i.e. ‘Determination of residues of Prohexadione-Calcium in honey after one application of BAS 125 13 W in winter oilseed rape at 4 sites in Germany in 2019’, Kugel, D.; 2019; report No 780427_14, S19-00556; Document No 2019/1057826 (GLP-Yes), including a study indicating the validation of the determination method: ‘Development and Validation of an Analytical Method for the Determination of Prohexadione Calcium and its metabolite Despropionyl Prohexadione in Honey using LC-MS/MS’, Tushar Rastogi and Sandro Jooß, 2020, EAG Laboratories ID: P 5132 G. The owner of the submitted studies is Fine Agrochemicals Ltd so the Applicant provided a letter of access as well. The aforementioned studies were performed in accordance with the applicable requirements. The formulation BAS 125 13W (10% WG), a water dispersible granule formulation containing a nominal content of 100 g/kg prohexadione-calcium, was applied to plots with winter oilseed rape by spraying once at a nominal application rate of 250 g a.s./ha and a water rate of 200 L/ha. The application was performed at BBCH of 64-65 (40%-50% of flowers open). Honey was collected from initially empty combs which were introduced in the hive shortly before the application. Honey was collected at the end of flowering of the oilseed rape crop 2-11 days after treatment for subsequent residue analysis. Honey samples were transported on dry ice to the analytical test site and stored deep frozen ($\leq -18^{\circ}\text{C}$) until analysis. Residues of prohexadione-calcium in honey were determined according to the previously validated analytical method P 5132 G by LC-MS/MS, by extraction with water and acidified acetonitrile. Residues were quantified using matrix matched standards. Concurrent recovery determinations were included in each set of analyses. The Limit of Quantification (LOQ) for prohexadione-calcium in honey, defined as the lowest validated fortification level, was 0.01 mg/kg, expressed as prohexadione-calcium. The corresponding

respective Limit of Detection (LOD) was 0.002 mg/kg. The storage period of the honey samples before analysis was 14-26 days. Since analysis was performed within 30 days of collection, storage stability data are not required. Mean recoveries at each fortification level were in the range of 86-95%. The RSDs values, if applicable, were <15%. The obtained recovery data are in accordance with the general requirements for residue analytical methods (SANTE/2020/12830 rev.1); therefore, the method was validated successfully. Residues of prohexadione-calcium in honey from treated plots showed one value below LOQ (<0.01 mg/kg at PHI 7 days), two values below the threshold value of 0.05 mg/kg (0.0308 and 0.0380 mg/kg at PHI 7 and 11 days, respectively) or one higher value (0.157 mg/kg at PHI 2 days). No residues of the analyte above the LOQ were found in any of the control samples of honey. The results were not corrected for concurrent recoveries.

Taking into account that the dose used in the study (1x250 g a.s./ha) was much higher when comparing to the intended use of PRL OD 75 (1x90 g a.s./ha) and the fact that in the study the application was in spring BBCH 60-69, and the PRL OD 75 is intended for use in autumn BBCH 12-18, it should be considered that the provided study represents a worst-case scenario. It therefore seems that for the intended use of PRL OD 75 in autumn, the residues in honey will not exceed the trigger value of 0.05 mg/kg, thus confirming that the current honey MRL of 0.05 mg/kg will adequately cover this use.

In addition it should be noted that honey is known to be acidic (pH approx.4) and prohexadione active substance DT50 in hydrolytic conditions is 2.5 days at pH 4 and 3.2 days at pH 5 (EFSA 2010; 8(3):1555). Based on this, prohexadione residues in honey will decrease in a short-time period as confirmed by the 3 lower residue values in the honey residue study.

However, it should be noted that formulation in the provided study (WG) was different than intended for PRL OD 75 (OD) and that one of the results showed a residue significantly above the applicable MRL. The authorization decision should be made by the risk managers.

7.1.1 Critical GAP(s) and overall conclusion

Selection of critical uses and justification

The critical GAPs with respect to consumer intake and risk assessment for the preparation prohexadione-Ca OD 75 (75 g/L) are presented in Table 7.1-1. They have been selected from the individual GAPs in the Central Zone for oilseed rape. A list of all intended uses within the Central Zone is given in Part B, Section 0.

Overall conclusion

The data available are considered sufficient for risk assessment.

For prohexadione-calcium, an exceedance of the already proposed MRL of 0.015 mg/kg (EFSA, 2018) is not expected.

The chronic and the short-term intakes of prohexadione-calcium residues are unlikely to present a public health concern.

As far as consumer health protection is concerned, Poland acting as zRMS, agrees with the authorization of the intended use.

Authorization is not possible due to the lack of appropriate residue studies in honey.

The authorization decision should be made by the risk managers.

According to available data, no specific mitigation measures should apply.

Data gaps

Noticed data gaps are:

- Studies determining the residues of prohexadione-calcium in honey

Table 7.1-1: Acceptability of critical GAPs (and respective fall-back GAPs, if applicable)

1	2	3	4	5	6	7		8				9			10	11
GAP number (see part B.0)*	Crop and/ or situation **	Zone	Product code	F, Fn, G, Gn, Gpn or I***	Pests or Group of pests controlled	Formulation		Application				Application rate per treatment			PHI (days)	Conclusion
						Type	Conc. of as	method kind	growth stage & season	number min max	interval between applications (min)	kg as/hL min max	water L/ha min max	kg as/ha min max		
2, 5, 8, 11, 14, 17, 20	Winter, rape (0401060)	CZ	102000037599 PRL OD 75	F	growth regulation of crop, resistance to lodging	OD	75 g/L	spray	30-59	1	-	0.0225- 0.090	100-400	0.090	As per growth stage	According to the PartB Section 0: This use is not supported in the present application but indicated here as information to justify the worst case considered in some studies.
	Rape, winter (BRSNW), (0401060)	NEU	102000037599 PRL OD 75	F	winter solidness, growth regulation of crop	OD	75 g/L	spray	12-18	1	-	0.0225- 0.090	100-400	0.090	as per growth stage	The authorization decision should be made by the risk managers. Not accepted GAP proposed in accordance with PartB Section 0
3, 6, 9, 12, 15, 18, 21	Winter, rape (0401060)	CZ	102000037599 PRL OD 75	F	B1: winter solidness, growth regulation of	OD	75 g/L	spray	12-59 B1: 12-18 B2: 30-59	2	90 days	0.0225- 0.090	100-400	B1: 0.090 B2: 0.090	As per growth stage	This use is not supported in the present application

					crop B2: resistance to lodging, growth regulation of crop											but indicated here as information to justify the worst case considered in some studies.
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PRL: Prohexadione-calcium

* Use number(s) in accordance with the list of all intended GAPs in Part B, Section 0 should be given in column 1

** Use also code numbers according to Annex I of Regulation (EU) No 396/2005

*** F: professional field use, Fn: non-professional field use, Fpn: professional and non-professional field use, G: professional greenhouse use, Gn: non-professional greenhouse use, Gpn: professional and non-professional greenhouse use, I: indoor application

Explanation for Column 11 “Conclusion”

A	Exposure acceptable without risk mitigation measures, safe use
R	Further refinement and/or risk mitigation measures required
N	Exposure not acceptable, no safe use

7.1.2 Summary of the evaluation

The Plant Protection Product Prohexadione-Ca OD 75 (75 g/L) is composed of prohexadione-calcium.

Table 7.1-2: Toxicological reference values for the dietary risk assessment of prohexadione-Ca

Reference value	Source	Year	Value	Study relied upon	Safety factor
ADI	EFSA, 2010	2010	0.2 mg/kg bw/day	Dog, 1 year study	100
ARfD	EFSA, 2010	2010	Not allocated (not necessary)		

7.1.2.1 Summary for prohexadione-Ca

Table 7.1-3: Summary for prohexadione-Ca

Use-No.*	Crop	Plant metabolism covered?	Sufficient residue trials?	PHI sufficiently supported?	Sample storage covered by stability data?	MRL compliance	Chronic risk for consumers identified?	Acute risk for consumers identified?
2, 5, 8, 11, 14, 17, 20	Oilseed rape	Yes	Yes** (8 NEU)	Not applicable	Yes	Yes ***	No	Not applicable

* Use number(s) in accordance with the list of all intended GAPs in Part B, Section 0 should be given in column 1

** The residue trials were conducted with a more critical GAP (2 applications) than the cGAP of this dRR. However, since the residues of prohexadione-calcium in the oilseed rape seed remain at or below LOQ in the residue trials, it is to be expected that at cGAP of this dRR the residues of prohexadione-calcium would be also at or below LOQ.

*** An MRL of 0.015 mg/kg was proposed in EFSA Journal 2018;16(8):5397 and the draft Regulation was approved by SCOPAFF representatives in February/March 2021

For oilseed rape, additional data has been submitted. Following a more critical trial GAP (two applications instead of one) than the cGAP of this dRR, the residues of prohexadione-calcium in rape seed were present at or below LOQ. According to the available data, the intended uses on oilseed rape in the central zone is therefore considered acceptable. The intended use patterns will be covered by the proposed MRL for prohexadione-calcium in oilseed rape, which was approved by SCOPAFF representatives in February/March 2021.

As residues of prohexadione-calcium do not exceed the trigger values defined in Reg (EU) No 283/2013, there is no need to investigate the effect of industrial and/or household processing.

The intended uses (oilseed rape) can be grown in rotation with other crops. However, based on the confined rotational crop study, no quantifiable residues of prohexadione-calcium are expected in rotational and succeeding crops.

Considering dietary burden and based on the intended uses, no significant modification of the intake was calculated for livestock. Further investigation of residues as well as the modification of MRLs in commodities of animal origin is therefore not necessary.

No long-term risk has been identified for the supported crop. An acute risk assessment was not performed as an ARfD has not been set.

The use of Prohexadione-Ca OD 75 (75 g/L) on oilseed rape is therefore acceptable.

7.1.2.2 Summary for PRL OD 75

Table 7.1-4: Information on PRL OD 75 (KCA 6.8)

Crop	PHI for 102000037599 proposed by applicant	PHI/ Withholding period* sufficiently supported for	PHI for 102000037599 proposed by zRMS	zRMS Comments (if different PHI proposed)
		Prohexadione-Ca		
Oilseed rape	NR	NR	NR	-

NR: not relevant

* Purpose of withholding period to be specified

** F: PHI is defined by the application stage at last treatment (time elapsing between last treatment and harvest of the crop).

Table 7.1-5: Waiting periods before planting succeeding crops

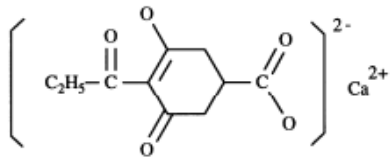
Waiting period before planting succeeding crops		Overall waiting period proposed by zRMS for PRL OD 75
Crop group	Led by prohexadione-Ca	
All	NR	NR

NR: not relevant

7.2 Prohexadione-Ca

General data on prohexadione-calcium are summarised in the table below.

