EURL for Cereals and Feeding stuff
National Food Institute
Technical University of Denmark

Validation Report 38

Determination of pesticide residues in rice based babyfood by LC-MS/MS and GC-MS/MS

(QuEChERS method)

Mette Erecius Poulsen
Elena Hakme
Susan Strange Herrmann
December 2021

CONTENT:

1. Introduction

This report describes the validation of rice based babyfood for 355 pesticides and the study are a follow up on the validation studies that are reported in Report 31 and 31B. The current study is performed at at two low levels, 0.0005 and 0.001 mg/kg. To obtain this low LOQs the instrument methods was optimized by injecting higher volume of the extractions into the instrument than the 1µl typically used; 5µl for the GCMSMS and 2 µl for the LCMSMS.

2. Principle of analysis

The analytic method used is based on EN 15662:2008[1]

Sample preparation

The baby food was analysed as ready to consume, so 25 g powder was mixed with 25 ml 50 ºC MiliQ water, that was boiled and then cooled to 50 ºC. Five g porridge was added 5 ml water and mixed well using ceramic homogenizers. The samples was then extracted with 10 ml acetonitrile using a Geno grinder for 5 min and a salt and buffer mixture is added and the sample is shaken again 10 minutes. Eight millilitre of supernatant were transferred in a clean tube and placed in -80°C freezer for at least 1 hour. After freezing-out the samples were removed from freezer, thawed and centrifuged at 5°C for 10 minutes at 4500 rpm. At this point an aliquot is withdrawn and filtered, diluted 1:1 with acetonitrile and analysed by LC-MS/MS. Another 6 mL extract were transferred to a 15 ml single use centrifuge tube containing 150 mg PSA and 900 mg $MgSO_4$, shaken 30 seconds and centrifuged five minutes at 4500 rpm. After shaking and an additional centrifugation step the final extract is diluted 1:1 with acetonitrile to obtain the same matrix concentration as in the matrix matched calibration standards. The final extracts are analysed by GC-MS/MS. Crude extract withdrawn before PSA clean-up was analysed by LC-MS/MS.

GC-MS/MS

For gas chromatographic separation, a Thermo Scientific™ Trace™ 1310 Gas Chromatograph coupled to a Thermo Scientific™ TriPlus™ RSH autosampler was used. The samples were injected in a programmable temperature vaporizer (PTV) mode through a PTV baffle liner 2×2.75×120 mm for Thermo GCs (Siltek). The injection volume was 1 µL and the injection temperature was set to 70°C. Helium as used as carrier gas at a flow of 1.2 $ml.min^{-1}$. The analytes were separated on a TG-5SILMS (capillary column of 30 m long, 0.25 mm inner diameter and a film thickness of 0.25 µm). The oven temperature program was as follows: 60°C for 1.5 min, up to 90°C at 25°C/min for 1.5 min,

up to 180°C at 25°C /min, then up to 280°C at 5 °C/min and finally up to 300°C at 10°C/min and for 12 min. The total runtime was 42 min. For the mass spectrometric analysis, a Thermo Scientific™ TSQ™ 8000 Evo was used. The instrument has been upgraded with and Advanced Electron ionisation source, (AEI). The AEI source was operated with an electron energy of 50 eV. The analyses were performed by a triple quadrupole operating in the SRM mode (Selected Reaction Monitoring). The source temperature was set at 300°C, and the transfer line, at 280°C. The MRM transitions for the pesticides and degradation products are given in Appendix 1a.

