



Statement on the dietary risk assessment for the proposed temporary maximum residue level for chlormequat in oyster mushrooms

European Food Safety Authority (EFSA)

Abstract

The European Commission requested EFSA to provide a statement in the framework of Article 43 of Regulation (EC) No 396/2005 on the dietary risk assessment for the proposed temporary maximum residue levels (MRLs) (6 and 7 mg/kg) for chlormequat in cultivated oyster mushrooms. The MRL proposals were derived by the evaluating Member State (EMS) Germany. Chlormequat residues can be found in mushrooms due to cross-contamination from cereal straw lawfully treated with chlormequat chloride which is used as cultivation substrate. EFSA concluded that the exposure to residue levels at the proposed MRLs is unlikely to pose a risk to consumers' health. However, EFSA recommended to take appropriate risk management actions to avoid contamination of cultivated oyster mushrooms and other fungi cultivated on straw.

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Keywords: chlormequat chloride, cultivated fungi, pesticide, MRL, consumer risk assessment

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Summary

In the framework of Article 43 of Regulation (EC) No 396/2005, the European Commission requested European Food Safety Authority (EFSA) to carry out a dietary exposure and a consumer risk assessment for two temporary maximum residue levels (MRLs) for chlormequat in cultivated oyster mushrooms proposed by the evaluating member state (EMS) Germany. The proposed temporary MRL should accommodate for residues of chlormequat chloride in cultivated oyster fungi exceeding the current legal limit established at European level due to cross-contamination from cereal straw which was lawfully treated with chlormequat. EFSA was not requested to assess the methodology used to derive the proposed MRLs and the appropriateness of the MRL proposals. Thus, EFSA focussed this statement on the dietary risk assessment related to the exposure to oyster mushrooms containing residues at the level of the proposed temporary MRLs.

The consumer exposure assessment was performed with the revision 3.1 of the EFSA Pesticide Residues Intake Model (PRIMo) using the MRL options proposed by Germany as input value. In the absence of specific data, the consumption data for cultivated fungi were used.

EFSA concluded that both MRL options proposed by Germany are unlikely to pose a risk to consumers' health. However, the consumer risk assessment is affected by non-standard uncertainties and EFSA recommended to generate further studies to increase the robustness of the risk assessment; furthermore, EFSA compiled a number of recommendations to be considered by risk managers.

The risk management MRL options for cultivated fungi are summarised in the table below.

Code ^(a)	Commodity	Existing EU t-MRL (mg/kg)	Proposed EU t-MRL (mg/kg)	Comment/justification
Enforcen chloride)	nent residue defi	nition: Chlorm	nequat (sum of cl	hlormequat and its salts, expressed as chlormequat
0280010	Cultivated fungi (including oyster mushrooms)	0.9 ^(ft)	Oyster mushrooms (0280010-008) 6 or 7 (further risk management consideration)	Germany proposed to increase the existing temporary MRL for oyster mushrooms based on monitoring data In a comprehensive chronic risk assessment, which covers the authorised EU uses of chlormequat, the Codex MRLs taken over in the EU legislation and the proposed temporary MRLs for mushrooms, the estimated chronic exposure did not exceed the ADI. Thus, a long-term consumer risk was found to be unlikely EFSA calculated different scenarios for the acute risk assessment, using the proposed temporary MRLs derived for oyster mushrooms. Assuming that the unit-to-unit variability is lower in cultivated mushrooms grown on straw which contains residues of chlormequat chloride than in crops treated directly, an acute consumer health risk is not expected Considering that according to the EU food classification, oyster mushrooms are listed under the crop code for cultivated fungi, risk managers have to decide whether the proposed temporary MRLs should apply only for oyster mushrooms or for the whole group of cultivated fungi, although for other cultivated fungi the existing MRL might be sufficient. The results of the risk assessment performed by EFSA cover all types of cultivated fungi, since specific consumption data for oyster mushrooms are not available

(a): Commodity code number according to Annex I of Regulation (EC) No 396/2005.

(ft): Monitoring shows that cross-contamination of untreated cultivated fungi may occur with straw lawfully treated with chlormequat. This cross-contamination may not be fully avoidable in all cases. When reviewing the MRL, the Commission will take into account the information, if it is submitted by 13 April 2021, or, if that information is not submitted by that date, the lack of it.



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1. Introduction and background information

Chlormequat is an active substance that was approved for being used in plant protection products on 1 December 2009 under Regulation (EC) No $1107/2009^1$ by Commission Directive $2010/2/EU^2$; the approval was restricted to the use on cereals and on non-edible crops.

Chlormequat belongs to the class of quaternary ammonium compounds with the ISO common name for 2-chloroethyltrimethylammonium (IUPAC). For plant protection product formulations, the chloride salt (2-chloroethyltrimethylammonium chloride) is usually used.

The chemical structure of the active substance and its salt is reported in Appendix C.

EFSA finalised the MRL review under Article 12 of Regulation (EC) No 396/2005³ of this active substance on 7 March 2016 (EFSA, 2016). The maximum residue levels (MRLs) for chlormequat are established in Annexes II of Regulation (EC) No 396/2005.

The presence of chlormequat chloride residues in cultivated fungi is resulting from residues in straw which is used as cultivation substrate for different species of mushrooms. Thus, residues in cultivated fungi are considered a cross-contamination from residues in cereal straw lawfully treated with chlormequat.

The MRL for cultivated fungi is currently set as a temporary MRL at the level of 0.9 mg/kg (Regulation (EU) No 2017/693⁴), implementing an EFSA recommendation derived in the framework of the Article 12 MRL review. In its reasoned opinion under Article 12, EFSA derived five different MRL proposals for cultivated fungi for consideration by risk managers, using different scientific approaches to calculate MRLs based on data of national control programmes (official monitoring data) covering the period of 2011 to 2014. Risk managers decided to implement the MRL proposal that was calculated as the 99th percentile of the available monitoring data.

Mushroom growers submitted monitoring data showing that residues in oyster mushrooms (*Pleurotus ostreatus*) occur at higher levels than the current temporary MRL of 0.9 mg/kg applicable for cultivated fungi. Germany submitted additional monitoring data from official controls performed specifically on oyster mushrooms, which confirmed the findings of the mushroom growers.

In accordance with Article 6(3) of Regulation (EC) No 396/2005, Germany as the evaluating Member State (EMS), submitted an application to modify the existing MRL for chlormequat in oyster mushrooms. The EMS drafted an evaluation report in accordance with Article 8 of Regulation (EC) No 396/2005, which was submitted to the European Commission and forwarded to the European Food Safety Authority (EFSA) on 22 March 2019. Based on the monitoring data provided by the mushrooms growers, Germany proposed two options for modifying the existing MRL for oyster mushrooms:

- 6 mg/kg (95th percentile of all sample results)
- 7 mg/kg (95th percentile of positive findings only, i.e. results greater than the limit of quantification (LOQ)).

2. Terms of Reference as provided by the European Commission

On 12 April 2019, EFSA received a request from the European Commission to carry out a dietary exposure and a consumer risk assessment for the two MRL options of 6 and 7 mg/kg, respectively, as presented in the Evaluation Report prepared by Germany and to deliver a Scientific Statement according to Article 43 of Regulation (EC) No 396/2005 on the safety for consumers in relation to the two options.

The deadline to deliver the statement was agreed to be 25 April 2019.

EFSA accepted the mandate and included it in the EFSA Register of Questions with the reference number EFSA-Q-2019-00255.

¹ 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. OJ L 309, 24.11.2009, p. 1–50.

² Commission Directive 2010/2/EU of 27 January 2010 amending Council Directive 91/414/EEC as regards an extension of the use of the active substance chlormequat. OJ L 24, 28.1.2010, p. 11–13.

³ Regulation (EC) No 396/2005 of the European Parliament and of the Council of 23 February 2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin and amending Council Directive 91/414/EEC. OJ L 70, 16.3.2005, p. 1–16.

⁴ Commission Regulation (EU) 2017/693 of 7 April 2017 amending Annexes II, III and V to Regulation (EC) No 396/2005 of the European Parliament and of the Council as regards maximum residue levels for bitertanol, chlormequat and tebufenpyrad in or on certain products. OJ L 101, 13.4.2017, p. 1–34.



2.1. Interpretation of the Terms of Reference

As requested in the mandate, EFSA focussed this statement on the dietary risk assessment for the two MRL proposals derived by Germany (2019). EFSA did not assess the methodology used to derive the proposed MRLs and the appropriateness of the MRL proposals.

This document is not a stand-alone document and should be read alongside with the evaluation report submitted by the EMS (Germany, 2019) and the exposure calculations using EFSA Pesticide Residues Intake Model (PRIMo) model; both documents are made publicly available as background documents.

3. Temporary MRLs proposed by the EMS

3.1. Monitoring data on oyster fungi

The EMS Germany compiled monitoring data (n = 308) on chlormequat chloride residues in oyster mushrooms (*P. ostreatus*) from different sources (Germany, 2019):

- 168 samples analysed under the national German control programmes (2001–2018);
- 138 samples from food business operators (2001 to beginning 2019);
- Two samples of oyster mushrooms from the EFSA monitoring database compiling national monitoring data reported to EFSA under Article 31 of Regulation (EC) No 396/2005 (2014, 2017).

The samples originated from different countries, mainly European Union (EU) Member States. The 82.5% of the samples (n = 254) contained residues of chlormequat chloride at or above the LOQ of the analytical method applied, with the highest value of 16.4 mg/kg chlormequat chloride.