Table 7.2-1: General information on prohexadione-calcium

Active substance (ISO Common Name)	Prohexadione-calcium
IUPAC	Calcium 3-oxido-5-oxo-4-propionylcyclohex-3-enecarboxylate (for the Ca salt) Calcium 3,5-dioxo-4-propionylcyclohexanecarboxylate (derived from free acid)
Chemical structure	
Molecular formula	C ₁₀ H ₁₀ O ₅ Ca
Molar mass	250.26 g/mol
Chemical group	plant growth regulator
Mode of action (if available)	inhibition of the biosynthesis of gibberellin
Systemic	Yes
Company (ies)	Fine Agrochemicals Limited
Rapporteur Member State (RMS)	France
Approval status	Approved Commission Implementing Regulation (EU) No. 702/2011, entry into force 01/01/2012

	Extencion of the approval period to 31/12/2022 - Commission Implementing Regulation (EU) 2019/291
Restriction (e.g. is restricted to use as "...")	see Approval Directive / Regulation Only uses as plant growth regulator may be authorised.
Review Report	SANCO/11023/2011 Rev 2 17/06/2011
Current MRL regulation	Reg. (EU) No 2018/70 Reg. (EU) 2021/976
Peer review of MRLs according to Article 12 of Reg No 396/2005 EC performed	Yes
EFSA Journal: Conclusion on the peer review	Yes EFSA Journal 2010; 8(3):1555
EFSA Journal: conclusion on article 12	EFSA Journal 2013;11(4):3192
Current MRL applications on intended uses	None EFSA Journal 2018;16(8):5397 based on submission of other applicant

* Notifier in the EU process to whom the a.s. belong(s)

7.2.1 Stability of Residues (KCA 6.1)

7.2.1.1 Stability of residues during storage of samples

Available data

The storage stability of prohexadione-calcium has been demonstrated for up to 24 months in apple and wheat matrices (forage, grain and straw) (EFSA, 2013), and in peanut matrix for 1 month (EFSA, 2012). And during metabolism studies the stability of prohexadione-calcium was demonstrated in poultry liver samples stored at temperatures at around -20°C for a period of about 1 month (AR, France, 2010).

A new storage stability study, undertaken by Fine Agrochemicals Ltd and covered by a Letter of Access, has been submitted in the framework of this application for the matrices of oilseed rape (whole plant, seed, haulm) at -18°C. The detailed assessment of this study is presented in 0.

Results are summarised in the table below.

Table 7.2-2: Summary of stability data achieved at ≤ - 18°C (unless stated otherwise)

Matrix	Characteristics of the matrix	Acceptable Maximum Storage duration	Reference
Data relied on in EU			
Plant products			
Apple (fruit)	High water content	24 months (-5°C)	Report N° 2001/5002487 AR, France, 2010; EFSA, 2010
Wheat (forage)	High water content	24 months	Report N° 95/10624 AR, France, 2010; EFSA, 2010
Wheat (grain)	High starch content	24 months	
Wheat (straw)	Dry matrices	24 months	
Peanut (nutmeat)	High oil content	1 month (-5°C)	Report N° 98/5052 EFSA, 2010; EFSA, 2013
Animal Products			

Matrix	Characteristics of the matrix	Acceptable Maximum Storage duration	Reference
Poultry	Liver	17 months (- 20°C)	Report N° 97/5331 AR, France, 2010
New data			
Plant products			
Oilseed rape (seed)	High oil content	6 months	Report N° RES-00196 See Appendix 2
Oilseed rape (whole plant)	High water content	6 months	
Oilseed rape (haulm)	Dry matrices	6 months	

Conclusion on stability of residues during storage

Storage stability of prohexadione-calcium has been demonstrated for at least 24 months in apple (fruit, at -5°C) and wheat (forage, grain and straw, at -18°C) and for 1 month in high oil matrices (peanut, at -5°C). A new storage stability study was therefore carried out for oilseed rape at -18°C and the storage stability of prohexadione-calcium has been demonstrated for at least 6 months in oilseed rape seeds (as well as whole plant and haulm) when stored frozen at -18°C.

All residue data referred to and/or reported within the present submission (maximal storage period in oilseed rape, whole plant: 161 days, 5.4 months) are well covered by the storage stability data for prohexadione-calcium.

7.2.1.2 Stability of residues in sample extracts (KCA 6.1)

Available data

The storage stability of pesticide residues in sample extracts is generally checked during the development of the applicable analytical residue methods. During the course of the method validation/storage stability study (RES-00196), stability of prohexadione-calcium was shown in all tested matrix extracts for at least 8 days, when stored in the dark in a refrigerator at 5°C ± 3°C.

Additionally, relevant information on the stability of residues in the final or any intermediate extracts can be derived from the fortification experiments performed during sample analysis. Every analytical batch does contain at least one freshly fortified sample for concurrent recovery determination. The extracts of the fortified samples and of the study samples are handled and stored in parallel. If the recoveries in the fortified samples are within acceptable ranges, the stability of the sample extracts is considered as sufficiently proven.

Conclusion on stability of residues in sample extracts

It can be concluded, that prohexadione-calcium was found to be stable in final plant extracts at 5 °C ± 3 °C in the dark for at least 8 days (oilseed rape whole plant, haulm and seed).

7.2.2 Nature of residues in plants, livestock and processed commodities

7.2.2.1 Nature of residue in primary crops (KCA 6.2.1)

Available data

The metabolism of prohexadione-calcium has been investigated in cereals (barley and rice), fruits (apples) and on oilseeds (peanuts). The studies were considered in the framework of the peer review under Directive 91/414/EEC (DAR, France, 1998) and for renewal of approval (AR, France, 2010; EFSA, 2010). These studies are summarised in the table below.

No new data submitted in the framework of this application.

Table 7.2-3: Summary of plant metabolism studies

Crop Group	Crop	Label position	Application and sampling details					Reference
			Method, F or G (a)	Rate (kg a.s./ha)	No	Sampling (DAT)	Remarks	
EU data								
Fruits and fruiting vegetable	Apples	3- or 5- ¹⁴ C-cyclo-hexenone	foliar treatment, F	0.98	2	45	-	Report N° 1997/5005 AR, France, 2010 EFSA, 2010
Pulses and oilseeds	Peanut			1.12	1	0, 13, 22	-	Report N° 1997/5341 AR, France, 2010 EFSA, 2010
Cereals	Barley			0.13-0.14	1	2, 8, 66	Treatment at BBCH 39	Report N° 1993/10804 & 1993/10871 AR, France, 2010 EFSA, 2010
	Rice			0.03 or 0.3	1	50 25, 50	Treatment at BBCH 47	Report N° 1990/10594 & 1992/11979 AR, France, 2010 EFSA, 2010

(a) Outdoor/field application (F) or glasshouse/protected/indoor application (G)

Summary of plant metabolism studies reported in the EU

The metabolism of prohexadione-calcium in plants proceeds from prohexadione to tricarballic acid and then incorporation into natural plant components. Only three metabolites were encountered in amounts exceeding 10 % of the TRR: prohexadione (peanut), tricarballic acid (peanut hay and hull, barley straw), and the methoxymethyl metabolite (apples).

Excerpt from EFSA Journal 2010; 8(3):1555:

“The residue definition for plants is based on metabolism studies on apples, peanuts, barley and rice. As the metabolic pathway is similar in the three crop groups the residue definition is applicable to all crop groups. Prohexadione was a main component of the radioactive residues in all crop parts. Metabolites are not expected to be found in significant concentrations for the representative GAPs. Tricarballic acid, which was the main component in plant parts used for animal feed, also occurs naturally in animal feed and the contribution to the animal intakes from prohexadione-calcium is insignificant.”

Conclusion on metabolism in primary crops

Excerpt from EFSA Journal 2010; 8(3):1555:

“Therefore, the following residue definition for plant matrices for monitoring and risk assessment was proposed: prohexadione and its salts expressed as prohexadione-calcium. For application rates higher than the representative GAPs the inclusion of metabolites in the residue definition may be necessary.”

The submitted use on oilseed rape is covered by the available metabolism studies. No further data on the nature of the residue was required (EFSA, 2013).

7.2.2.2 Nature of residue in rotational crops (KCA 6.6.1)

Available data

Confined rotational studies on prohexadione-calcium have been conducted in cereals (wheat), leafy vegetables (lettuce) and root and tuber vegetables (turnip). The studies were considered in the framework of the peer review under Directive 91/414/EEC (DAR, France, 1998) and for renewal of approval (AR, France, 2010; EFSA, 2010). These studies are summarised in the table below.

No new data submitted in the framework of this application.

Table 7.2-4: Summary of metabolism studies in rotational crops

Crop group	Crop	Label position	Application and sampling details					Reference
			Method, F or G *	Rate (kg a.s./ha)	Sowing intervals (DAT)	Harvest Intervals (DAT)	Remarks	
EU data								
Leafy vegetables	Lettuce	¹⁴ C-prohexadione-calcium	Bare soil	0.38	31	at maturity	-	Report N° 1996/5005 AR, France, 2010 EFSA, 2010
Root and tuber vegetables	Turnip				31	at maturity	-	
Cereals	Wheat				31, 122	at maturity	-	

* Outdoor/field application (F) or glasshouse/protected/indoor application (G)

Summary of plant metabolism studies reported in the EU

A rapid dissipation of prohexadione-calcium could be confirmed in soil and no TRR above 0.01 mg/kg was detected in any plant sample with only few exceptions (wheat grain and straw at day 31 and wheat straw at day 122). Additionally, the majority of radioactivity in analysed plant samples was associated with carbohydrate fractions or unextractable (AR, France, 2010).

Conclusion on metabolism in rotational crops

Excerpt from EFSA Journal 2010; 8(3):1555:

“Prohexadione-calcium is rapidly degraded in soil, therefore no quantifiable residues of prohexadione-calcium are expected in rotational crops. “

7.2.2.3 Nature of residues in processed commodities (KCA 6.5.1)

Available data

During the peer-review process, data on the magnitude of residues in processed commodities were not required as residues of prohexadione-calcium did not reach the trigger value of 0.1 mg/kg in the RAC and the TMDI was <10% of the ADI (EFSA, 2010).

No new data submitted in the framework of this application.