LC-MS/MS:

For liquid chromatographic separation, a LC system Thermo Ultimate 3000 and the mass spectrometer Bruker EVOQ was used. The analytes were separated on a Accuity UPLC BEH C18 1.7 µm, 2.1*100 mm reversed-phase column. The injection volume was 1 µl. The eluents consisted of milli-q water with 0,1% formic acid and 5 mM ammonia solution (A eluent) and methanol (B eluent) and a flow rate of 0.4 ml/min was applied. The analytes were separated using a gradient elution programme. In this program the column was equilibrated with 2% B eluent before injection. At the time of injection the B eluent was increased to 35% within 0.1 min and then increased further reaching 98% at a run time of 7 min. The 98% of B eluent is then maintained for 3 minutes before the proportion is lowered again to 2% within 0.1 min and maintained until a total run time of 13 min in order to prepare the column for the next injection. The mass spectrometer was operated in multiple reaction monitoring mode and using both + and negative electrospray ionization. The MRM transitions for the pesticides and degradation products sought validated are given in Appendix 1b.

3. Validation

The validation was performed in accordance with Guidance document on analytical quality control and method validation procedures for pesticide residues and analysis in food and feed, Document SANTE/12682/2019[2]

Validation design

The method was sought validated for 355 pesticides or metabolites in rice based babyfood, see **Appendix 1**. The validation was performed on 3 times 6 replicates of the two spiking levels; 0.0005 and 0.001 mg/kg. A blank sample was included.

Calibration curves and linearity

The calibration curve is determined by the analysis of each of the analysts at least 4 calibration levels within the range of 0.1 to 33 ng/ml. The quantification was performed from the mean of two bracketing calibration curves. The calibration curves were fitted to a linear curve. The majority of the correlation coefficients (R) were higher or equal to 0.99 but none were lower than 0.97. Thus, good linearity was observed within the relevant concentration range.

Specificity

The ion ratios for sample extracts were within ±30% (relative) of average of relevant calibration standards from same sequence. The ion ratios may vary slightly depending on concentration level and in some cases the average of calibration standard are based on the lower calibration levels for the low spike samples.

Accuracy – Recovery

The accuracy was determined from recovery studies in which samples were spiked at three concentration levels (0.0005and 0.001 mg/kg) with the relevant pesticides, isomers and degradation products.

Precision – repeatability and internal reproducibility

Repeatability and internal reproducibility was calculated for all pesticides and degradation products on both spiking levels (0.0005and 0.001 mg/kg) as given by ISO 5725-2[3].

Limit of quantification, LOQ

The Limit of quantification (LOQ) was determinate as the lowest spiked level for which the acceptance criteria were meet (average relative recovery in percentage between 70 and 120 and precision lower than or equal 20%), and ion ratios for sample extracts were within ±30% (relative) of average of relevant calibration standards.

Expanded uncertainty and recovery corrections

The expanded uncertainty is calculated to demonstrate that it is less than 50%. The expanded uncertainty is given by:

$$U = \sqrt{RSD^2 + Bias^2 + (RSD^2/n)} * 2$$

Where RSD is the intra-laboratory uncertainty (RSD_R),

Bias is 100 minus the recovery,
RSD^2/n is the uncertainty of the bias,
n is the number of recoveries included in the bias and
2 is the coverage factor corresponding to 95% confidence level.

If the expanded uncertainty is higher than 50%, the analytical results must be corrected for recovery and the combined uncertainty is then given by:

$$U_c = \sqrt{RSD^2 + (RSD^2/n)}$$

Where RSD, in this validation, is the repeatability uncertainty (RSD_r),
RSD^2/n is the uncertainty of the bias,
n is the number of recoveries included in the bias and
2 is the coverage factor corresponding to 95% confidence level.

The bias/recovery used for correction will be the bias/recoveries determined for the individual analytes during the initial validation and/or ongoing method validation. However, if it is evaluated that the type of sample being analysed is significantly different from the matrices employed for the method validation it is possible to correct for bias/recoveries based on recovery from spiked samples included in the analytical batch in question. However, minimum of 5 recovery samples must be included then.

The obtained results including recovery, RSD_r, RSD_R, expanded uncertainty (U, Uc and limit of quantification (LOQ) are presented in Appendix 2.