Monitoring data (n = 117) on other species of the genus Pleurotus (i.e. *P. eryngii*, *P. citrinopileatus*) and on the mushroom shiitake (*Lentinula edodes*) showed a lower percentage of positive findings (23.9%), none of them exceeding the existing t-MRL of 0.9 mg/kg (Germany, 2019). Thus, the data give an indication that the levels and the frequency of chlormequat chloride residues differ among the mushroom varieties.

3.2. MRL estimation

Germany pooled the sample results on oyster mushrooms to derive MRL proposals according to the methodology recommended by the Food and Agriculture Organization (FAO) of the United Nations for the setting of MRLs in spices and extraneous MRLs (FAO, 2016).

The EMS Germany proposed two MRL options for risk management consideration (Germany, 2019):

- The MRL proposal of 6 mg/kg (MRL option 1) was derived calculating the 95th percentile of all sample results;
- The MRL proposal of 7 mg/kg (MRL option 2) was derived by calculating the 95th percentile of the subset of data (254 samples) with residues greater than the LOQ.

As outlined in Section 2.1, EFSA did not verify the calculated temporary MRLs derived by the EMS.

4. Consumer risk assessment

The consumer exposure assessment was performed using the revision 3.1 of the EFSA PRIMo. This dietary exposure assessment model contains the relevant European food consumption data for different subgroups of the EU population (EFSA, 2018a). The input values used for the dietary exposure calculation are summarised in Appendix B. The assumptions for the chronic and the acute risk assessment and the results are presented below.

4.1. Chronic (long-term) risk assessment

EFSA estimated the chronic dietary exposure for residues of chlormequat chloride, taking into account the expected residues in food products assessed in the framework of the MRL review (supervised trials median residues (STMRs) for barley grain, oats grain and the mean residue concentration of monitoring data for pears, EFSA, 2016); in addition, the STMR values related to

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Codex MRLs which were recently implemented in the EU MRL legislation⁵ were included in the exposure assessment.

The EFSA PRIMo revision 3.1 contains consumption data for cultivated fungi (mean consumption) for 30 diets ranging from 0.011 g/kg body weight (bw) to 0.2367 g/kg bw (Irish adults). The consumption data cover all types of fungi classified under the food code 0280010 (Annex I of regulation (EC) number 396/2005) (see Table 1). Specific consumption data for oyster mushrooms (*P. ostreatus*) are not available. As input values for cultivated fungi, EFSA used the proposed MRLs derived by Germany (scenario 1: MRL proposal 6 mg/kg, scenario 2: MRL proposal of 7 mg/kg).

 Table 1:
 EU food classification for cultivated fungi (code 0280010 of Annex I of Regulation (EC) No 396/2005)

Common name	Scientific name
Common mushrooms/button mushrooms/champignons mushrooms	Agaricus bisporus
Corn smuts/Mexican truffles	Ustilago maydis
Enokitake/winter mushrooms	Flammulina velutipes
Fusarium venenatum	Fusarium venenatum
Horse mushrooms	Agaricus arvensis
Jew's ears/hirneola	Auricularia auricula-judae
Nameko	Pholiota nameko
Oyster mushrooms	Pleurotus ostreatus
Paddy straw mushroom	Volvariella volvacea
Pom-pom blancs/lion's mane mushrooms/monkeyhead mushrooms	Hericium erinaceus
Shiitake	Lentinula edodes
Shimeji/bunashimeji/beach mushrooms	Hypsizygus tessulatus: syn: H. marmoreus
Snow mushrooms/white jelly mushrooms	Tremella fuciformis
Wood blewits/pied bleus	Clytocibe nuda; syn: Lepista nuda
Other cultivated fungi	
Other species of genus Pleurotus, not elsewhere mentioned	

The estimated dietary exposure derived for the different diets included in the EFSA PRIMo revision 3.1 was compared with the toxicological reference value (acceptable daily intake (ADI) value of 0.04 mg/kg body weight per day) derived for chlormequat chloride during the EU pesticides peer review (European Commission, 2009).

Results

In scenario 1 (considering the MRL proposal of 6 mg/kg for cultivated fungi), the estimated long-term dietary intake of chlormequat chloride was in the range of 2% to 48% of the ADI (maximum for Dutch toddlers). The contribution of cultivated fungi accounted for up to 3.6% of the ADI (Irish adults).

In scenario 2 (considering the MRL proposal of 7 mg/kg for cultivated fungi), the maximum longterm dietary intake of chlormequat chloride was not affected. Thus, the highest long-term exposure accounted for 48% of the ADI; the contribution of cultivated fungi was slightly higher, i.e. 4.14% of the ADI (Irish adults).

The chronic (long-term) risk assessment is affected by non-standard uncertainties related to the fact that the calculations were performed using the proposed MRLs for cultivated fungi instead of a STMR value derived from supervised field trials, which is expected to lead to an overestimation of the exposure. Furthermore, lacking specific consumption data for oyster mushrooms, the calculations were performed assuming that all fungi classified under the code for cultivated fungi contain residues at the proposed MRLs for oyster mushrooms, which is another assumption which is likely to overestimate the exposure.

⁵ Commission Regulation (EU) 2019/552 of 4 April 2019 amending Annexes II and III to Regulation (EC) No 396/2005 of the European Parliament and of the Council as regards maximum residue levels for azoxystrobin, bicyclopyrone, chlormequat, cyprodinil, difenoconazole, fenpropimorph, fenpyroximate, fluopyram, fosetyl, isoprothiolane, isopyrazam, oxamyl, prothioconazole, spinetoram, trifloxystrobin and triflumezopyrim in or on certain products. Official Journal L 96, 5.4.2019, p. 6–49.

4.2. Acute (short-term) risk assessment

The acute risk assessment was performed for cultivated fungi only. Lacking specific consumption data for oyster mushrooms, the exposure calculation was performed using the large portion (LP) derived for cultivated fungi (i.e. 8.44 g/kg bw for children (97.5th percentile for Belgian toddlers with a mean body weight of 17.8 kg) and 2.78 g/kg bw for adults (97.5th percentile for French adults with mean body weight of 66.4 kg)).

In the EFSA PRIMo revision 3.1, the unit weight for cultivated mushrooms was reported to be 25 g (unit weight edible portion and unit weight raw agricultural commodities). Thus, for the standard setting of PRIMo revision 3.1, the exposure calculations for cultivated fungi are performed according to international estimated short-term intake (IESTI) case 2a, using a variability default factor of 7. The EMS proposed to replace the default variability factor of 7, considering that the unit weight of oyster mushroom carpophorus is likely to be below 25 g (Mohamed et al., 2016) which would justify the use of a variability factor of 1. In addition, the EMS highlighted that the substrate on which oyster mushrooms are cultivated is likely to show a homogeneous residue distribution. A rather homogeneous product can be anticipated also from the inoculum (spawn) under the controlled moisture and temperature conditions. Thus, according to the EMS, the residues in individual oyster mushrooms are likely to be homogeneous (Germany, 2019).

EFSA agrees with the EMS to replace the default variability factor of 7 which is considered too conservative. EFSA calculated two scenarios, using variability factor of 3 and 1. The scenario using the variability factor of 3 was calculated, taking into account that average variability factors of 2.8 and 3.6 were obtained from supervised residue trials and from market surveys, respectively (EFSA PPR Panel, 2005).

The estimated acute dietary exposure derived for children and adults using variability factor of 3 and 1 was compared with the toxicological reference value (acute reference dose (ARfD) value of 0.09 mg/kg bw) derived for chlormequat chloride during the EU pesticides peer-review (European Commission, 2009).

Results

The results of the short-term risk assessment for the two MRL options for chlormequat in cultivated fungi is reported in Table 2.

Diet	Scenar	rio 1 (6 mg/kg)	Scenar	rio 2 (7 mg/kg)
VF	BE toddler FR adults		BE toddler	FR adults
1	56% ARfD	19% ARfD	66% ARfD	22% ARfD
3	75% ARfD	24% ARfD	88% ARfD	27% ARfD

Table 2: Results of the acute risk assessment for chlormequat in cultivated fungi, using non-standard variability factors of 1 and 3

The acute risk assessment is affected by the following non-standard uncertainties, which should be considered by risk managers:

- Specific consumption data for oyster mushrooms are not available. The LP for oyster mushrooms may be equal or lower to the LP included in the EFSA PRIMo calculation spreadsheet.
- Empirical data on the unit-to-unit variability of chlormequat chloride residues on individual mushrooms are not available. The replacement of the default variability factor of 7 with 3 and 1 is based on considerations that should be verified with empirical data. If a higher level of unit-to-unit variability occurs in reality, the exposure calculations might underestimate the actual exposure. If the unit-to-unit variability is leading to a variability factor of greater than 5.66 (scenario 1, using proposed MRL of 6 mg/kg) or greater than 4.14 (scenario 2, using proposed MRL of 7 mg/kg), the acute exposure would exceed the ARfD.
- There are indications that the unit weight of oyster mushrooms is lower than 25 g (Mohamed et al., 2016). Thus, exposure calculations using IESTI case 2a instead of IESTI case 1 is considered a conservative approach that may lead to an overestimation of the exposure.
- The exposure calculations for oyster mushrooms were performed with the proposed MRLs, instead of the highest residue (HR) of residue trials. Thus, the use of the MRL is a deviation of the internationally agreed methodology which usually would be considered as an



overestimation. However, taking into account that the temporary MRL proposals cover 95% of the monitoring data, the occurrence of higher residues than the proposed MRLs cannot be excluded. Thus, for these cases, the estimated acute dietary exposure of consumers might be higher than calculated by EFSA.