Table 7.2-5: Nature of the residues in processed commodities

Conditions (Duration, Temperature, pH)	Identified compound(s) (%)	Reference
EU data		
Pasteurisation (20 minutes, 90°C, pH 4)	Not required	EFSA, 2010
Baking, boiling, brewing (60 minutes, 100°C, pH 5)		
Sterilisation (20 minutes, 120°C, pH 6)		

7.2.2.4 Conclusion on the nature of residues in commodities of plant origin (KCA 6.7.1)

Table 7.2-6: Summary of the nature of residues in commodities of plant origin

Endpoints	
Plant groups covered	Cereals (barley, rice) Fruits and fruiting vegetable (apple) Pulses and oilseeds (peanuts)
Rotational crops covered	Lettuce, turnips and wheat
Metabolism in rotational crops similar to metabolism in primary crops?	Yes
Processed commodities	none
Residue pattern in processed commodities similar to pattern in raw commodities?	-
Plant residue definition for monitoring	prohexadione and its salts, expressed as prohexadione-calcium (EFSA, 2010)
Plant residue definition for risk assessment	prohexadione and its salts, expressed as prohexadione-calcium (EFSA, 2010)
Conversion factor from enforcement to RA	No conversion factor (EFSA, 2010)

7.2.2.5 Nature of residues in livestock (KCA 6.2.2-6.2.5)

Available data

Livestock metabolism studies on prohexadione-calcium in lactating goats and in laying hens were considered in the framework of the peer review under Directive 91/414/EEC (DAR, France, 1998) and for renewal of approval (AR, France, 2010; EFSA, 2010). These studies are summarised in the table below.

No new data submitted in the framework of this application.

Table 7.2-7: Summary of animal metabolism studies

Group	Species	Label position	No of animal	Application details		Sample details		Reference
				Rate (mg/kg bw/d)	Duration (days)	Commodity	Time of sampling	
EU data								
Lactating ruminants	Goat	3- or 5- ¹⁴ C-cyclohexenone	3	0.02 or 20	10	Milk	twice daily	Report N° 1992/11978 AR, France, 2010 EFSA, 2010
						Urine and faeces	24 hours after each dose	
						Tissues	23 hours after last low dose, 8 hours after last high dose	
Laying poultry	Hens		20	0.76 or 3.0	5	Eggs	twice daily	Report N° 97/5331 AR, France, 2010 EFSA, 2010
						Excreta	Immediately before dosing	
						Tissues	20-21 hours after last low dose	

Summary of animal metabolism studies reported in the EU

A metabolism study on goat was performed with the ingestion of capsule at 0.02 or 20 mg/kg bw/day (4 and 400 times the expected ingested dose). After oral administration of 0.02 mg/kg bw/day to goats, radioactivity was rapidly excreted mainly via urine (73-83% of dose). There was no evidence of bioaccumulation. After ten daily doses of 20 mg/kg bw/day, a substantial proportion (ca. 17%) of radioactivity was unmetabolised and excreted as prohexadione acid. There were three major and two minor metabolites in excreta. In kidney, three metabolites were identified in the organic fraction (3,5-dioxocyclohexanecarboxylic acid, acid form of prohexadione-calcium and metabolite KI 1902 (ethyl 3,5-dioxo-4-propionyl-1-cyclohexane carboxylate)).

In the laying hen metabolism study, the administrated doses were 0.76 or 3.0 mg/kg bw/day during 5 days. The data presented demonstrated that there is very little uptake into poultry tissues even at an exaggerated dose rate. Parent was found in most tissues and eggs. Individual metabolites were not easily isolated from any edible tissues and evidence for the metabolic pathway was elucidated from non-edible tissues. The major metabolic pathway of prohexadione-calcium in hens involves eventual metabolism to tricarballic acid. Tricarballic acid is then metabolised into natural products (protein).

Excerpt from EFSA Journal 2010; 8(3):1555:

“Radioactive residues were very low, with prohexadione being a main component.”

Conclusion on metabolism in livestock

Excerpt from EFSA Journal 2010; 8(3):1555:

“The following residue definition for animal matrices for monitoring and risk assessment was proposed: prohexadione and its salts expressed as prohexadione-calcium. “

7.2.2.6 Conclusion on the nature of residues in commodities of animal origin (KCA 6.7.1)

Table 7.2-8: Summary on the nature of residues in commodities of animal origin

	Endpoints
Animals covered	Lactating goats Laying hens
Time needed to reach a plateau concentration	Not applicable
Animal residue definition for monitoring	Prohexadione and its salts expressed as prohexadione-calcium (EFSA, 2010)
Animal residue definition for risk assessment	Prohexadione and its salts expressed as prohexadione-calcium (EFSA, 2010)
Conversion factor	No conversion factor (EFSA, 2010)
Metabolism in rat and ruminant similar	Yes
Fat soluble residue	No

7.2.3 Magnitude of residues in plants (KCA 6.3)

7.2.3.1 Summary of European data and new data supporting the intended uses

New studies on the magnitude of residue, undertaken by Fine Agrochemicals Ltd and covered by a Letter of Access, have been submitted in the framework of this application. These studies are summarised in the table below. The detailed assessment of these studies is presented in 0.

Table 7.2-9: Summary of EU reported and new data supporting the intended uses of prohexadione-calcium and conformity to existing MRL

Commodity	Source	Residue zone (N-EU, S-EU, EU, outside EU)	Evaluation GAP Residue levels (mg/kg) E = according to enforcement residue definition RA = according to risk assessment residue definition	STMR (mg/kg)	HR (mg/kg)	Unrounded OECD calculator MRL (mg/kg)	Current EU MRL (mg/kg) *	MRL compliance
Residue definition for monitoring (E): prohexadione and its salts, expressed as prohexadione-calcium (EFSA, 2010)(EFSA Journal 2018;16(8):5397)								
Residue definition for risk assessment (RA): prohexadione and its salts, expressed as prohexadione-calcium (EFSA, 2010) (EFSA Journal 2018;16(8):5397)								
Oilseed rape	EFSA, 2010	EU	GAP on which MRL/EU a.s. assessment is based: Default MRLs (at the LOQ) were established since no primary use has been registered thus far E/RA: 0.01	N/A			0.01 0.015*	
	EFSA, 2018 ER, France, 2018 (2015/1112 013; 2015/11120 14)	N-EU	Trials GAP: 2 x 0.05 kg a.s./ha, BBCH 59, outdoor E/RA: 8x <0.012 [#]	0.012	0.012	0.015 (proposed MRL)	0.01 * 0.015 P	No/ Yes
		S-EU	Trials GAP: 2 x 0.05 kg a.s./ha, BBCH 59, outdoor E/RA: 6x <0.012 [#] ; 2x 0.012 [#]					
	New trials (SPK-20-42544; SPK-19-38007)	N-EU	Trials GAP**: 2 x 0.09 kg as/ha, BBCH 30-59, outdoor E/RA: 7x <0.01, 0.01 Although the GAP of the trials is more critical than the cGAP in this dRR, since the residues of prohexadione-calcium in the oilseed rape seed remain at or below LOQ, it is to be expected that at cGAP of this dRR the residues of prohexadione-calcium would be also at or below LOQ.	E/RA: 0.01	E/RA: 0.01	0.013	0.01 * 0.015 P	No/ Yes

* Source of EU MRL: Reg. (EU) No ~~2018/70~~ 2021/976

Values reported in the studies to be at or below 0.01 mg as LOQ for prohexadione, corresponding to an LOQ of 0.012 mg/kg for prohexadione-calcium (conversion factor: 1.179)

7.2.3.2 Conclusion on the magnitude of residues in plants

According to the available data, the intended uses on oilseed rape are considered acceptable, for outdoor uses in the central registration zone.

Following a more critical trial GAP (two applications instead of one) than the cGAP of this dRR, the residues of prohexadione-calcium in rape seed were present at or below LOQ.

The data submitted show that no exceedance of the ~~already proposed~~ applicable MRL of 0.015 mg/kg (EFSA, 2018 Reg. (EU) 2021/976) will occur.

The uses are considered acceptable.

7.2.4 Magnitude of residues in livestock

7.2.4.1 Dietary burden calculation

Table 7.2-10: Input values for the dietary burden calculation (considering the uses authorised in the country of the zRMS/authorised within the zone/evaluated in Art. 12 procedure and the uses under consideration)

Feed Commodity	Median dietary burden		Maximum dietary burden	
	Input value (mg/kg)	Comment	Input value (mg/kg)	Comment
Risk assessment residue definition: Prohexadione and its salts expressed as prohexadione-calcium				
Cereal straw	0.05	Median residue (EFSA, 2013)	0.08	Highest residue (EFSA, 2013)
Cereal grain	0.05	Median residue (EFSA, 2013)	0.05	Median residue (EFSA, 2013)
Apple pomace	0.25	Median residue x 5 (EFSA, 2013)	0.25	Median residue x 5 (EFSA, 2013)
Brewer's grain	0.17	Median residue x 3.3 (EFSA, 2013)		Median residue x 3.3 (EFSA, 2013)
Rape/Rapeseed meal	0.02	Median residue x 2	0.02	Median residue x 2
Distiller's grain	0.17	Median residue x 3.3 (EFSA, 2013)		Median residue x 3.3 (EFSA, 2013)
Linseed meal	0.03	Median residue x 2 (EFSA, 2018)	0.03	Median residue x 2 (EFSA, 2018)
Sunflower meal	0.04	Median residue x 2 (EFSA, 2018)	0.04	Median residue x 2 (EFSA, 2018)
Peanut meal	0.12	Median residue x 2 (EFSA, 2013)	0.12	Median residue x 2 (EFSA, 2013)
Wheat gluten	0.09	Median residue x 1.8 (EFSA, 2013)	0.09	Median residue x 1.8 (EFSA, 2013)
Wheat milled-by-products	0.35	Median residue x 7 (EFSA, 2013)	0.35	Median residue x 7 (EFSA, 2013)

Table 7.2-11: Results of the dietary burden calculation

Animal species	Median dietary burden (mg/kg bw/d)	Maximum dietary burden (mg/kg bw/d)	Highest contributing commodity	Max dietary burden (mg/kg DM)	Trigger exceeded (Y/N)
Risk assessment residue definition: Prohexadione and its salts, expressed as prohexadione-calcium					
Beef cattle*	0.0042	0.004	Apple, pomace wet	0.19	Y
Dairy cattle*	0.0061	0.007	Wheat, milled-by-pdts	0.17	Y
Ram/ewe	0.0065	0.007	Wheat, milled-by-pdts	0.2	Y
Lamb	0.0097	0.010	Wheat, milled-by-pdts	0.24	Y
Breeding swine	0.005	0.005	Wheat, milled-by-pdts	0.23	Y
Finishing swine*	0.007	0.007	Wheat, milled-by-pdts	0.23	Y
Broiler poultry	0.008	0.008	Wheat, milled-by-pdts	0.12	Y
Layer poultry*	0.009	0.009	Wheat, milled-by-pdts	0.13	Y
Turkey	0.008	0.008	Wheat, milled-by-pdts	0.11	Y

* These categories correspond to those (formerly) assessed at EU level.

7.2.4.2 Livestock feeding studies (KCA 6.4.1-6.4.3)

Available data

The dietary burden calculation showed that the maximum dietary burden intakes for ruminant (lamb: 0.010 mg/kg dw/d), for pig (finishing swine: 0.007 mg/kg bw/d) and for poultry (layer poultry: 0.009 mg/kg bw/d) exceed the trigger values of 0.004 mg/kg bw/d and therefore further consideration of the potential need for livestock feeding studies is necessary.