8. Results and conclusion

The validation results obtained for the 355 pesticides, isomers or metabolites using LC-MSMS or GC-MSMS are presented in Appendix 2. Of the 355 pesticides 94 was validated on both types of instruments, 117 was validated on GC-MSMS and 144 on LC-MSMS.

The majority of the compounds (316) were validated with an LOQ of 0.0005 mg/kg, 105 compounds on GC-MSMS, 130 on LC-MSMS and 81 on both instruments. The rest of the compounds (39) were validated with an LOQ of 0.001. Here 18 compounds were validated on GC-MSMS, 20 on LC-MSMS and 1 on both instruments.

9. References

1 EN 15662:2008. Foods of plant origin - Determination of pesticide residues using GC-MS and/or LC-MS/MS following acetonitrile extraction/partitioning and clean-up by dispersive SPE - QuEChERS-method

3 Guidance document on analytical quality control and method validation procedures for pesticide residues and analysis in food and feed, Document SANTE/12682/2019, European Commission, Brussels, 2019.

2 ISO 5725-2:1994. Accuracy (trueness and precision) of measurement methods and results – Part2. Basic method for the determination of repeatability and reproducibility of standard measurement method. First edition. December 1994.

Appendix 1a. MRM transitions for GC-MS/MS

Name	RT	Parent Mass	Product Mass	Collision Energy
1-4-dimethylnaphthalene	9.25	115.1	89.1	15
1-4-dimethylnaphthalene	9.25	141.1	115.1	15
1-4-dimethylnaphthalene	9.25	156.1	141.1	15
2-phenylphenol	9.71	170	115	35
2-phenylphenol	9.71	170	141	25
2-phenylphenol	9.71	170	169	10
Acetochlor	13.6	131.8	117	14
Acetochlor	13.6	146	117.7	8
Acetochlor	13.6	146	131.1	12
Aclonifen	19.42	212	182	10
Aclonifen	19.42	264	194.1	14
Acrinathrin(I)	23.69	181	152	22
Acrinathrin(I)	23.69	208.1	180.9	8
Acrinathrin(I)	23.69	289	93.1	8
Acrinathrin(II)	24.07	181	152	22
Acrinathrin(II)	24.07	208.1	180.9	8
Acrinathrin(II)	24.07	289	93.1	22
Aldimorph1	14.04	128.1	70.1	15
Aldimorph1	14.04	128.1	110.1	10
Aldimorph2	14.38	128.1	70.1	15
Aldimorph2	14.38	128.1	110.1	10
Atrazine	11.74	200	122	8
Atrazine	11.74	215	173	10
Atrazine	11.74	215	200	10
Azoxystrobin	29.93	344.1	156	34
Azoxystrobin	29.93	344.1	171.9	36
Azoxystrobin	29.93	344.1	329	14
Benalaxyl	20.12	148.1	77	30
Benalaxyl	20.12	234.3	174.2	10
Benalaxyl	20.12	266.4	148.2	10
Bendiocarb	11.08	126	51.9	16
Bendiocarb	11.08	151	43	20
Bendiocarb	11.08	166.1	151.1	10
Benfluralin	11	292	159.7	20
Benfluralin	11	292	206.1	10
Benfluralin	11	292	264	8
Benzovindiflupyr	28	239	174	25
Benzovindiflupyr	28	369.1	159.1	20
Benzovindiflupyr	28	369.1	237.1	10
Bifenazate	22.41	258	196.1	12
Bifenazate	22.41	258	199.1	12
Bifenthrin	21.84	181	165.9	10
Bifenthrin	21.84	181.1	153.1	10