Residues of chlormequat chloride in oyster mushrooms are resulting from the use of chlormequat in cereals, leading to significant residues in straw. Since for the monitoring data on oyster mushrooms, the corresponding residue levels in straw are not available, it is not possible to conclude whether the monitoring data reflect the worst-case situation, i.e. mushrooms cultivated on straw containing residues in accordance with the existing authorised uses for cereals. In the framework of the MRL review under Article 12, information on the expected residues in straw may occur at levels up to 39 mg/kg (EFSA, 2016). Although the available monitoring data were sufficiently representative according to the EMS, it cannot be excluded that the available data overestimate the actual residues in oyster mushrooms, if straw used to cultivate fungi was treated with exaggerated dose rates compared to the authorised good agricultural practices. The monitoring data might also underestimate the situation, if the mushrooms were grown on straw that contained significantly lower residues than expected according to the authorised uses.

For further details on the exposure calculations, a screenshot of the Report sheet of the EFSA PRIMo for the different scenarios is presented in Appendix A.

5. Conclusion and recommendations

Based on the results of the different scenarios of the dietary risk assessment, EFSA concluded that the occurrence of residues of chlormequat chloride in oyster mushrooms at the level of the proposed temporary MRLs (6 and 7 mg/kg) is unlikely to pose a chronic and an acute intake risk. The risk assessment contains assumptions that lead to non-standard uncertainties. In order to increase the robustness of the risk assessment, the following data should be generated:

- Residue trials that allow a reliable prediction of the expected residues in oyster mushrooms cultivated on straw that contain residues at levels in accordance with the most critical authorised use of chlormequat in cereals;
- Studies investigating the unit-to-unit variability of chlormequat chloride residues in individual mushrooms to verify the assumptions used in the acute consumer risk assessment;
- Unit weight data for oyster mushrooms.

Considering that residues of chlormequat chloride in oyster mushrooms are resulting from the presence of residues in treated straw, EFSA recommends the following options to be considered by risk managers:

- According to the results of the EU coordinated monitoring programmes, chlormequat chloride residues are the most frequently found residues in cereal grains. Almost 50% of the wheat grain samples analysed in the EU coordinated monitoring programme (EUCP) in 2015 and approximately 35% of the rye grain samples analysed in EUCP 2016 contained quantifiable residues of chlormequat chloride (EFSA, 2017, 2018b). These data imply that also a high proportion of straw produced in the EU is likely to contain chlormequat residues. Thus, it would be desirable to derive a sound basis for setting MRLs for fungi cultivated on straw based on residue trials, instead of setting temporary MRLs based on monitoring data;
- As alternative option, the production of cultivated fungi could be restricted, allowing only the use of organically produced straw (chlormequat-free) as cultivation substrate;
- If reliable data on the transfer rate of residues from straw to mushrooms are generated as recommended under the first bullet point, chlormequat chloride residue limits for straw could be derived that would avoid contamination of cultivated fungi. Mushroom growers, under their responsibility as food business operators, could be requested to use for growing mushrooms only straw that complies with these limits for straw.



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Abbreviations

- ADI acceptable daily intake
- ARfD acute reference dose
- bw body weight
- CCPR Codex Committee on Pesticide Residues
- CF conversion factor for enforcement to risk assessment residue definition
- EMS evaluating Member State
- EUCP EU coordinated monitoring programme
- FAO Food and Agriculture Organization of the United Nations
- HR highest residue
- IESTI international estimated short-term intake
- ISO International Organisation for Standardisation
- IUPAC International Union of Pure and Applied Chemistry
- LOQ limit of quantification
- LP large portion
- MRL maximum residue level
- PRIMo (EFSA) Pesticide Residues Intake Model
- SANCO Directorate-General for Health and Consumers
- STMR supervised trials median residue
- WHO World Health Organization



Appendix A – Pesticide Residue Intake Model (PRIMo)

Chronic risk assessment

• Scenario 1 (MRL of 6 mg/kg)

+												
		fsa		ex	pressed as chlor	mequ	at-chloric	le)	Details – chronic risk	Supplementary	results –	
	· * * 🏳			LOQs (mg/kg) range fi	rom:	0.01	to:	0.05	assessment	chronic risk ass	essment	
	L				Toxicological ref	erence va	alues					1
	-			ADI (mg/kg bw per da	y):	0.04	ARfD (mg/kg bw):	0.09		\langle		
Eι	uropean Food	Safety Authority		Source of ADI:		сом	Source of ARfD:	сом	Details – acute risk	Details – acu	te risk	
				Year of evaluation:		2008	Year of evaluation:	2008	assessment/children	assessment/	adults	
ments		DE-MRL proposal of 6 mg/kg fo	r cultivated fungi based on		er fungi and VE of 1.	2000	real of evaluation.	2000		<u> </u>		
			·		-							
					Refined	calculat	<u>ion mode</u>					
					Chronic risk assess	ment: JM	PR methodology	(IEDI/TMDI)				
				No of diets exceeding	the ADI :		-				Exposure	e resulting from
											MRLs set at	commoditie under assess
				Highest contributor to			2nd contributor to MS		3rd contributor to M		the LOQ (in % of ADI)	(in % of A
	Calculated exposur (% of ADI)	MS Diet	Expsoure (µg/kg bw per day)	MS diet (in % of ADI)	Commodity/ group of commodities		diet (in % of ADI)	Commodity/ group of commodities	diet (in % of ADI)	Commodity/ group of commodities	. ,	
	48%	NL toddler	19.05	23%	Milk: Cattle		12%	Wheat	6%	Rapeseeds/canola seeds	0.0%	48%
	42%	DK child	16.79		Rye		13%	Wheat	5%	Milk: Cattle		42%
	27%	NL child	10.99		Wheat		9%	Milk: Cattle	3%	Rapeseeds/canola seeds	0.0%	27%
	26%	DE child	10.53	12%	Wheat		8%	Milk: Cattle	3%	Rye	0.0%	26%
	26% 25%	UK infant	10.21 10.08		Milk: Cattle Wheat		8% 9%	Wheat Milk: Cattle	2% 1%	Oat Cultivated fungi	0.0%	26% 25%
	25%	FR child 3–15 yr GEMS/Food G06	9.48	21%	Wheat		9% 1.0%	Milk: Cattle	0.3%	Cotton seeds	0.0%	25%
-	23%	FR toddler 2 3 vr	9.05	11%	Milk: Cattle		9%	Wheat	1.0%	Cultivated fungi	0.0%	23%
consumption)	22%	GEMS/Food G07	8.66	13%	Wheat		4%	Rapeseeds/canola seeds	2%	Milk: Cattle	0.0%	22%
	22%	GEMS/Food G08	8.63	12%	Wheat		2%	Rapeseeds/canola seeds	2%	Milk: Cattle	0.0%	22%
	21%	UK toddler	8.57		Wheat		8%	Milk: Cattle	0.9%	Cultivated fungi		21%
3	21%	GEMS/Food G15	8.30	13%	Wheat		3%	Milk: Cattle	1%	Rapeseeds/canola seeds	0.0%	21%
	20%	IT toddler	8.17		Wheat		0.6%	Cultivated fungi	0.0%	Pears	0.0%	20%
average rood	20% 19%	RO general ES child	7.98 7.63	15% 13%	Wheat Wheat		4% 5%	Milk: Cattle Milk: Cattle	0.1% 0.3%	Swine: Muscle/meat	0.0%	20% 19%
55	19%	SE general	7.63		Wheat		5% 5%	Milk: Cattle	0.3%	Cultivated fungi Cultivated fungi	0.0%	19%
5	18%	GEMS/Food G10	7.42	12%	Wheat		2%	Milk: Cattle	2%	Rapeseeds/canola seeds	0.1%	19%
5	16%	GEMS/Food G11	6.49	11%	Wheat		3%	Milk: Cattle	1%	Barley	0.1%	16%
2	15%	DE general	6.06	6%	Wheat		5%	Milk: Cattle	2%	Rye	0.0%	15%
	15%	DE women 14-50 yr	6.02	6%	Wheat		5%	Milk: Cattle	2%	Rye	0.0%	15%
	15%	IE adult	5.81		Wheat		4%	Cultivated fungi	2%	Milk: Cattle	0.0%	15%
	13%	NL general	5.35	6%	Wheat		3%	Milk: Cattle	2%	Rapeseeds/canola seeds	0.0%	13%
	13%	IT adult	5.23	12%	Wheat		0.8%	Cultivated fungi	0.0%	Pears	0.0%	13%
	12% 11%	PT general	4.99 4.49	12% 4%	Wheat Oat		0.5% 4%	Rye Wheat	0.2% 2%	Oat Rye	0.0%	12% 11%
	11%	FI 3 yr ES adult	4.49	4% 7%	Wheat		4% 2%	Wheat Milk: Cattle	2%	Rye Cultivated fungi	0.0%	11%
	10%	LT adult	3.98	4%	Rye		2 %	Wheat	2%	Milk: Cattle	0.070	10%
	10%	UK vegetarian	3.91	6%	Wheat		2%	Cultivated fungi	1%	Milk: Cattle		10%
	10%	FR adult	3.89		Wheat		2%	Milk: Cattle	0.8%	Cultivated fungi	0.0%	10%
•	9%	FR infant	3.69	7%	Milk: Cattle		2%	Wheat	0.2%	Cultivated fungi	0.0%	9%
	8%	DK adult	3.30	3%	Wheat		2%	Milk: Cattle	2%	Rye		8%
- 1	8%	FI 6 yr	3.30		Wheat		2%	Oat	2%	Rye	0.0%	8%
	7% 5%	UK adult	2.99 2.16	5% 3%	Wheat Wheat		1% 1%	Milk: Cattle Milk: Cattle	0.9%	Cultivated fungi Cultivated fungi	0.0%	7% 5%
	5% 5%	IE child Fl adult	2.16		Wheat Rye		1% 1%	Milk: Cattle Oat	0.4%	Cultivated fungi Wheat	0.0%	5% 5%
	2%	PL general	0.79	2%	Cultivated fungi		0.0%	Table grapes	0.0%	Pears	0.0%	2%

The estimated long-term dietary intake (TMDI/NEDI/EDI) was below the ADI. The long-term intake of residues of Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride) is unlikely to present a public health concern.