However, based on the results of the livestock metabolism studies, since the calculated exposure is still lower than the lowest dose levels in metabolism studies for which no residues above the LOQ of 0.01 mg/kg were observed, it was concluded that residues above the LOQ are not expected in ruminant, swine and poultry matrices (EFSA, 2018).

No new data were submitted in the framework of this application.

Conclusion on feeding studies

The requested uses in oilseed rape modify the theoretical maximum daily intake for animals, but regarding available data, there is no risk for animal MRL to be exceeded.

7.2.5 Magnitude of residues in processed commodities (Industrial Processing and/or Household Preparation) (KCA 6.5.2-6.5.3)

7.2.5.1 Available data for all crops under consideration

Studies on the magnitude of residues in oilseed rape processed fractions are not necessary because the trigger value of 0.1 mg/kg was not reached for rape seed and intakes of prohexadione-calcium from this commodity are very low (<10% of the ADI).

7.2.6 Magnitude of residues in representative succeeding crops

The intended use (oilseed rape) can be grown in rotation with other crops.

However, based on the confined rotational crop study, no quantifiable residues of prohexadione-calcium are expected in rotational and succeeding crops.

7.2.7 Other / special studies (KCA6.10, 6.10.1)

The available data for the active substance sufficiently address aspects of the residue situation that might arise from the use of prohexadione-calcium. Therefore, other special studies are not needed.

According to Regulation (EU) 283/2013 and the Technical Guidance SANTE/11956/2016 rev. 9, residue levels of plant protection products need to be determined in honey in order to evaluate the risk for the consumer and to establish a honey Maximum Residue Levels (MRLs) for monitoring. However prohexadione-calcium residue levels in aerial part of oilseed rape are below 0.05 mg/kg, therefore, the default MRL at LOQ (0.05 mg/kg) can be set for honey.

zRMS comments

zRMS does not agree with the conclusions presented by the Applicant. Prohexadione-calcium is a systemic substance, oilseed rape is a melliferous plant and residues in the whole plant during the flowering period (BBCH 60-69) indicate above 0.05 mg/kg. Residues studies for flowers, leaves or nectar were not provided. It is not clear from which studies the Applicant claims that there are no residues above 0.05 mg/kg in aerial parts of the crop. Studies determining the residues of prohexadione-calcium in honey should be provided.

At the commenting stage, the Applicant provided additional data in the RT: *Bayer has indeed not conducted any study to determine prohexadione-calcium residues in honey at the GAP supported in this application. However, a residue study in honey following OSR treatment with prohexadione-calcium applied at a more critical GAP during springtime (250 g a.s./ha at BBCH 64-65) was conducted by one of the companies holding the a.s. registration. This study was submitted along with the a.s. AIR dossier (June 2020, RMS FRA) with a proposed MRL at 0.4 mg/kg.*

The prohexadione-calcium AIR review is currently still on-going and therefore the residue definition in honey and the honey MRL will be set at the a.s. approval.

However, considering that Bayer's GAP with the product Prohexadione-calcium OD 75 on OSR is much less critical, the proposed MRL of 0.4 mg/kg will be appropriate to cover the PRL OD 75 use on OSR.

zRMS is of the opinion that the Applicant should provide a study showing no residue in honey above 0.05 mg/kg. Authorization will also be possible after completing the documentation with the study mentioned by the Applicant and changing the MRL value to 0.4 mg/kg.

Following the commenting process, the Applicant provided a residue study of prohexadione-calcium in honey, i.e. 'Determination of residues of Prohexadione-Calcium in honey after one application of BAS 125 13 W in winter oilseed rape at 4 sites in Germany in 2019', Kugel, D.; 2019; report No 780427_14, S19-00556; Document No 2019/1057826 (GLP-Yes), including a study indicating the validation of the determination method: 'Development and Validation of an Analytical Method for the Determination of Prohexadione Calcium and its metabolite Despropionyl Prohexadione in Honey using LC-MS/MS', Tushar Rastogi and Sandro Jooß, 2020, EAG Laboratories ID: P 5132 G. The owner of the submitted studies is Fine Agrochemicals Ltd so the Applicant provided a letter of access as well. The aforementioned studies were performed in accordance with the applicable requirements. The formulation BAS 125 13W (10% WG), a water dispersible granule formulation containing a nominal content of 100 g/kg prohexadione-calcium, was applied to plots with winter oilseed rape by spraying once at a nominal application rate of 250 g a.s./ha and a water rate of 200 L/ha. The application was performed at BBCH of 64-65 (40%-50% of flowers open). Honey was collected from initially empty combs which were introduced in the hive shortly before the application. Honey was collected at the end of flowering of the oilseed rape crop 2-11 days after treatment for subsequent residue analysis. Honey samples were transported on dry ice to the analytical test site and stored deep frozen ($\leq -18^{\circ}\text{C}$) until analysis. Residues of prohexadione-calcium in honey were determined according to the previously validated analytical method P 5132 G by LC-MS/MS, by extraction with water and acidified acetonitrile. Residues were quantified using matrix matched standards. Concurrent recovery determinations were included in each set of analyses. The Limit of Quantification (LOQ) for prohexadione-calcium in honey, defined as the lowest validated fortification level, was 0.01 mg/kg, expressed as prohexadione-calcium. The corresponding

respective Limit of Detection (LOD) was 0.002 mg/kg. The storage period of the honey samples before analysis was 14-26 days. Since analysis was performed within 30 days of collection, storage stability data are not required. Mean recoveries at each fortification level were in the range of 86-95%. The RSDs values, if applicable, were <15%. The obtained recovery data are in accordance with the general requirements for residue analytical methods (SANTE/2020/12830 rev.1); therefore, the method was validated successfully. Residues of prohexadione-calcium in honey from treated plots showed one value below LOQ (<0.01 mg/kg at PHI 7 days), two values below the threshold value of 0.05 mg/kg (0.0308 and 0.0380 mg/kg at PHI 7 and 11 days, respectively) or one higher value (0.157 mg/kg at PHI 2 days). No residues of the analyte above the LOQ were found in any of the control samples of honey. The results were not corrected for concurrent recoveries.

Taking into account that the dose used in the study (1x250 g a.s./ha) was much higher when comparing to the intended use of PRL OD 75 (1x90 g a.s./ha) and the fact that in the study the application was in spring BBCH 60-69, and the PRL OD 75 is intended for use in autumn BBCH 12-18, it should be considered that the provided study represents a worst-case scenario. It therefore seems that for the intended use of PRL OD 75 in autumn, the residues in honey will not exceed the trigger value of 0.05 mg/kg, thus confirming that the current honey MRL of 0.05 mg/kg will adequately cover this use. In addition it should be noted that honey is known to be acidic (pH approx.4) and prohexadione active substance DT50 in hydrolytic conditions is 2.5 days at pH 4 and 3.2 days at pH 5 (EFSA 2010; 8(3):1555). Based on this, prohexadione residues in honey will decrease in a short-time period as confirmed by the 3 lower residue values in the honey residue study.

However, it should be noted that formulation in the provided study (WG) was different than intended for PRL OD 75 (OD) and that one of the results showed a residue significantly above the applicable MRL.

7.2.8 Estimation of exposure through diet and other means (KCA 6.9)

Toxicological reference values relevant for dietary risk assessment are reported in the summary of the evaluation (see 7.1.2).

As an ARfD was not deemed necessary, acute risk assessment is not relevant.

7.2.8.1 Input values for the consumer risk assessment

The consumer risk assessments were performed with revision 3.1 of the EFSA Pesticide Residues Intake Model (PRIMo 3.1). This exposure assessment model contains the relevant European food consumption data for different sub-groups of the EU population (EFSA, 2018, update 2019).

For the calculation of chronic exposure, the existing MRLs were used as input values for prohexadione-calcium (see Commission Regulation (EU) 2018/70). For oilseed rape the proposed MRL of 0.015 mg/kg was used. The input parameters for the dietary exposure assessment are summarised in the table below.

An acute risk assessment was not performed as an ARfD has not been set.

Table 7.2-12: Input values for the consumer risk assessment

Commodity	Chronic risk assessment		Acute risk assessment	
	Input value (mg/kg)	Comment	Input value (mg/kg)	Comment
Risk assessment residue definition: Prohexadione and its salts, expressed as prohexadione-calcium				
Citrus fruits, tree nuts	0.01*	Commission Regulation (EU) 2018/70	Not applicable	
Pome fruits	0.1			


Commodity	Chronic risk assessment		Acute risk assessment	
	Input value (mg/kg)	Comment	Input value (mg/kg)	Comment
Stone fruits, except cherries (sweet), plums	0.01*			
Cherries	0.4			
Plums	0.05			
Berries and small fruits, except strawberries	0.01*			
Strawberries	0.15			
Miscellaneous fruits	0.01*			
Root and tuber vegetables, bulb vegetables, fruiting vegetables, brassica vegetables	0.01*			
Leaf vegetables (lettuces, spinaches, grape leaves, witloofs/Belgian endives)	0.01*			
Herbs and edible flowers	0.02*			
Legume vegetables, stem vegetables, fungi, mosses and lichens, algae and prokaryotes organisms	0.01*			
Pulses	0.02*			
Oilseeds and oil fruits, except peanuts/groundnuts and rapeseeds	0.01*			
Rapeseeds	0.015 P			
Peanuts/groundnuts	0.9			
Cereals, except barley, oat, rye, wheat	0.02*			
Barley, oat, rye, wheat	0.1			
Teas, coffee, herbal infusions, cocoa and carobs	0.05*			
Hops	0.01*			
Spices	0.05*			
Sugar plants	0.01*			
Commodities from swine, bovine, sheep, goat, equine, poultry and other farmed terrestrial animals	0.01*			
Milk, bird eggs	0.01*			
Honey	0.05*			
Other terrestrial animals	0.01*			

* Indicates MRL at lower limit of analytical quantification (LOQ)

P: proposed MRL as in EFSA Journal 2018;16(8):5397. Draft Regulation was approved by SCOPAFF representatives in February / March 2021.

zRMS conclusion:

After the date of submission of this dRR, the regulation changing the MRLs for oilseed crops entered into force, Reg. (EU) 2021/976. A chronic risk assessment using PRIMo Rev. 3.1 and taking into account all applicable MRL values (overestimated) is provided below.



European Food Safety Authority
EFSA PRIMo revision 3.1; 2019/03/19

Prohexadione

LOQs (mg/kg) range from: to:

Toxicological reference values

ADI (mg/kg bw/day): **0.2** ARID (mg/kg bw): **insert valid entry**

Source of ADI: **EFSA 2010** Source of ARID:

Year of evaluation: Year of evaluation:

Input values

Details - chronic risk assessment

Supplementary results - chronic risk assessment

Details - acute risk assessment/children

Details - acute risk assessment/adults

Comments:

Normal mode

Chronic risk assessment: JMPR methodology (IEDI/TMDI)

		No. of diets exceeding the ADI						Exposure resulting from	
								MRLs set at the LOQ (in % of ADI)	
	Calculated exposure (% of ADI)	MS Diet	Exposure (µg/kg bw per day)	Highest contributor to MS diet (in % of ADI)	Commodity / group of commodities	2nd contributor to MS diet (in % of ADI)	Commodity / group of commodities	3rd contributor to MS diet (in % of ADI)	Commodity / group of commodities
TMDI/NEDI calculation (based on average food consumption)	2%	NL toddler	3.31	0.5%	Apples	0.3%	Milk: Cattle	0.2%	Pears
	1%	DE child	2.54	0.6%	Apples	0.2%	Wheat	0.1%	Milk: Cattle
	1%	NL child	2.02	0.3%	Apples	0.2%	Wheat	0.1%	Milk: Cattle
	0.8%	DK child	1.64	0.3%	Rye	0.2%	Wheat	0.1%	Apples
	0.6%	GEMS/Food G06	1.27	0.4%	Wheat	0.0%	Apples	0.0%	Cherries (sweet)
	0.6%	FR child 3-15 yr	1.24	0.2%	Wheat	0.1%	Milk: Cattle	0.1%	Apples
	0.6%	GEMS/Food G11	1.21	0.2%	Wheat	0.1%	Peanuts/groundnuts	0.1%	Apples
	0.6%	FR toddler 2-3 yr	1.20	0.2%	Apples	0.2%	Wheat	0.1%	Milk: Cattle
	0.6%	GEMS/Food G15	1.14	0.2%	Wheat	0.1%	Apples	0.0%	Barley
	0.6%	RO general	1.13	0.3%	Wheat	0.1%	Apples	0.1%	Milk: Cattle
	0.6%	GEMS/Food G08	1.13	0.2%	Wheat	0.1%	Apples	0.0%	Barley
	0.6%	UK infant	1.12	0.2%	Milk: Cattle	0.1%	Wheat	0.1%	Apples
	0.5%	GEMS/Food G07	1.08	0.2%	Wheat	0.1%	Apples	0.0%	Peanuts/groundnuts
	0.5%	UK toddler	1.07	0.2%	Wheat	0.1%	Milk: Cattle	0.1%	Apples
	0.5%	GEMS/Food G10	1.04	0.2%	Wheat	0.0%	Peanuts/groundnuts	0.0%	Apples
	0.5%	ES child	1.00	0.2%	Wheat	0.1%	Milk: Cattle	0.1%	Apples
	0.5%	DE women 14-50 yr	0.97	0.1%	Apples	0.1%	Wheat	0.1%	Milk: Cattle
	0.5%	DE general	0.96	0.1%	Apples	0.1%	Wheat	0.1%	Milk: Cattle
	0.5%	IT toddler	0.95	0.3%	Wheat	0.0%	Apples	0.0%	Cherries (sweet)
	0.4%	SE general	0.85	0.2%	Wheat	0.1%	Milk: Cattle	0.1%	Apples
	0.4%	IE adult	0.83	0.1%	Wheat	0.0%	Peanuts/groundnuts	0.0%	Apples
	0.4%	NL general	0.80	0.1%	Wheat	0.1%	Apples	0.1%	Peanuts/groundnuts
	0.4%	PT general	0.77	0.2%	Wheat	0.1%	Apples	0.0%	Potatoes
	0.3%	IT adult	0.64	0.2%	Wheat	0.0%	Apples	0.0%	Cherries (sweet)
	0.3%	ES adult	0.61	0.1%	Wheat	0.0%	Apples	0.0%	Milk: Cattle
	0.3%	FI 3 yr	0.58	0.1%	Wheat	0.0%	Apples	0.0%	Rye
	0.3%	LT adult	0.57	0.1%	Apples	0.1%	Apples	0.0%	Wheat
	0.3%	FR infant	0.56	0.1%	Milk: Cattle	0.1%	Apples	0.0%	Wheat
	0.3%	FR adult	0.55	0.1%	Wheat	0.0%	Apples	0.0%	Milk: Cattle
	0.3%	FI adult	0.54	0.1%	Coffee beans	0.0%	Rye	0.0%	Apples
0.2%	UK vegetarian	0.46	0.1%	Wheat	0.0%	Apples	0.0%	Peanuts/groundnuts	
0.2%	FI 6 yr	0.45	0.0%	Wheat	0.0%	Rye	0.0%	Apples	
0.2%	DK adult	0.44	0.1%	Wheat	0.0%	Apples	0.0%	Milk: Cattle	
0.2%	UK adult	0.37	0.1%	Wheat	0.0%	Apples	0.0%	Milk: Cattle	
0.2%	PL general	0.36	0.1%	Apples	0.0%	Cherries (sweet)	0.0%	Potatoes	
0.1%	IE child	0.23	0.1%	Wheat	0.0%	Milk: Cattle	0.0%	Apples	

Conclusion:
The estimated long-term dietary intake (TMDI/NEDI) was below the ADI.
The long-term intake of residues of Prohexadione is unlikely to present a public health concern.

The calculations do not change the results obtained by the Applicant. Calculated exposure (%ADI) does not exceed 2%.

7.2.8.2 Conclusion on consumer risk assessment

Extensive calculation sheets are presented in **Błąd! Nie można odnaleźć źródła odwołania..**

Table 7.2-13: Consumer risk assessment

TMDI (% ADI) according to EFSA PRIMo 3.1	2 % (based on NL toddler)
IEDI (% ADI) according to EFSA PRIMo 3.1	Not needed, TMDI < 100%
IESTI (% ARfD) according to EFSA PRIMo 3.1*	Not relevant, no ARfD set
NTMDI (% ADI) **	-
NEDI (% ADI)**	-
NESTI (% ARfD) **	-

* include raw and processed commodities if both values are required for PRIMo

** if national model is available

The proposed use of prohexadione-calcium in the formulation Prohexadione-Ca OD 75 (75 g/L) does not represent unacceptable chronic risks for the consumer.

7.3 Combined exposure and risk assessment

Not relevant. The product contains only one active substance.

7.4 References

DAR, France, 1998. Draft assessment report on the active substance prohexadione prepared by the rapporteur Member State France in the framework of Council Directive 91/414/EEC, May, 1998.

AR, France, 2009. Prohexadione-calcium. Addendum to the Additional report to Volume 3 Annex B.7 revised in August 2009. Linked to Evaluation Table Open points, October, 2009.

AR, France, 2010. Final addendum to the Assessment Report (AR) on the existing substance prohexadione calcium provided by the rapporteur Member State, France, and the corapporteur Member State, Slovakia, according to the procedure for the renewal of the inclusion of a first group of active substances in Annex I to Council Directive 91/414/EEC laid down in Commission Regulation (EC) No 737/2007, January 2010.

EC, 2011. Review report for the active substance prohexadione (formerly included as variant prohexadione-calcium) finalised in the Standing Committee on the Food Chain and Animal Health at its meeting on 17 June 2011 in view of the approval of prohexadione as active substance in accordance with Regulation (EC) No 1107/2009. SANCO/11023/2011 Rev 2. 17 June 2011.

EFSA (European Food Safety Authority), 2010. Conclusion on the peer review of the pesticide risk assessment of the active substance prohexadione. EFSA Journal 2010; 8(3):1555, 51 pp. doi:10.2903/j.efsa.2010.1555

EFSA (European Food Safety Authority), 2012. Reasoned opinion on the setting a new MRL for prohexadione in peanuts. EFSA Journal 2012;10(11):2957, 26 pp. doi:10.2903/j.efsa.2012.2957

EFSA (European Food Safety Authority), 2013. Reasoned opinion on the review of the maximum residue levels (MRLs) for prohexadione according to Article 12 of Regulation (EC) No 396/2005. EFSA Journal 2013;11(4):3192, 36 pp. doi:10.2903/j.efsa.2013.3192

EFSA (European Food Safety Authority), 2018. Reasoned Opinion on the modification of the existing maximum residue levels for prohexadione in various oilseeds. EFSA Journal 2018;16(8):5397, 25 pp. doi:10.2903/j.efsa.2018.5397

Appendix 1 Lists of data considered in support of the evaluation

List of data submitted by the applicant and relied on

All data submitted or referred to by the applicant and relied on are available via a Letter of Access from Fine Agrochemicals Ltd.

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
-	Watson, G.	2020	Prohexadione-calcium: Storage stability of residues of prohexadione-calcium in oilseed rape whole plant, haulm and seed stored frozen for up to 6 months and validation of the methodology used Report No.: RES-00196 Fine Agrochemicals Ltd., Worcester, United Kingdom. GLP/GEP: Yes unpublished	N	Fine Agrochemicals Ltd.
-	Meric, D.	2020	Magnitude of the residues of Prohexadione-Calcium in winter oilseed rape (RAC Whole plants, Seeds and straw), following two applications of FAL 2032 with adjuvant actimum. Northern Europe – 2019 – 2020 Report No.: SPK-20-42544 Fine Agrochemicals Ltd., Worcester, United Kingdom. GLP/GEP: Yes unpublished	N	Fine Agrochemicals Ltd.
-	Peterek, S.	2020	Magnitude of the residues of prohexadione-calcium in winter oilseed rape (RAC whole plants, seeds and straw), following two applications of FAL 2032, Northern Europe – 2019. Report No.: SPK-19-38007 Fine Agrochemicals Ltd., Worcester, United Kingdom. GLP/GEP: Yes unpublished	N	Fine Agrochemicals Ltd.

List of data submitted or referred to by the applicant and relied on, but already evaluated at EU peer review

All data mentioned as part of DAR, RAR, or EFSA journals are considered as relied on.