• Scenario 2 (MRL of 7 mg/kg)



EFSA PRIMo revision 3.1; 2019/03/19

Comments:

DE-MRL proposal of 7 mg/kg for cultivate

	Chlormequat (s	sum of chlormed	Input values			
	•	d as chlormequ	at-chloride)		Details – chronic risk	Supplementary results –
	LOQs (mg/kg) range from:	0.01	to:	0.05	assessment	chronic risk assessment
		Toxicological reference va	lues		ussessment	
	ADI (mg/kg bw per day):	0.04	ARfD (mg/kg bw):	0.09		<u> </u>
	Source of ADI:	сом	Source of ARfD:	СОМ	Details – acute risk assessment/children	Details – acute risk assessment/adults
	Year of evaluation:	2008	Year of evaluation:	2008	assessment/children	assessment/adults
ated fungi based	on monitring data on oyster fungi and VF of 1.					
		Refined calcul	ation mode			
				(155)(51)(5))		

				No of diets exceeding t	he ADI :					Exposure	resulting from
	Calculated exposure (% of ADI)	MS Diet	Expsoure (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 no under assessme (in % of ADI)
	48%	NL toddler	19.18	23%	Milk: Cattle	12%	Wheat	6%	Rapeseeds/canola seeds	0.0%	48%
	42%	DK child	16.84	20%	Rye	13%	Wheat	5%	Milk: Cattle		42%
	28%	NL child	11.06	12%	Wheat	9%	Milk: Cattle	3%	Rapeseeds/canola seeds	0.0%	28%
	27%	DE child	10.60	12%	Wheat	8%	Milk: Cattle	3%	Rye	0.0%	27%
	26%	UK infant	10.23	15%	Milk: Cattle	8%	Wheat	2%	Oat		26%
	25%	FR child 3 15 yr	10.15	14%	Wheat	9%	Milk: Cattle	1%	Cultivated fungi	0.0%	25%
	24%	GEMS/Food G06	9.48	21%	Wheat	1.0%	Milk: Cattle	0.3%	Cotton seeds	0.0%	24%
Ê	23%	FR toddler 2 3 yr	9.11	11%	Milk: Cattle	9%	Wheat	1%	Cultivated fungi	0.0%	23%
(unption)	22%	GEMS/Food G07	8.66	13%	Wheat	4%	Rapeseeds/canola seeds	2%	Milk: Cattle	0.0%	22%
Ē	22%	UK toddler	8.63	12%	Wheat	8%	Milk: Cattle	1%	Cultivated fungi		22%
nsr	22%	GEMS/Food G08	8.63	12%	Wheat	2%	Rapeseeds/canola seeds	2%	Milk: Cattle	0.0%	22%
8	21%	GEMS/Food G15	8.30	13%	Wheat	3%	Milk: Cattle	1%	Rapeseeds/canola seeds	0.0%	21%
ро	21%	IT toddler	8.21	20%	Wheat	0.7%	Cultivated fungi	0.0%	Pears	0.0%	21%
age foor	20%	RO general	7.98	15%	Wheat	4%	Milk: Cattle	0.1%	Swine: Muscle/meat		20%
age	19%	ES child	7.65	13%	Wheat	5%	Milk: Cattle	0.4%	Cultivated fungi	0.0%	19%
/er	19%	SE general	7.59	9%	Wheat	5%	Milk: Cattle	3%	Cultivated fungi		19%
, a	18%	GEMS/Food G10	7.30	12%	Wheat	2%	Milk: Cattle	2%	Rapeseeds/canola seeds	0.1%	18%
1 or	16%	GEMS/Food G11	6.49	11%	Wheat	3%	Milk: Cattle	1%	Barley	0.1%	16%
sed	15%	DE general	6.09	6%	Wheat	5%	Milk: Cattle	2%	Rye	0.0%	15%
pa	15%	DE women 14-50 yr	6.06	6%	Wheat	5%	Milk: Cattle	2%	Rye	0.0%	15%
on (ba	15%	IE adult	6.05	7%	Wheat	4%	Cultivated fungi	2%	Milk: Cattle	0.0%	15%
atic	14%	NL general	5.42	6%	Wheat	3%	Milk: Cattle	2%	Rapeseeds/canola seeds	0.0%	14%
E.	13%	IT adult	5.28	12%	Wheat	0.9%	Cultivated fungi	0.0%	Pears	0.0%	13%
calc	12%	PT general	4.99	12%	Wheat	0.5%	Rye	0.2%	Oat	0.0%	12%
	11%	ES adult	4.53	7%	Wheat	2%	Milk: Cattle	1%	Cultivated fungi	0.0%	11%
[MDI/NEDI/IEDI	11%	FI 3 yr	4.50	4%	Oat	4%	Wheat	2%	Rye	0.0%	11%
品	10%	UK vegetarian	4.04	6%	Wheat	2%	Cultivated fungi	1%	Milk: Cattle		10%
ş	10%	LT adult	4.01	4%	Rye	3%	Wheat	2%	Milk: Cattle		10%
¥	10%	FR adult	3.94	7%	Wheat	2%	Milk: Cattle	0.9%	Cultivated fungi	0.0%	10%
F	9%	FR infant	3.71	7%	Milk: Cattle	2%	Wheat	0.2%	Cultivated fungi	0.0%	9%
	8%	DK adult	3.35	3%	Wheat	2%	Milk: Cattle	2%	Rye		8%
	8%	FI 6 yr	3.31	3%	Wheat	2%	Oat	2%	Rye	0.0%	8%
	8%	UK adult	3.05	5%	Wheat	1%	Milk: Cattle	1%	Cultivated fungi	0.0%	8%
	5%	IE child	2.19	3%	Wheat	1%	Milk: Cattle	0.4%	Cultivated fungi		5%
	5%	FI adult	1.94	2%	Rye	1%	Oat	1.0%	Wheat	0.0%	5%
	2%	PL general	0.92	2%	Cultivated fungi	0.0%	Table grapes	0.0%	Pears	0.0%	2%



Acute risk assessment

• Scenario 1 (MRL of 6 mg/kg, VF 1)