Appendix 2 Detailed evaluation of the additional studies relied upon

A 2.1 Prohexadione-Ca

A 2.1.1 7.2.1 Stability of residues - Prohexadione-Ca

A 2.1.1.1 7.2.1.1 Stability of residues during storage of samples

A 2.1.1.1.1 Storage stability of residues in plant products (KCA 6.1)

A 2.1.1.1.1.1 Study RES-00196

Comments of zRMS:	The analytical method was found to be valid for the determination of prohexadione-calcium residues in oilseed rape whole plant, oilseed rape haulm and oilseed rape seed with an LOQ of 0.01 mg/kg. The validation of the method met the criteria detailed in SANCO/3029/99 rev.4. Procedural recoveries were extracted, stored and quantified concurrently with stored specimens, all mean batch procedural recoveries were within the acceptable range of 70 – 110%. The specificity for prohexadione-calcium was demonstrated by LC-MS/MS where no significant interferences were detected in any of the reagent blank or control specimens. There was no significant decrease in the observed residue levels of prohexadione-calcium in the fortified oilseed rape whole plant, oilseed rape haulm and oilseed rape seed specimens stored frozen at <-18 °C for a period of six months. The recovery values for the 6-month stored fortified samples (mean of three replicates) was between 70 – 110% for all three matrices. The study is accepted.
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Reference:	RES-00196
Title:	Prohexadione-calcium: Storage stability of residues of prohexadione-calcium in oilseed rape whole plant, haulm and seed stored frozen for up to 6 months and validation of the methodology used
Report:	Watson, G.; 2020; RES-00196
Authority registration No:	
Guideline(s):	Regulation (EC) No 1107/2009 of the European Parliament and of the council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC. SANCO/825/00 rev. 8.1 SANCO/3029/99 rev.4 OECD Guidelines for the Testing of Chemicals 506. Stability of Pesticide Residues in Stored commodities. (16 October 2007).
Deviations:	None
GLP/GEP:	yes
Acceptability:	
Duplication (if vertebrate study):	

Materials and methods

The stability of prohexadione-calcium for 6 months in deep frozen storage was investigated in the plant matrices of oilseed rape (whole plant, haulm and seed). A method validation was also performed in the study, but will not be reported here (see Section B5).

Samples of oilseed rape whole plant, haulm and seed were fortified with prohexadione-calcium at 0.10 mg/kg. Immediately after fortification, a sample was taken to determine the initial residues. The remaining fortified samples were stored deep frozen at ≤ -18°C or below until analysis after nominal storage intervals of 1, 3 and 6 months.

For analysis the residue analytical method 506248 was used with a limit of quantitation of 0.01 mg/kg.

Results and discussions

No significant decrease of residues was observed after the tested period of 6 months. The recovery values for the 6-month stored fortified samples was between 70 – 110% for all three matrices. Thus, the residues of prohexadione-calcium are stable under freezer storage conditions $\leq -18^{\circ}\text{C}$ for at least 6 months.

Table A 1: Summary of concurrent recoveries of prohexadione-calcium from oilseed rape

Matrix	Spike level (mg/kg)	Storage Interval (days)	Sample size (n)	Individual procedural recoveries (%)	Mean \pm RSD
Oilseed rape (whole plant)	0.1	0	5	87, 84, 88, 86, 87	87 \pm 1.8
		30	2	85, 84	84
		94	2	93, 88	90
		183	2	76, 90	83
	Overall Mean and RSD				86 \pm 5.0
Oilseed rape (haulm)	0.1	0	5	86, 84, 92, 89, 90	88 \pm 3.2
		30	2	92, 93	92
		92	2	77, 78	78
		101*	2	89, 92	90
		185	2	95, 93	94
	Overall Mean and RSD				88 \pm 6.5
Oilseed rape (seed)	0.1	0	5	89, 86, 92, 95, 96	92 \pm 4.8
		30	2	105, 112	108
		96	2	81, 89	85
		183	2	83, 82	83
	Overall Mean and RSD				92 \pm 10.7

Table A 2: Stability of prohexadione-calcium residues in oilseed rape following storage at $\leq -18^{\circ}\text{C}$

Matrix	Spike level (mg/kg)	Storage interval (days)	Individual recovered residues (mg/kg)	Individual recoveries (%)
Oilseed rape (whole plant)	0.1	0	0.08724, 0.08440, 0.08843, 0.08631, 0.08738	87, 84, 88, 86, 87
		30	0.07419; 0.07538; 0.07548	74, 75, 75
		94	0.07802, 0.07816, 0.08074	78, 78, 81
		183	0.07686, 0.07665, 0.07815	77, 77, 78
Oilseed rape (haulm)	0.1	0	0.08565, 0.08361, 0.09186, 0.08873, 0.09033	86, 84, 92, 89, 90
		30	0.08011, 0.07758, 0.08333	80, 78, 83
		92*	0.06473, 0.06257, 0.06693	65*, 63*, 67*
		101*	0.07820, 0.08049, 0.07707	78, 80, 77
		185	0.08626, 0.08603, 0.08578	86, 86, 86
Oilseed rape (seed)	0.10	0	0.08866, 0.08589, 0.09248, 0.09516, 0.09636	89, 86, 92, 95, 96
		30	0.09583, 0.09530, 0.09329	96, 95, 93
		96	0.07469, 0.07790, 0.07911	75, 78, 79
		183	0.07505, 0.07399, 0.07318	75, 74, 73

* The 3-month time point in oilseed rape haulm was repeated as recovery values for stored samples were <70% and the associated procedural recoveries were lower than seen for previous time points

Conclusion

The study demonstrated that in frozen storage (at $\leq -18^{\circ}\text{C}$) prohexadione-calcium was stable for at least 183 days in matrices of oilseed rape (whole plant, haulm, seed).

A 2.1.1.1.2 Storage stability of residues in animal products

No additional study has been submitted.

A 2.1.1.2 7.2.1.2 Stability of residues in sample extracts (KCA 6.1)

No additional storage stability study of residues in plant and animal sample extracts has been submitted.

A 2.1.2 7.2.2 Nature of residues in plants, livestock and processed commodities (KCA 6.2) - Prohexadione-Ca

A 2.1.2.1 7.2.2.1 Nature of residue in primary crops

No new study submitted.

A 2.1.2.2 7.2.2.2 Nature of residue in rotational crops

No new study submitted.

A 2.1.2.3 7.2.2.3 Nature of residues in processed commodities

No new study submitted.

A 2.1.2.4 7.2.2.5 Nature of residues in livestock

No new study submitted.

A 2.1.3 7.2.3 Magnitude of residues in plants (KCA 6.3) – Prohexadione-Ca

A 2.1.3.1 Oilseed rape

Table A 3: Comparison of intended and critical EU GAPs

Type of GAP	Number of applications	Application rate per treatment (precise unit)	Interval between application	Growth stage at last application	PHI (days)
cGAP EU (ER, France, 2018)	2	50 g a.s./ha	21	BBCH 59	-*
cGAP EU (Art. 12, EFSA, 2013)	There was no EU cGAP in place on oilseed rape for prohexadione-calcium				
Intended cGAP (2, 5, 8, 11, 14, 17, 20)	1	90 g a.s./ha	-	BBCH 30-59	-*
Supporting cGAP** (3, 6, 9, 12, 15, 18, 21)	2	90 g a.s./ha	90	BBCH 12-59	-*

* as per growth stage

** This use is not supported in the present application but indicated here as information to justify the worst case considered in some studies

A 2.1.3.1.1 Study 1 (SPK-20-42544)

Comments of zRMS:	<p>The objective of the study (n=4) was to determine the magnitude of residues of prohexadione-calcium in whole plants, seeds and straw of winter oilseed rape after two applications of FAL 2032 (OD formulation, 90 g/ha of prohexadione-calcium per application) with adjuvant Actimum. Two decline trials (in Poland and Germany) and two harvest trials (in North France and Poland) were performed in 2019 - 2020. The distance between the fields where the studies were conducted in Poland was over 500 km, which means that the studies should be considered independent. The first application was targeted between BBCH 12 and 18 and the second one at BBCH 59. The analytical method used in the studies was validated in the study RES-00196. Acceptance criteria for method validation were met. No residues of prohexadione-calcium above the limit of quantification were found in seeds at harvest. The storage time of samples from harvest to analysis is covered by stability studies.</p> <p>The study is accepted.</p>
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Reference:	SPK-20-42544
Title:	Magnitude of the residues of Prohexadione-Calcium in winter oilseed rape (RAC Whole plants, Seeds and straw), following two applications of FAL 2032 with adjuvant actimum. Northern Europe – 2019 - 2020
Report:	Meric, D.; 2020; SPK-20-42544
Authority registration No:	
Guideline(s):	<p>Commission Regulations N° 283/2013 and 284/2013 of 1 March 2013 setting out the data requirements for active substances or plant protection products, in accordance with Regulation (EC) No 1107/2009 of the European Parliament and of the Council concerning the placing of plant protection products on the market.</p> <p>OECD Guideline for the Testing of Chemicals on Crop Field Trial (TG 509 published on 7 September 2009).</p> <p>Guidelines on comparability, extrapolation, group tolerances and data requirements for setting MRLs (SANCO 7525/VI/95 rev.10.3, 13 June 2017).</p> <p>Guidance for generating and reporting methods of analysis in support of pre-registration data requirements (SANCO/3029/99 rev.4, 11 July 2000).</p> <p>OECD (2007): Guidance Document on Pesticide Residue Analytical Methods ENV/JM/MONO(2007)17</p>
Deviations:	None
GLP/GEP:	yes
Acceptability:	
Duplication (if vertebrate study):	

In 2019-2020, four supervised field trials (two decline and two harvest trials) were performed in Northern Europe (Poland [2], Germany and Northern France) on winter oilseed rape (whole plant, seeds and straw). Prohexadione-calcium was applied as FAL 2032, an oil dispersion (OD) formulation containing 75 g/L prohexadione, two times with application rates of 86-91 g/ha prohexadione and 220-310 L water per ha. The applications were done at BBCH 12-18 and BBCH 59, with a spray interval of 165-188 days, with the last application 90-107 days before the harvest (at maturity). The adjuvant Actimum was used in all of the spray applications at 0.33-0.44% (v/v).

Concurrent recoveries obtained during the conduct of this study were acceptable with mean value in the range 70-110%.