k assessment is based on the A on is based on the large portion children odities for which ARfD/ADI is STI): % of ADI Commodities Cultivated fungi Milk: Cattle Wheat Pears Rye	RfD. of the most critical c Sh MRL/input for RA (mg/kg) 6/6 0.5/0.15	onsumer group ow result Exposure (µg/kg bw)	s for all crop	s – acute risk assess S for which ARfD/ADI is	ment/ad	ults
children children odities for which ARfD/ADI is STI): % of ADI Commodities Cultivated fungi Milk: Cattle Wheat Pears	MRL/input for RA (mg/kg) 6/6 0.5/0.15	ow result	s for all crop Results for adults No. of commodities exceeded (IESTI): IESTI			
% of DDI Commodities Cultivated fungi Milk: Cattle Wheat Pears	MRL/input for RA (mg/kg) 6/6 0.5/0.15	 Exposure (µg/kg bw)	Results for adults No. of commodities exceeded (IESTI): IESTI			
% of DDI Commodities Cultivated fungi Milk: Cattle Wheat Pears	for RA (mg/kg) 6/6 0.5/0.15	(µg/kg bw)	No. of commodities exceeded (IESTI): IESTI	for which ARfD/ADI is		
STI): % of NDI Commodities Cultivated fungi Milk: Cattle Wheat Pears	for RA (mg/kg) 6/6 0.5/0.15	(µg/kg bw)	exceeded (IESTI):	for which ARfD/ADI is		
% of ADI Commodities Cultivated fungi Milk: Cattle Wheat Pears	for RA (mg/kg) 6/6 0.5/0.15	(µg/kg bw)	IESTI			
ADI Commodities Cultivated fungi Milk: Cattle Wheat Pears	for RA (mg/kg) 6/6 0.5/0.15	(µg/kg bw)				
ADI Commodities Cultivated fungi Milk: Cattle Wheat Pears	for RA (mg/kg) 6/6 0.5/0.15	(µg/kg bw)	Highest % of			
ADI Commodities Cultivated fungi Milk: Cattle Wheat Pears	(mg/kg) 6/6 0.5/0.15	(µg/kg bw)			MRL/input	Exposu
Cultivated fungi Milk: Cattle Wheat Pears	6/6 0.5/0.15		ARfD/ADI	Commodities	for RA (mg/kg)	(µg/kg b
Milk: Cattle Wheat Pears		51	19%	Cultivated fungi	6/6	17
Pears		19	11%	Wheat	7/1.19	10.0
	7/1.19	17	8%	Rye	8/1.42	6.9
Rye	0.07/0.07	9.7	7%	Milk: Cattle	0.5/0.15	6.0
	8/1.42	9.0	4%	Bovine: Edible offals (other	1.5/1.14	3.8
Bovine: Edible offals (8.3	4%	Barley	3/0.68	3.3
Bovine: Liver	1.5/0.54	4.4	3%	Swine: Edible offals (other	1.5/1.14	3.0
Bovine: Kidney	1.5/1.14	4.3	3%	Milk: Goat	0.5/0.15	2.8
Barley	3/0.68	3.8	3%	Swine: Kidney	1.5/1.14	2.5
Table grapes	0.05/0.05	3.8	3%	Bovine: Kidney	1.5/1.14	2.4
				-		2.3
						2.2 2.1
						2.1
						1.7
•	he ARfD/ADI in					
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pse list			ļ			
	value was identified	for any upproc	essed commodity			
				nequat-chloride) is unlikely to n	resent a public	health risk
streaded of onionhequ	,ou or onionneq	to balle	.,			
	Milk: Goat Rapeseeds/canola se Oat Swine: Edible offals (costing) Swine: Kidney apse list er of commodities exceeding tid d adult diets ulation) children ssed commodities for which ARfE (IESTI): % of ADI Processed commoditie 6 Cultivated fungi/fried 6 Oat/boiled 6 Oat/boiled 6 Oat/boiled 6 Pears/juice 9 Rapeseeds/oils 9 Barley/cooked 9 Rapeseeds/oils 9 Barley/milling (flour) % Soyabeans/soya drink % Soyabeans/solied MI #NUM! apse list :	Milk: Goat 0.5/0.15 Rapeseeds/canola seeds 7/2.65 Oat 15/3.1 Swine: Edible offals (other 1.5/1.14 apse list 1.5/1.14 children 1.5/1.14 ssed commodities exceeding the ARfD/ADI (IESTI): 1.5/1.14 % of MRL/input for RA ADI Processed commodities (mg/kg) % of Cultivated fungi/fried % Oat/boiled 15/3.1 % Oat/boiled 15/3.1 % Oat/boiled 8/1.42 % Barley/cooked 3/0.68 % Soyabeans/soya drink 0.01/0.05 % Soyabeans/soya drink 0.01/0.01 % Soyabeans/soya drink 0.01/0.01 % Soyabeans/soya drink 0.01/0.01 % Soyabeans/soya drink 0.01/0.01 % Soyabeans/boiled 0.01/0.01 % Soyabeans/boiled 0.01/0.01 % Soyabeans/boiled 0.01/0.01 <td>b Milk: Goat 0.5/0.15 3.7 c Rapeseeds/canola seeds 7/2.65 3.7 c Oat 15/3.1 3.4 c Swine: Edible offals (other 1.5/1.14 3.4 c Swine: Kidney 1.5/1.14 3.4 c Swine: Kidney 1.5/1.14 1.4 apse list rer of commodities exceeding the ARfD/ADI in d adult diets 1.4 datt diets Ilation) </td> <td>Milk: Goat 0.5/0.15 3.7 3% Appeseeds/canola seeds 7/2.65 3.7 2% Oat 15/3.1 3.4 2% Swine: Edible offals (other 1.5/1.14 3.4 2% Swine: Edible offals (other 1.5/1.14 3.4 2% Swine: Kidney 1.5/1.14 1.4 2% apse list arc of commodities exceeding the ARfD/ADI in d adult diets 1.4 2% Ilation) </td> <td>Milk: Goat 0.5/0.15 3.7 3% Milk: Sheep Appeseeds/canola seeds 7/2.65 3.7 2% Bovine: Liver Autor 15/3.1 3.4 2% Pears Swine: Edible offals (other 1.5/1.14 3.4 2% Oat Swine: Kidney 1.5/1.14 1.4 2% Table grapes appelist For commodities exceeding the ARfD/ADI in 4 adult diets 4 adult diets ilation) For occurred titles for which ARfD/ADI No of processed commodities for which ARfD/ADI (EST): EEST % of MRL/input for RA Exposure 6 Quitivated fungi/fried 6/6 31 6% Wheat/bread/pizza 6 Cultivated fungi/fried 6/6 31 6% Wheat/bread (wholemeal) 6 Quitboiled 15/3.1 9.3 5% Wheat/bread (wholemeal) 6 Quitboiled 8/1.42 5.0 #NUMI #NUMI 6 Quitboiled 3/0.68 2.5<td>Milk: Goat 0.5/0.15 3.7 3% Milk: Sheep 0.5/0.15 Appeseeds/canola seeds 7/2.65 3.7 2% Pears 0.07/0.07 Swine: Edible offals (other 1.5/1.14 3.4 2% Pears 0.07/0.07 Swine: Edible offals (other 1.5/1.14 3.4 2% Oat 15/3.1 asset is swine: Kiney 1.5/1.14 1.4 2% Oat 15/3.1 asset commodities exceeding the ARfD/ADI in d adult diets is for which ARfD/ADI is exceeded (IESTI): </td></td>	b Milk: Goat 0.5/0.15 3.7 c Rapeseeds/canola seeds 7/2.65 3.7 c Oat 15/3.1 3.4 c Swine: Edible offals (other 1.5/1.14 3.4 c Swine: Kidney 1.5/1.14 3.4 c Swine: Kidney 1.5/1.14 1.4 apse list rer of commodities exceeding the ARfD/ADI in d adult diets 1.4 datt diets Ilation)	Milk: Goat 0.5/0.15 3.7 3% Appeseeds/canola seeds 7/2.65 3.7 2% Oat 15/3.1 3.4 2% Swine: Edible offals (other 1.5/1.14 3.4 2% Swine: Edible offals (other 1.5/1.14 3.4 2% Swine: Kidney 1.5/1.14 1.4 2% apse list arc of commodities exceeding the ARfD/ADI in d adult diets 1.4 2% Ilation)	Milk: Goat 0.5/0.15 3.7 3% Milk: Sheep Appeseeds/canola seeds 7/2.65 3.7 2% Bovine: Liver Autor 15/3.1 3.4 2% Pears Swine: Edible offals (other 1.5/1.14 3.4 2% Oat Swine: Kidney 1.5/1.14 1.4 2% Table grapes appelist For commodities exceeding the ARfD/ADI in 4 adult diets 4 adult diets ilation) For occurred titles for which ARfD/ADI No of processed commodities for which ARfD/ADI (EST): EEST % of MRL/input for RA Exposure 6 Quitivated fungi/fried 6/6 31 6% Wheat/bread/pizza 6 Cultivated fungi/fried 6/6 31 6% Wheat/bread (wholemeal) 6 Quitboiled 15/3.1 9.3 5% Wheat/bread (wholemeal) 6 Quitboiled 8/1.42 5.0 #NUMI #NUMI 6 Quitboiled 3/0.68 2.5 <td>Milk: Goat 0.5/0.15 3.7 3% Milk: Sheep 0.5/0.15 Appeseeds/canola seeds 7/2.65 3.7 2% Pears 0.07/0.07 Swine: Edible offals (other 1.5/1.14 3.4 2% Pears 0.07/0.07 Swine: Edible offals (other 1.5/1.14 3.4 2% Oat 15/3.1 asset is swine: Kiney 1.5/1.14 1.4 2% Oat 15/3.1 asset commodities exceeding the ARfD/ADI in d adult diets is for which ARfD/ADI is exceeded (IESTI): </td>	Milk: Goat 0.5/0.15 3.7 3% Milk: Sheep 0.5/0.15 Appeseeds/canola seeds 7/2.65 3.7 2% Pears 0.07/0.07 Swine: Edible offals (other 1.5/1.14 3.4 2% Pears 0.07/0.07 Swine: Edible offals (other 1.5/1.14 3.4 2% Oat 15/3.1 asset is swine: Kiney 1.5/1.14 1.4 2% Oat 15/3.1 asset commodities exceeding the ARfD/ADI in d adult diets is for which ARfD/ADI is exceeded (IESTI):

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Acute risk assessment/children

Acute risk assessment/adults/general population

Details - acute risk assessment/children

Details – acute risk assessment/adults

The acute risk assessment is based on the ARfD.

The calculation is based on the large portion of the most critical consumer group.