Table A 4: Summary of the study SPK-20-42544 trials

Trial No. / Location / EU zone / Year	Commodity / Variety	Date of 1. Sowing or planting 2. Flowering 3. Harvest 4. Transplanting	Application rate per treatment			Dates of treatment / Application interval	Growth stage at last treatment	Portion analyzed	Growth stage at sampling	Residues (mg/kg)	PHI (days)	Details on trial
			g a.s./ha	Water (L/ha)	g a.s./hL							
(a)		(b)				(c)	(d)			Prohexadione- calcium as prohexadione -calcium	(e)	(f)
SPK-20-42544- PL01 Poland 64-610 Prušce Europe, North F 2019	Winter Oilseed rape Chrobry	1) 28.08.2019 2) 14.04.2020 – 21.05.2020 3) 23.07.2020	89.1 89.7	303 306	29 29	15.10.2019/0 09.04.2020/177	59	Whole plant seed straw	59 61 63 65 89 89	0.89 0.30 0.24 0.20 <u><0.01</u> <0.01	0 7 14 21 105 105	(g) SPK-20-42544 (h) OD (prohexadione-calcium 75 g/L) (i) Application method: foliar broadcast application (j) Analytical method: RES-00196 (k) LOQ: 0.01 mg/kg (l) Method Validation Data in method RES-00196 (m) Storage: whole plant: 117 days seed: 43 days straw: 42 days Appl 1 and 2 + Actimum (1.0 L/ha)
SPK-20-42544- DE02 Germany 91622 Lindach Europe, North F 2019	Winter Oilseed rape DK Expansion	1) 16.08.2019 2) 08.04.2020 – 04.05.2020 3) 25.07.2020	89.2 86.1	304 293	29 29	24.10.2019/0 06.04.2020/165	59	Whole plant seed straw	59 60 65 67 89 89	1.45 0.47 0.33 0.13 <u><0.01</u> 0.01	0 7 14 23 107 107	(g) SPK-20-42544 (h) OD (prohexadione-calcium 75 g/L) (i) Application method: foliar broadcast application (j) Analytical method: RES-00196 (k) LOQ: 0.01 mg/kg (l) Method Validation Data in method RES-00196 (m) Storage: whole plants: 120 days seeds: 44 days straw: 43 days Appl 1 and 2 + Actimum (1.0 L/ha)

Trial No. / Location / EU zone / Year	Commodity / Variety	Date of 1. Sowing or planting 2. Flowering 3. Harvest 4. Transplanting	Application rate per treatment			Dates of treatment / Application interval	Growth stage at last treatment	Portion analyzed	Growth stage at sampling	Residues (mg/kg)	PHI (days)	Details on trial
			g a.s./ha	Water (L/ha)	g a.s./hL					Prohexadione- calcium as prohexadione -calcium		
(a)	(b)	(b)				(c)	(d)				(e)	(f)
SPK-20-42544- FR03 France 08310 M��nil - L��pinois Europe, North F 2019	Winter Oilseed rape Temptation	1) 22.08.2019 2) 06.04.2020 – 24.04.2020 3) 09.07.2020	85.6 89.5	220 230	39 39	07.10.2019/0 03.04.2020/179	59	seed straw	89 89	<u><0.01</u> 0.02	97 97	(g) SPK-20-42544 (h) OD (prohexadione-calcium 75 g/L) (i) Application method: foliar broadcast application (j) Analytical method: RES-00196 (k) LOQ: 0.01 mg/kg (l) Method Validation Data in method RES-00196 (m) Storage: seeds: 57 days straw: 56 days Appl 1 and 2 + Actimum (1.0 L/ha)
SPK-20-42544- PL04 Poland 21-211 Chmi��w Europe, North F 2019	Winter Oilseed rape Sherlock	1) 19.08.2019 2) 29.04.2020 – 25.05.2020 3) 22.07.2020	90.9 90.0	310 307	29 29	18.10.2019/0 23.04.2020/188	59	seed straw	89 89	<u><0.01</u> <0.01	90 90	(g) SPK-20-42544 (h) OD (prohexadione-calcium 75 g/L) (i) Application method: foliar broadcast application (j) Analytical method: RES-00196 (k) LOQ: 0.01 mg/kg (l) Method Validation Data in method RES-00196 (m) Storage: seeds: 44 days straw: 43 days Appl 1 and 2 + Actimum (1.0 L/ha)

(a) According to CODEX Classification / Guide
(b) Only if relevant
(c) Year must be indicated
(d) Either growth stage description or BBCH Code
G greenhouse F field

(e) Days after last application (Label pre-harvest interval, PHI, underline)
(f) Remarks may include: Climatic conditions; Reference to analytical method and information which metabolites are included
(g) Study reference
* prior to last treatment

(h) Formulation type
(i) Application method
(j) Method information
(k) LOQ
** residue in control
(l) Method validation
(m) Storage (max)
! based on date of analysis
P based on production date
no data available

A 2.1.3.1.2 Study 2 (SPK-19-38007)

Comments of zRMS:	<p>The objective of the study was to determine the magnitude of residues of prohexadione-calcium in whole plants, seeds and straw of winter oilseed rape after two applications of FAL 2032 (OD formulation, 90 g/ha of prohexadione-calcium per application) without any additive (plot T1) or with with adjuvant Actimum (plot T2). Two decline trials (in Poland and Germany) and two harvest trials (in North France and Poland) were performed in 2019. The distance between the fields where the studies were conducted in Poland was about 200 km, which means that the studies should be considered independent. The first application was targeted between BBCH 30 and 31 and the second one at BBCH 59. The analytical method used in the studies was validated in the study RES-00196. Acceptance criteria for method validation were met. No residues of prohexadione-calcium above the limit of quantification were found in seeds at harvest for all samples from plot T1 (n=4) and in all samples from plot T2 except for one trial where the residue was found at 0.01 mg/kg. The storage time of samples from harvest to analysis is covered by stability studies.</p> <p>The study is accepted.</p>
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Reference:	SPK-19-38007
Title:	Magnitude of the residues of prohexadione-calcium in winter oilseed rape (RAC whole plants, seeds and straw), following two applications of FAL 2032, Northern Europe – 2019.
Report:	Peterek, S.; 2020; SPK-19-38007
Authority registration No:	
Guideline(s):	<p>Commission Regulations N° 283/2013 and 284/2013 of 1 March 2013 setting out the data requirements for active substances or plant protection products, in accordance with Regulation (EC) No 1107/2009 of the European Parliament and of the Council concerning the placing of plant protection products on the market.</p> <p>OECD Guideline for the Testing of Chemicals on Crop Field Trial (TG 509 published on 7 September 2009).</p> <p>Guidelines on comparability, extrapolation, group tolerances and data requirements for setting MRLs (SANCO 7525/VI/95 rev.10.3, 13 June 2017).</p> <p>Guidance for generating and reporting methods of analysis in support of pre-registration data requirements (SANCO/3029/99 rev.4, 11 July 2000).</p> <p>OECD (2007): Guidance Document on Pesticide Residue Analytical Methods ENV/JM/MONO(2007)17.</p>
Deviations:	Yes (see report)
GLP/GEP:	yes
Acceptability:	
Duplication (if vertebrate study):	

In 2019, four supervised field trials (two decline and two harvest trials) were performed in Northern Europe (Poland [2], Germany and Northern France) on winter oilseed rape (whole plant, seeds and straw). Prohexadione-calcium was applied as FAL 2032, an oil dispersion (OD) formulation containing 75 g/L prohexadione, two times with application rates of 87-99 g/ha prohexadione and 217-313 L water per ha.

The applications were done at BBCH 30-31 and BBCH 59, with a spray interval of 14-35 days, with the last application 84-109 days before the harvest (performed at maturity).

In each trial, FAL 2032 was either applied without any additive (plot T1) or with the adjuvant Actimum at 0.33-0.44% (v/v) (plot T2).

Concurrent recoveries obtained during the conduct of this study were acceptable with mean value in the range 70-110%.

Table A 5: Summary of the study SPK-19-38007 trials

Trial No. / Location / EU zone / Year	Commodity / Variety	Date of 1. Sowing or planting 2. Flowering 3. Harvest 4. Transplanting	Application rate per treatment			Dates of treatment / Application interval	Growth stage at last treat- ment	Portion analyzed	Growth stage at sampling	Residues (mg/kg) Prohexadione- calcium as prohexadione -calcium	PHI (days)	Details on trial
			g a.s./ha	Water (L/ha)	g a.s./hL							
(a)		(b)				(c)	(d)				(e)	(f)
SPK-19- 38007-PL01 T1 Poland 63-233 Wojciechowo Europe, North F 2019	Winter Oilseed rape Exodus	1) 22.08.2018 2) 19.04.2019 – 13.05.2019 3) 11.07.2019	90.3	300	30	25.03.2019/0 18.04.2019/24	59	Seeds	89	<0.01	84	(g) SPK-19-38007 (h) OD (prohexadione-calcium 75 g/L) (i) Application method: foliar broadcast application (j) Analytical method: RES-00196 (k) LOQ: 0.01 mg/kg (l) Method Validation Data in method RES-00196 (m) Storage: seeds: 96 days straw: 90 days
			90.3	300	30			Straw	89	<0.01	84	
SPK-19- 38007-PL01 T2 Poland 63-233 Wojciechowo Europe, North F 2019	Winter Oilseed rape Exodus	1) 22.08.2018 2) 19.04.2019 – 13.05.2019 3) 11.07.2019	91.6	304	30	25.03.2019/0 18.04.2019/24	59	Whole plants	59	1.69	0	(g) SPK-19-38007 (h) OD (prohexadione-calcium 75 g/L) (i) Application method: foliar broadcast application (j) Analytical method: RES-00196 (k) LOQ: 0.01 mg/kg (l) Method Validation Data in method RES-00196 (m) Storage: whole plants: 161 days seeds: 76 days straw: 63 days Appl 1 and 2 + Actimum (1.0 L/ha)
			87.6	291	30				65	0.55	7	
									65	0.26	14	
									69	0.31	21	
								Seeds	89	<0.01	84	
								Straw	89	<0.01	84	

Trial No. / Location / EU zone / Year	Commodity / Variety	Date of 1. Sowing or planting 2. Flowering 3. Harvest 4. Transplanting	Application rate per treatment			Dates of treatment / Application interval	Growth stage at last treat- ment	Portion analyzed	Growth stage at sampling	Residues (mg/kg)	PHI (days)	Details on trial
			g a.s./ha	Water (L/ha)	g a.s./hL					Prohexadione- calcium as prohexadione -calcium		
(a)		(b)				(c)	(d)				(e)	(f)
SPK-19- 38007-DE02 T1 Germany 07922 Stelzen Europe, North F 2019	Winter Oilseed rape Sherlock	1) 18.08.2018 2) 28.04.2019 – 27.05.2019 3) 27.07.2019	90.6	301	30	22.03.2019/0 26.04.2019/35	59	Seeds	89	<0.01	94	(g) SPK-19-38007 (h) OD (prohexadione-calcium 75 g/L) (i) Application method: foliar broadcast application (j) Analytical method: RES-00196 (k) LOQ: 0.01 mg/kg (l) Method Validation Data in method RES-00196 (m) Storage: seeds: 78 days straw: 72 days
			90.9	302	30			Straw	89	<0.01	94	
SPK-19- 38007-DE02 T2 Germany 07922 Stelzen Europe, North F 2019	Winter Oilseed rape Sherlock	1) 18.08.2018 2) 28.04.2019 – 27.05.2019 3) 27.07.2019	89.9	299	30	22.03.2019/0 26.04.2019/35	59	Whole plants	59	1.66	0	(g) SPK-19-38007 (h) OD (prohexadione-calcium 75 g/L) (i) Application method: foliar broadcast application (j) Analytical method: RES-00196 (k) LOQ: 0.01 mg/kg (l) Method Validation Data in method RES-00196 (m) Storage: whole plants: 153 days seeds: 58 days straw: 45 days Appl 1 and 2 + Actimum (1.0 L/ha)
			91.3	303	30				63	0.61	7	
									64	0.49	14	
									67	0.23	25	
								Seeds	89	<0.01	94	
								Straw	89	0.02	94	