Show results for all crops

Results for children No. of commodities f exceeded (IESTI):	or which ARfD/ADI is			Results for adults No. of commodities exceeded (IESTI):	for which ARfD/ADI is		
IESTI				IESTI			
		MRL/input				MRL/input	
Highest % of		for RA	Exposure	Highest % of		for RA	Expo
ARfD/ADI	Commodities	(mg/kg)	(µg/kg bw)	ARfD/ADI	Commodities	(mg/kg)	(µg/k
66%	Cultivated fungi	7/7	59	22%	Cultivated fungi	7/7	1
21%	Milk: Cattle	0.5/0.15	19	11%	Wheat	7/1.19	10
19%	Wheat	7/1.19	17	8%	Rye	8/1.42	6.
11%	Pears	0.07/0.07	9.7	7%	Milk: Cattle	0.5/0.15	6.
10%	Rye	8/1.42	9.0	4%	Bovine: Edible offals (other	1.5/1.14	3.
9%	Bovine: Edible offals (other	1.5/1.14	8.3	4%	Barley	3/0.68	3.
5%	Bovine: Liver	1.5/0.54	4.4	3%	Swine: Edible offals (other	1.5/1.14	3.
5%	Bovine: Kidney	1.5/1.14	4.3	3%	Milk: Goat	0.5/0.15	2.
4%	Barley	3/0.68	3.8	3%	Swine: Kidney	1.5/1.14	2.
4%	Table grapes	0.05/0.05	3.8	3%	Bovine: Kidney	1.5/1.14	2.
4%	Milk: Goat	0.5/0.15	3.7	3%	Milk: Sheep	0.5/0.15	2.
4%	Rapeseeds/canola seeds	7/2.65	3.7	2%	Bovine: Liver	1.5/0.54	2.
4%	Oat	15/3.1	3.4	2%	Pears	0.07/0.07	2.
4%	Swine: Edible offals (other	1.5/1.14	3.4	2%	Oat	15/3.1	2.
2%	Swine: Kidney	1.5/1.14	1.4	2%	Table grapes	0.05/0.05	1.
Expand/collapse list Total number of co	mmodities exceeding the ARf	D/ADI in					
Expand/collapse list		D/ADI in					
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Expand/collapse list Total number of cor- children and adult ((IESTI calculation) Results for childrer No of processed con is exceeded (IESTI): IESTI Highest % of	diets	MRL/input for RA	Exposure	No of processed cor is exceeded (IESTI): IESTI Highest % of	:	for RA	Expo (µg/kç
Expand/collapse list Total number of cou- children and adult ((IESTI calculation) Results for children No of processed con is exceeded (IESTI): IESTI Highest % of ARED/ADI 41%	diets notice for which ARfD/ADI Processed commodities Cultivated fungi/fried	MRL/input for RA (mg/kg) 7/7	Exposure (µg/kg bw) 37	No of processed cor is exceeded (IESTI): IESTI Highest % of ARfD/ADI 6%	Processed commodities Wheat/bread/pizza	for RA (mg/kg) 7/1.19	Expo (µg/ko 5.
Expand/collapse list Total number of cou- children and adult of (IESTI calculation) Results for children No of processed con is exceeded (IESTI): IESTI Highest % of ARfD/ADI 41% 16%	diets modities for which ARfD/ADI Processed commodities Cultivated fungi/fried Wheat/milling (flour)	MRL/input for RA (mg/kg) 7/7 7/1.19	Exposure (µg/kg bw) 37 14	No of processed cor is exceeded (IESTI): IESTI Highest % of ARTD/ADI 6% 5%	Processed commodities Wheat/bread/pizza Barley/beer	for RA (mg/kg) 7/1.19 3/0.14	Expo (µg/kg 5. 4.
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Expand/collapse list Total number of cor- children and adult ((IESTI calculation)) Results for childrer No of processed con is exceeded (IESTI): IESTI Highest % of ARTD/ADI 41% 16% 12% 10% 7% 6% 6%	diets Processed commodities Cultivated fungi/fried Wheat/milling (flour) Oat/boiled Oat/milling (flakes) Wheat/milling (flakes) Rye/boiled Rye/boiled Rye/milling (wholemeal)-bak	MRL/input for RA (mg/kg) 7/7 7/1.19 15/3.1 15/3.1 15/3.1 15/3.1 8/1.42	Exposure (µg/kg bw) 37 14 11 9.3 6.6 5.1 5.0	No of processed cor is exceeded (IESTI): IESTI Highest % of ARfD/ADI 6% 5% 5% 5% 5% 5% 0.3% #NUM!	Processed commodities Wheat/bread/pizza Barley/beer Oat/boiled Wheat/pasta Wheat/bread (wholemeal) Table grapes/raisins #NUM!	for RA (mg/kg) 7/1.19 3/0.14 15/3.1 7/1.19 7/1.19 0.05/0.24 #NUM!	Expo (µg/kg 5. 4. 4. 4. 4. 0.3 #NU
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Expand/collapse list Total number of cou- children and adult ((IESTI calculation) Results for children No of processed con is exceeded (IESTI): IESTI Highest % of ARfD/ADI 41% 16% 12% 10% 7% 6% 6% 6% 3% 2%	diets Processed commodities Cultivated fungi/fried Wheat/milling (flour) Oat/boiled Odt/milling (flakes) Wheat/milling (wholemeal)-b Rye/boiled Rye/milling (wholemeal)-bak Barley/cooked Pears/juice	MRL/input for RA (mg/kg) 7/7 7/1.19 15/3.1 15/3.1 15/3.1 7/1.19 8/1.42 8/1.42 3/0.68 0.07/0.05	Exposure (µg/kg bw) 37 14 11 9.3 6.6 5.1 5.0 2.5 1.6	No of processed cor is exceeded (IESTI): IESTI Highest % of ARID/ADI 6% 5% 5% 5% 5% 5% 5% 0.3% #NUM! #NUM!	Processed commodities Wheat/bread/pizza Barley/beer Oat/boiled Wheat/pasta Wheat/bread (wholemeal) Table grapes/raisins #NUM! #NUM!	for RA (mg/kg) 7/1.19 3/0.14 15/3.1 7/1.19 7/1.19 0.05/0.24 #NUM! #NUM!	Expo (μg/kg 5.: 4. 4. 4. 4. 0.3 #NU #NU #NU
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Expand/collapse list Total number of con- children and adult ((IESTI calculation)) Results for children No of processed con- is exceeded (IESTI): IESTI Highest % of ARTD/ADI 41% 16% 12% 10% 7% 6% 6% 6% 3% 2% 1%	diets Processed commodities Cultivated fungi/fried Wheat/milling (flour) Oat/boiled Oat/milling (flakes) Wheat/milling (wholemeal)-b Rye/boiled Rye/milling (wholemeal)-bak Barley/cooked Pears/juice Rapeseeds/oils Barley/milling (flour)	MRL/input for RA (mg/kg) 7/7 7/1.19 15/3.1 7/1.19 8/1.42 8/1.42 3/0.68 0.07/0.05 7/5.3 3/0.68	Exposure (µg/kg bw) 37 14 11 9.3 6.6 5.1 5.0 2.5 1.6 1.6 1.2	No of processed cor is exceeded (IESTI): IESTI Highest % of ARTD/ADI 6% 5% 5% 5% 0.3% #NUM! #NUM! #NUM! #NUM! #NUM!	Processed commodities Wheat/bread/pizza Barley/beer Oat/boiled Wheat/pasta Wheat/bread (wholemeal) Table grapes/raisins #NUM! #NUM! #NUM! #NUM! #NUM!	for RA (mg/kg) 7/1.19 3/0.14 15/3.1 7/1.19 7/1.19 0.05/0.24 #NUM! #NUM! #NUM! #NUM! #NUM!	Expo (µg/kg 5. 4. 4. 4. 4. 0.3 #NU #NU #NU #NU #NU #NU
Expand/collapse list Total number of cou- children and adult ([IESTI calculation]) Results for children No of processed con is exceeded (IESTI): IESTI Highest % of ARfD/ADI 41% 16% 12% 10% 7% 6% 6% 3% 2% 2% 1% 0.0%	diets Processed commodities Cultivated fungi/fried Wheat/milling (flour) Oat/boiled Oat/milling (flakes) Wheat/milling (wholemeal)-bak Barley/cooked Pears/juice Rapeseeds/oils Barley/milling (flour) Soyabeans/soya drink	MRL/input for RA (mg/kg) 7/7 7/1.19 15/3.1 15/3.1 7/1.19 8/1.42 8/1.42 8/1.42 3/0.68 0.07/0.05 7/5.3 3/0.68 0.01/0.01	Exposure (µg/kg bw) 37 14 11 9.3 6.6 5.1 5.0 2.5 1.6 1.6 1.2 0.04	No of processed cor is exceeded (IESTI): IESTI Highest % of ARfD/ADI 6% 5% 5% 5% 5% 5% 5% 5% 6,3% 4NUM! #NUM! #NUM! #NUM! #NUM!	Processed commodities Wheat/bread/pizza Barley/beer Oat/boiled Wheat/pasta Wheat/bread (wholemeal) Table grapes/raisins #NUM! #NUM! #NUM! #NUM! #NUM! #NUM!	for RA (mg/kg) 7/1.19 3/0.14 15/3.1 7/1.19 7/1.19 7/1.19 0.05/0.24 #NUM! #NUM! #NUM! #NUM! #NUM!	Expo (µg/kg 5. 4. 4. 4. 4. 0.3 #NU #NU #NU #NU #NU #NU #NU
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Expand/collapse list Total number of con- children and adult ((IESTI calculation)) Results for children No of processed con- is exceeded (IESTI): IESTI Highest % of ARTD/ADI 41% 16% 12% 10% 7% 6% 6% 6% 6% 3% 2% 2% 1% 0.0% 0.0% #NUM!	diets Processed commodities Cultivated fungi/fried Wheat/milling (flour) Oat/boiled Oat/milling (flakes) Wheat/milling (wholemeal)-b Rye/boiled Rye/milling (wholemeal)-bak Barley/cooked Pears/juice Rapeseeds/oils Barley/milling (flour) Soyabeans/soya drink Soyabeans/boiled #NUM!	MRL/input for RA (mg/kg) 7/7 7/1.19 15/3.1 7/1.19 8/1.42 8/1.42 8/1.42 8/0.68 0.07/0.05 7/5.3 3/0.68 0.01/0.01 0.01/0 #NUM!	Exposure (µg/kg bw) 37 14 11 9.3 6.6 5.1 5.0 2.5 1.6 1.6 1.6 1.2 0.04 0.01 #NUM!	No of processed cor is exceeded (IESTI): IESTI Highest % of ARtD/ADI 6% 5% 5% 5% 5% 5% 0.3% #NUM! #NUM! #NUM! #NUM! #NUM! #NUM! #NUM!	Processed commodities Wheat/bread/pizza Barley/beer Oat/boiled Wheat/pasta Wheat/bread (wholemeal) Table grapes/raisins #NUM! #NUM! #NUM! #NUM! #NUM! #NUM! #NUM! #NUM!	for RA (mg/kg) 7/1.19 3/0.14 15/3.1 7/1.19 7/1.19 0.05/0.24 #NUM! #NUM! #NUM! #NUM! #NUM! #NUM! #NUM! #NUM!	Expo (µg/kg 5. 4. 4. 4. 4. 4. 0.3 #NU #NU #NU #NU #NU #NU #NU #NU
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No exceedance of the toxicological reference value was identified for any unprocessed commodity. A short-term intake of residues of Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride) is unlikely to present a public health risk.

For processed commodities, no exceedance of the ARfD/ADI was identified.



• Scenario 1 (MRL of 6 mg/kg, VF 3)

		Acute risk assessment/chi	ildren		Acute ris	sk assessment/a	-	neral
						populatio	n	
	D	etails – acute risk assessmer	nt/children			Details – acu	ute risk	
		assessment is based on the ARfD.						
	The calculation	is based on the large portion of the most crit	ical consumer gro	oup.				
		Sh	ow results	for all c	rops			
					Results for a	luits		
I	Results for ch	ildren			No. of commo			
1	No. of commod	ities for which ARfD/ADI is exceeded (IESTI)	:		ARfD/ADI is ex	ceeded (IESTI):		-
	ESTI				IESTI			
				_			input for	_
	Highest % of	a	MRL/input for	Exposure	Highest % of		RA	Expo
F	ARfD/ADI	Commodities	RA (mg/kg)	(µg/kg bw)	ARfD/ADI	Commodities	(mg/kg)	(µg/k
1	75%	Cultivated fungi	6/6	68	24%	Cultivated fungi	6/6	2
L	21%	Milk: Cattle	0.5/0.15	19	11%	Wheat	7/1.19	10
L	19%	Wheat	7/1.19	17	8%	Rye	8/1.42	6
L	11%	Pears	0.07/0.07	9.7	7%	Milk: Cattle	0.5/0.15	6
L	10%	Rye	8/1.42	9.0	4%	Bovine: Edible offals		3
	9%	Bovine: Edible offals (other than liver and	1.5/1.14	8.3	4%	Barley	3/0.68	3
	5%	Bovine: Liver	1.5/0.54	4.4	3%	Swine: Edible offals	1.5/1.14	3
	5%	Bovine: Kidney	1.5/1.14	4.3	3%	Milk: Goat	0.5/0.15	2
	4%	Barley	3/0.68	3.8	3%	Swine: Kidney	1.5/1.14	2
	4%	Table grapes	0.05/0.05	3.8	3%	Bovine: Kidney	1.5/1.14	2
	4%	Milk: Goat	0.5/0.15	3.7	3%	Milk: Sheep	0.5/0.15	2
	4%	Rapeseeds/canola seeds	7/2.65	3.7	2%	Bovine: Liver	1.5/0.54	2
	4%	Oat	15/3.1	3.4	2%	Pears	0.07/0.07	2
	4%	Swine: Edible offals (other than liver and kidney)	1.5/1.14	3.4	2%	Oat	15/3.1	2
		3,						
,	2% =xpand/collaps	Swine: Kidney	1.5/1.14	1.4	2%	Table grapes	0.05/0.05	1
1	Expand/collaps	e list of commodities exceeding the ARfD/ADI in		1.4	2%	l able grapes	0.05/0.05	1
1 2 (Expand/collaps Fotal number adult diets IESTI calculat	e list of commodities exceeding the ARfD/ADI ir ion)		1.4	2%	Table grapes	0.05/0.05	1
1	Expand/collaps Fotal number adult diets (IESTI calculat Results for ch	e list of commodities exceeding the ARfD/ADI ir ion) ildren		1.4	No of processe	ed commodities for	0.05/0.05	1
: () (Expand/collaps Total number adult diets (IESTI calculat Results for ch No of processe	e list of commodities exceeding the ARfD/ADI in ion) ildren d commodities for which ARfD/ADI is		1.4	No of processe which ARfD/AI	ed commodities for	0.05/0.05	1
: () ()	Expand/collaps Fotal number adult diets (IESTI calculat Results for ch	e list of commodities exceeding the ARfD/ADI in ion) ildren d commodities for which ARfD/ADI is			No of processe	ed commodities for	0.05/0.05	
: () () () () () () () () () () () () ()	Expand/collaps Total number adult diets (IESTI calculat Results for ch No of processe	e list of commodities exceeding the ARfD/ADI in ion) ildren d commodities for which ARfD/ADI is			No of processe which ARfD/AI	ed commodities for		
: () () () () () () () () () () () () ()	Expand/collaps Total number adult diets IESTI calculat Results for ch No of processe exceeded (IES ESTI	e list of commodities exceeding the ARfD/ADI in ion) ildren d commodities for which ARfD/ADI is	n children and		No of processa which ARfD/AI (IESTI): IESTI	ed commodities for DI is exceeded	input for	
 	Expand/collaps Total number of adult diets IESTI calculat Results for ch No of processe exceeded (IES) ESTI Highest % of	e list of commodities exceeding the ARfD/ADI in ion) ildren d commodities for which ARfD/ADI is TI):	n children and	 Exposure	No of processs which ARfD/AI (IESTI): IESTI Highest % of	ed commodities for DI is exceeded Processed	input for RA	Expo
 	Expand/collaps Total number of adult diets IESTI calculat Results for ch No of processe exceeded (IES' ESTI Highest % of ARfD/ADI	e list of commodities exceeding the ARfD/ADI in iton) ildren d commodities for which ARfD/ADI is TI): Processed commodities	MRL/input for RA (mg/kg)	 Exposure (μg/kg bw)	No of processe which ARfD/Al (IESTI): IESTI Highest % of ARfD/ADI	ed commodities for DI is exceeded Processed commodities	input for RA (mg/kg)	Ехр (µg/k
 	Expand/collaps Total number of adult diets IESTI calculat Results for ch No of processe exceeded (IES' ESTI Highest % of ARfD/ADI 35%	e list of commodities exceeding the ARfD/ADI in tion) ildren d commodities for which ARfD/ADI is TI): Processed commodities Cultivated fungi/fried	MRL/input for RA (mg/kg) 6/6	Exposure (µg/kg bw) 31	No of processe which ARfD/AI (IESTI): IESTI Highest % of ARfD/ADI 6%	ed commodities for DI is exceeded Processed commodities Wheat/bread/pizza	input for RA (mg/kg) 7/1.19	Exp (µg/k
1 	Expand/collaps Total number of adult diets IESTI calculat Results for ch No of processe exceeded (IES' ESTI Highest % of ARTD/ADI 35% 16%	e list of commodities exceeding the ARfD/ADI in ion) ildren d commodities for which ARfD/ADI is TI): Processed commodities Cultivated fungi/fried Wheat/milling (flour)	MRL/input for RA (mg/kg) 6/6 7/1.19	 Exposure (μg/kg bw) 31 14	No of processs which ARfD/AI (IESTI): IESTI Highest % of ARfD/ADI 6% 5%	ed commodities for DI is exceeded Processed commodities Wheat/bread/pizza Barley/beer	input for RA (mg/kg) 7/1.19 3/0.14	Ехри (µg/k 5 4
1 	Expand/collaps Total number of adult diets IESTI calculat Results for ch No of processe exceeded (IES' ESTI Highest % of ARfD/ADI 35% 16% 12%	e list of commodities exceeding the ARfD/ADI in iton) ildren d commodities for which ARfD/ADI is TI): Processed commodities Cultivated fungi/fried Wheat/milling (flour) Oat/boiled	MRL/input for RA (mg/kg) 6/6 7/1.19 15/3.1	 Exposure (μg/kg bw) 31 14 11	No of processs which ARTD/AI (IESTI): IESTI Highest % of ARTD/ADI 6% 5% 5%	ed commodities for DI is exceeded Processed commodities Wheat/bread/pizza Barley/beer Oat/boiled	input for RA (mg/kg) 7/1.19 3/0.14 15/3.1	Ехри (µg/k 5 4 4
 	Expand/collaps Total number of adult diets IESTI calculat Results for ch No of processe exceeded (IES' ESTI Highest % of ARfD/ADI 35% 16% 12% 10%	e list of commodities exceeding the ARfD/ADI in tion) Ildren d commodities for which ARfD/ADI is TI): Processed commodities Cultivated fungi/fried Wheat/milling (flour) Oat/boiled Oat/milling (flakes)	MRL/input for RA (mg/kg) 6/6 7/1.19 15/3.1 15/3.1	 Exposure (μg/kg bw) 31 14 11 9.3	No of processs which ARfD/AI (IESTI): Highest % of ARfD/ADI 6% 5% 5% 5%	ed commodities for DI is exceeded Processed commodities Wheat/bread/pizza Barley/beer Cat/boiled Wheat/pasta	input for RA (mg/kg) 7/1.19 3/0.14 15/3.1 7/1.19	Expr (μg/k 5 4 4 4
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For processed commodities, no exceedance of the ARfD/ADI was identified.