Trial No. / Location / EU zone / Year	Commodity / Variety (a)	Date of 1. Sowing or planting 2. Flowering 3. Harvest 4. Transplanting (b)	Application rate per treatment			Dates of treatment / Application interval (c)	Growth stage at last treat- ment (d)	Portion analyzed	Growth stage at sampling	Residues (mg/kg)	PHI (days) (e)	Details on trial (f)
			g a.s./ha	Water (L/ha)	g a.s./hL					Prohexadione- calcium as prohexadione -calcium		
SPK-19- 38007-FR03 T1 France 08300 Perthes Europe, North F 2019	Winter Oilseed rape Expansion	1) 24.08.2018 2) 10.04.2019 – 10.05.2019 3) 16.07.2019	89.6 87.0	223 217	40 40	21.03.2019/0 04.04.2019/14	59	Seeds Straw	89 89	<0.01 0.01	109 109	(g) SPK-19-38007 (h) OD (prohexadione-calcium 75 g/L) (i) Application method: foliar broadcast application (j) Analytical method: RES-00196 (k) LOQ: 0.01 mg/kg (l) Method Validation Data in method RES-00196 (m) Storage: seeds: 85 days straw: 79 days
SPK-19- 38007-FR03 T2 France 08300 Perthes Europe, North F 2019	Winter Oilseed rape Expansion	1) 24.08.2018 2) 10.04.2019 – 10.05.2019 3) 16.07.2019	99.0 87.0	247 217	40 40	21.03.2019/0 04.04.2019/14	59	Seeds Straw	89 89	<u>0.01</u> 0.04	109 109	(g) SPK-19-38007 (h) OD (prohexadione-calcium 75 g/L) (i) Application method: foliar broadcast application (j) Analytical method: RES-00196 (k) LOQ: 0.01 mg/kg (l) Method Validation Data in method RES-00196 (m) Storage: seeds: 65 days straw: 52 days Appl 1 and 2 + Actimum (1.0 L/ha)

Trial No. / Location / EU zone / Year	Commodity / Variety	Date of 1. Sowing or planting 2. Flowering 3. Harvest 4. Transplanting	Application rate per treatment			Dates of treatment / Application interval	Growth stage at last treat- ment	Portion analyzed	Growth stage at sampling	Residues (mg/kg)	PHI (days)	Details on trial
			g a.s./ha	Water (L/ha)	g a.s./hL					Prohexadione- calcium as prohexadione -calcium		
(a)		(b)				(c)	(d)				(e)	(f)
SPK-19- 38007-PL04 T1 Poland 99-440 Wiskienica Dolna Europe, North F 2019	Winter Oilseed rape Monolit	1) 22.08.2018 2) 23.04.2019 – 15.05.2019 3) 26.07.2019	91.2 93.2	303 310	30 30	29.03.2019/0 18.04.2019/20	59	Seeds Straw	89 89	<u><0.01</u> <0.01	99 99	(g) SPK-19-38007 (h) OD (prohexadione-calcium 75 g/L) (i) Application method: fFoliar broadcast application (j) Analytical method: RES-00196 (k) LOQ: 0.01 mg/kg (l) Method Validation Data in method RES-00196 (m) Storage: seeds: 81 days straw: 75 days
SPK-19- 38007-PL04 T2 Poland 99-440 Wiskienica Dolna Europe, North F 2019	Winter Oilseed rape Monolit	1) 22.08.2018 2) 23.04.2019 – 15.05.2019 3) 26.07.2019	94.2 89.2	313 297	30 30	29.03.2019/0 18.04.2019/20	59	Seeds Straw	89 89	<0.01 0.01	99 99	(g) SPK-19-38007 (h) OD (prohexadione-calcium 75 g/L) (i) Application method: foliar broadcast application (j) Analytical method: RES-00196 (k) LOQ: 0.01 mg/kg (l) Method Validation Data in method RES-00196 (m) Storage: seeds: 61 days straw: 48 days Appl 1 and 2 + Actimum (1.0 L/ha)

(a) According to CODEX Classification / Guide
(b) Only if relevant
(c) Year must be indicated
(d) Either growth stage description or BBCH Code
G greenhouse F field

(e) Days after last application (Label pre-harvest interval, PHI, underline)
(f) Remarks may include: Climatic conditions; Reference to analytical method and information which metabolites are included
(g) Study reference
* prior to last treatment

(h) Formulation type
(i) Application method
(j) Method information
(k) LOQ
** residue in control
(l) Method validation
(m) Storage (max)
! based on date of analysis
P based on production date
no data available

A 2.1.4 7.2.4 Magnitude of residues in livestock - Prohexadione-Ca

A 2.1.4.1 7.2.4.2 Livestock feeding studies (poultry KCA 6.4.1 - ruminants KCA 6.4.2 - pig KCA 6.4.3 – fish 6.4.4)

No additional study has been submitted.

A 2.1.5 7.2.5 Magnitude of residues in processed commodities (Industrial Processing and/or Household Preparation) (KCA 6.5.2-6.5.3) - Prohexadione-Ca

No additional study has been submitted.

A 2.1.6 7.2.6 Magnitude of residues in representative succeeding crops (KCA 6.6.2) - Prohexadione-Ca

No additional study has been submitted.

A 2.1.7 7.2.7 Other/Special Studies (KCA 6.10)

No additional study has been submitted.

A 3.1 TMDI/IEDI calculations

Normal mode												
Chronic risk assessment: JMPR methodology (IEDI/TMDI)												
			No of diets exceeding the ADI : ---								Exposure resulting from	
	Calculated exposure (% of ADI)		Exposure (µg/kg bw per day)	Highest contributor to MS diet (in % of ADI)	Commodity/ group of commodities	2nd contributor to MS diet (in % of ADI)	Commodity/ group of commodities	3rd contributor to MS diet (in % of ADI)	Commodity/ group of commodities	MRLs set at the LOQ (in % of ADI)	commodities not under assessment (in % of ADI)	
	MS Diet											
TMDI/NEDI/IEDI calculation (based on average food consumption)	2%	NL toddler	3.30	0.5%	Apples	0.3%	Milk: Cattle	0.2%	Pears			
	1%	DE child	2.53	0.6%	Apples	0.2%	Wheat	0.1%	Milk: Cattle			
	1%	NL child	2.00	0.3%	Apples	0.2%	Wheat	0.1%	Milk: Cattle			
	0.8%	DK child	1.64	0.3%	Rye	0.2%	Wheat	0.1%	Apples			
	0.6%	GEMS/Food G06	1.26	0.4%	Wheat	0.0%	Apples	0.0%	Cherries (sweet)			
	0.6%	FR child 3 15 yr	1.22	0.2%	Wheat	0.1%	Milk: Cattle	0.1%	Apples			
	0.6%	GEMS/Food G11	1.21	0.2%	Wheat	0.1%	Peanuts/groundnuts	0.1%	Apples			
	0.6%	FR toddler 2 3 yr	1.19	0.2%	Apples	0.2%	Wheat	0.1%	Milk: Cattle			
	0.6%	UK infant	1.12	0.2%	Milk: Cattle	0.1%	Wheat	0.1%	Apples			
	0.6%	GEMS/Food G15	1.11	0.2%	Wheat	0.1%	Apples	0.0%	Barley			
	0.6%	GEMS/Food G08	1.11	0.2%	Wheat	0.1%	Apples	0.0%	Barley			
	0.5%	RO general	1.10	0.3%	Wheat	0.1%	Apples	0.1%	Milk: Cattle			
	0.5%	UK toddler	1.07	0.2%	Wheat	0.1%	Milk: Cattle	0.1%	Apples			
	0.5%	GEMS/Food G07	1.06	0.2%	Wheat	0.1%	Apples	0.0%	Peanuts/groundnuts			
	0.5%	GEMS/Food G10	1.03	0.2%	Wheat	0.0%	Peanuts/groundnuts	0.0%	Apples			
	0.5%	ES child	0.99	0.2%	Wheat	0.1%	Milk: Cattle	0.1%	Apples			
	0.5%	DE women 14-50 yr	0.97	0.1%	Apples	0.1%	Wheat	0.1%	Milk: Cattle			
	0.5%	DE general	0.95	0.1%	Apples	0.1%	Wheat	0.1%	Milk: Cattle			
	0.5%	IT toddler	0.95	0.3%	Wheat	0.0%	Apples	0.0%	Cherries (sweet)			
	0.4%	SE general	0.85	0.2%	Wheat	0.1%	Milk: Cattle	0.1%	Apples			
	0.4%	IE adult	0.81	0.1%	Wheat	0.0%	Peanuts/groundnuts	0.0%	Apples			
	0.4%	NL general	0.79	0.1%	Wheat	0.1%	Apples	0.1%	Peanuts/groundnuts			
	0.4%	PT general	0.75	0.2%	Wheat	0.1%	Apples	0.0%	Potatoes			
	0.3%	IT adult	0.64	0.2%	Wheat	0.0%	Apples	0.0%	Cherries (sweet)			
	0.3%	ES adult	0.61	0.1%	Wheat	0.0%	Apples	0.0%	Milk: Cattle			
	0.3%	FI 3 yr	0.58	0.1%	Wheat	0.0%	Apples	0.0%	Rye			
	0.3%	LT adult	0.57	0.1%	Apples	0.1%	Rye	0.1%	Wheat			
	0.3%	FR infant	0.56	0.1%	Milk: Cattle	0.1%	Apples	0.0%	Wheat			
	0.3%	FI adult	0.54	0.1%	Coffee beans	0.0%	Rye	0.0%	Apples			
	0.3%	FR adult	0.54	0.1%	Wheat	0.0%	Apples	0.0%	Milk: Cattle			
0.2%	UK vegetarian	0.46	0.1%	Wheat	0.0%	Apples	0.0%	Peanuts/groundnuts				
0.2%	FI 6 yr	0.45	0.0%	Wheat	0.0%	Rye	0.0%	Apples				
0.2%	DK adult	0.44	0.1%	Wheat	0.0%	Apples	0.0%	Milk: Cattle				
0.2%	UK adult	0.37	0.1%	Wheat	0.0%	Apples	0.0%	Milk: Cattle				
0.2%	PL general	0.35	0.1%	Apples	0.0%	Cherries (sweet)	0.0%	Potatoes				
0.1%	IE child	0.23	0.1%	Wheat	0.0%	Milk: Cattle	0.0%	Apples				
Conclusion: The estimated long-term dietary intake (TMDI/NEDI/IEDI) was below the ADI. The long-term intake of residues of Prohexadione-calcium is unlikely to present a public health concern.												

A 3.2 IEDI calculations

Since the TMDI calculations demonstrate a margin of safety, it was not deemed necessary to perform IEDI calculations in order to refine the dietary risk assessment.

A 3.3 IESTI calculations - Raw commodities

Since the ARfD was not deemed necessary, acute risk assessment is not relevant.

A 3.4 IESTI calculations - Processed commodities

Since the ARfD was not deemed necessary, acute risk assessment is not relevant.

Appendix 4 Additional information provided by the applicant

Nothing submitted.