The acute risk assessment is based on the ARfD.



Scenario 2 (MRL of 7 mg/kg, VF 3) •

Acute risk assessment/children

Acute risk assessment/adults/general population

Details - acute risk assessment/children

Details – acute risk assessment/adults

The calculation is based on the large portion of the most critical consumer group. Show results for all crops commoditie Results for children Results for adults No. of commodities for which ARfD/ADI is No. of commodities for which ARfD/ADI is exceeded (IESTI): exceeded (IESTI): IFSTI IFSTI Unprocessed MRL/input MRL/input Highest % of for RA Exposure Highest % of for RA Exposure Commodities ARfD/ADI (mg/kg) (µg/kg bw) ARfD/ADI (mg/kg) (µg/kg bw) Commodities Cultivated fungi 88% Cultivated fungi 7/7 79 27% 7/7 25 Milk: Cattle Wheat 7/1.19 0.5/0.15 10.0 21% 19 11% 19% 7/1.19 17 8/1.42 Wheat 8% Rye 6.9 11% Pears 0.07/0.07 97 7% Milk[.] Cattle 0.5/0.15 6.0 4% Bovine: Edible offals (other 10% 1.5/1.14 Rve 8/1.42 9.0 3.8 Bovine: Edible offals (other 1.5/1.14 4% 3/0.68 9% 8.3 Barley 3.3 5% Bovine: Liver 1.5/0.54 4.4 3% Swine: Edible offals (other 1.5/1.14 3.0 5% Bovine: Kidney 1.5/1.14 43 3% Milk: Goat 0.5/0.15 2.8 4% Barlev 3/0.68 3.8 3% Swine: Kidney 1.5/1.14 2.5 4% 0.05/0.05 3.8 3% Bovine: Kidney 1.5/1.14 2.4 Table grapes 4% Milk: Goat 0.5/0.15 3.7 3% Milk: Sheep 0.5/0.15 2.3 4% Rapeseeds/canola seeds 7/2.65 3.7 2% Bovine: Liver 1.5/0.54 2.2 2% 4% 0.07/0.07 15/3.1 Pears 2.1 Oat 3.4 4% Swine: Edible offals (other 1.5/1.14 3.4 2% Oat 15/3.1 2.0 2% Swine: Kidney 1.5/1.14 1.4 2% Table grapes 0.05/0.05 1.7 Expand/collapse lis Total number of commodities exceeding the ARfD/ADI in children and adult diets **IESTI** calculation) Results for children Results for adults commodities No of processed commodities for which ARfD/ADI No of processed commodities for which ARfD/ADI is exceeded (IESTI): eded (IESTI) IESTI IESTI MRL/input MRL/input Processed Highest % of Highest % of for RA for RA Exposure Exposure ARfD/ADI ARfD/ADI Processed commoditie (mg/kg) (µg/kg bw Processed commoditie (mg/kg) (µg/kg bw) 41% Cultivated fungi/fried 7/7 37 6% Wheat/bread/pizza 7/1.19 5.2 16% Wheat/milling (flour) 7/1.19 14 5% Barley/beer 3/0.14 4.9 12% Oat/boiled 15/3.1 11 5% Oat/boiled 15/3.1 4.7 10% Oat/milling (flakes) 15/3.1 9.3 5% Wheat/pasta 7/1.19 4.5 7% Wheat/milling (wholemeal)-b 7/1.19 6.6 5% Wheat/bread (wholemeal) 7/1.19 4.1 6% Rye/boiled 8/1 42 5.1 0.3% Table grapes/raisins 0 05/0 24 0.30 6% Rye/milling (wholemeal)-bak 8/1.42 #NUM! #NUM! #NUM! #NUM! 5.0 3% Barley/cooked 3/0.68 2.5 #NUM! #NUM! #NUM! #NUM! 2% Pears/juice 0.07/0.05 1.6 #NUM! #NUM! #NUM! #NUM! 2% Rapeseeds/oils 7/5.3 1.6 #NUM! #NUM! #NUM! #NUM! 1% . Barley/milling (flour) 3/0.68 #NUM! #NUM! #NUM! #NUM! 1.2 0.0% 0.01/0.01 0.04 #NUM! #NUM! #NUM! Soyabeans/soya drink #NUM! 0.0% Soyabeans/boiled 0.01/0 0.01 #NUM! #NUM #NUM! Expand/collapse list Conclusion:

No exceedance of the toxicological reference value was identified for any unprocessed commodity. A short-term intake of residues of Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride) is unlikely to present a public health risk.

For processed commodities, no exceedance of the ARfD/ADI was identified.



Appendix B – Input values for the consumer risk assessment

		Chro	nic risk assessment	Acute	risk assessment
Commodity		Input value (mg/kg)	Comment	Input value (mg/kg)	Comment
Pears		0.05	Mean, monitoring (EFSA, 2016)		assessment only for assessment
Grapes		0.04	STMR \times CF (FAO, 2017) ^(a)		
Cultivated fungi	Scenario 1	6	Proposed t-MRL (Germany, 2019)	6	Proposed t-MRL (Germany, 2019)
	Scenario 2	7	Proposed t-MRL (Germany, 2019)	7	Proposed t-MRL (Germany, 2019)
Rape seed		2.65	STMR \times CF (FAO, 1994) ^(a)		assessment only for
Cotton seed		0.40	STMR \times CF (FAO, 1994) ^(a)	crop under	assessment
Barley grain		0.68	STMR (EFSA, 2016)		
Oats grain		3.10	STMR (EFSA, 2016)		
Rye grain		1.42	STMR \times CF (FAO, 2017) ^(a)		
Wheat grain		1.19	STMR \times CF (FAO, 2017) ^(a)		
Swine, meat		0.05	STMR \times CF (FAO, 2017) ^(a)		
Swine, fat		0.05	STMR \times CF (FAO, 2017) ^(a)		
Swine, liver		0.11	STMR \times CF (FAO, 2017) ^(a)		
Swine, kidney		0.44	STMR \times CF (FAO, 2017) ^(a)		
Swine, edible offal		0.44	STMR \times CF (FAO, 2017) ^(a)		
Ruminant, meat		0.05	STMR \times CF (FAO, 2017) ^(a)		
Ruminant, fat		0.05	STMR \times CF (FAO, 2017) ^(a)		
Ruminant, liver		0.11	STMR \times CF (FAO, 2017) ^(a)		
Ruminant, kidney		0.44	STMR \times CF (FAO, 2017) ^(a)		
Ruminant, edible of	ffal	0.44	STMR \times CF (FAO, 2017) ^(a)		
Poultry, meat		0.05	STMR \times CF (FAO, 2017) ^(a)		
Poultry, fat		0.05	STMR \times CF (FAO, 2017) ^(a)		
Poultry, liver		0.05	STMR \times CF (FAO, 2017) ^(a)		
Poultry, kidney		0.05	STMR \times CF (FAO, 2017) ^(a)		
Poultry, edible offal		0.05	STMR \times CF (FAO, 2017) ^(a)		
OFA, meat		0.05	STMR \times CF (FAO, 2017) ^(a)		
OFA, fat		0.05	STMR \times CF (FAO, 2017) ^(a)		
OFA, liver		0.11	STMR \times CF (FAO, 2017) ^(a)		
OFA, kidney		0.44	STMR \times CF (FAO, 2017) ^(a)		
OFA, edible offal		0.44	STMR \times CF (FAO, 2017) ^(a)		
Milks		0.15	STMR \times CF (FAO, 2017) ^(a)		
Birds Eggs		0.05	STMR \times CF (FAO, 2017) ^(a)		
Wild terrestrial vertebrates		0.30	MRL in Regulation (EU) 2019/552 ^(b)		

OFA: other farmed animals.

(a): The STMR values of the Codex MRL implemented in the EU legislation were converted to chlormequat chloride applying a molecular weight conversion factor of 1.29.

(b): Commission Regulation (EU) 2019/552 of 4 April 2019 amending Annexes II and III to Regulation (EC) No 396/2005 of the European Parliament and of the Council as regards maximum residue levels for azoxystrobin, bicyclopyrone, chlormequat, cyprodinil, difenoconazole, fenpropimorph, fenpyroximate, fluopyram, fosetyl, isoprothiolane, isopyrazam, oxamyl, prothioconazole, spinetoram, trifloxystrobin and triflumezopyrim in or on certain products. OJ L 96, 5.4.2019, p. 6–49.



Appendix C – Used compound codes

Code/trivial name ^(a)	IUPAC name/SMILES notation/ InChiKey ^(b)	Structural formula ^(c)
Chlormequat (cation)	(2-chloroethyl)trimethylammonium	H ₃ C
	C[N+](C)(C)CCCl	CH ₃
	JUZXDNPBRPUIOR-UHFFFAOYSA-N	CI CH ₃
Chlormequat chloride	(2-chloroethyl)trimethylammonium chloride	H ₃ C
	[Cl-].C[N+](C)(C)CCCl	
	UHZZMRAGKVHANO-UHFFFAOYSA-M	CI CH ₃

(a): The metabolite name in bold is the name used in the conclusion.

(b): ACD/Name 2015 ACD/Labs 2015 Release (File version N20E41, Build 75170, 19 Dec 2014).

(c): ACD/ChemSketch 2015 ACD/Labs 2015 Release (File version C10H41, Build 75059, 17 Dec 2014).