Name	RT	Parent Mass	Product Mass	Collision Energy
Bifenthrin	21.84	181.1	166.1	10
Biphenyl	8.75	154.1	115	26
Biphenyl	8.75	154.1	152.1	25
Biphenyl	8.75	154.1	153.1	15
Bitertanol	25.07	170	115.1	34
Bitertanol	25.07	170	141.1	20
Bitertanol	25.07	170	169.1	16
Bixafen	27.98	159	139.1	10
Bixafen	27.98	160.1	140.1	10
Bixafen	27.98	413.1	159.1	10
Boscalid	26.88	139.9	76	22
Boscalid	26.88	139.9	112	10
Boscalid	26.88	341.8	140.2	15
Bromophos-ethyl	16.5	302.7	284.8	14
Bromophos-ethyl	16.5	358.9	302.9	15
Bromophos-ethyl	16.5	358.9	330.9	10
Bromopropylate	21.88	184.9	75.5	30
Bromopropylate	21.88	340.8	185	14
Bromopropylate	21.88	342.7	185	15
Bromuconazole(I)	21.62	172.9	144.9	16
Bromuconazole(I)	21.62	293	173	10
Bromuconazole(I)	21.62	295	175	10
Bromuconazole(II)	22.5	172.9	145	16
Bromuconazole(II)	22.5	293	173	10
Bromuconazole(II)	22.5	295	175	10
Bupirimate	17.76	208.1	165	12
Bupirimate	17.76	273.1	193.2	8
Bupirimate	17.76	316.2	208.2	10
Carbosulfan	21.78	160	50.9	34
Carbosulfan	21.78	160	77	22
Carbosulfan	21.78	160	133	10
Carboxin	17.9	87	43	6
Carboxin	17.9	143	43	16
Carboxin	17.9	235	143	5
Carfentrazone-ethyl	20.12	290	99.9	36
Carfentrazone-ethyl	20.12	311.9	150.7	18
Carfentrazone-ethyl	20.12	340.1	312.1	10
Chlordane-trans	16.93	271.7	236.8	12
Chlordane-trans	16.93	372.7	263.7	20
Chlordane-trans	16.93	374.7	265.9	20
Chlorfenapyr	18.12	247	227	15
Chlorfenapyr	18.12	248.9	112	24
Chlorfenapyr	18.12	328	247	15
Chlorfenson	17.3	174.9	111	10
Chlorfenson	17.3	302	175	10

Name	RT	Parent Mass	Product Mass	Collision Energy
Chlorobenzilate	18.62	139	74.9	26
Chlorobenzilate	18.62	139	111	12
Chlorobenzilate	18.62	251	139	14
Chloropropylate	19.06	251	139	15
Chloropropylate	19.06	253	141	15
Chlorpropham	10.8	171	127	8
Chlorpropham	10.8	213	127	8
Chlorpropham	10.8	213	171	10
Chlorpyrifos-methyl	13.36	285.9	93	20
Chlorpyrifos-methyl	13.36	286	271	15
Chlorpyrifos-methyl	13.36	288	273	8
Chlorthal-dimethyl	15.09	300.7	222.9	22
Chlorthal-dimethyl	15.09	300.7	272.9	12
Chlorthal-dimethyl	15.09	331.9	300.9	10
Cinidon-ethyl	31.74	330	302	15
Cinidon-ethyl	31.74	358	330	10
Clodinafop-propargyl	20.59	238	130	18
Clodinafop-propargyl	20.59	266	91.1	14
Clodinafop-propargyl	20.59	349.1	266.1	8
Clomazone	11.84	125	89	16
Clomazone	11.84	138	74.9	24
Clomazone	11.84	204	107	15
Coumaphos	25.8	209.9	119	22
Coumaphos	25.8	209.9	182	10
Coumaphos	25.8	361.9	109	15
Cyflufenamid	18.53	222.8	203	10
Cyflufenamid	18.53	237	188	24
Cyflutrin	26.46	206	151	12
Cyflutrin	26.46	226	206	10
Cypermethrin	27	163	127	10
Cypermethrin	27	181	152	20
Cyproconazole	18.38	222	82.1	10
Cyproconazole	18.38	222	89.3	38
Cyproconazole	18.38	222	125	15
Cyprodinil	15.6	224.1	196.9	20
Cyprodinil	15.6	224.1	208	18
Cyprodinil	15.6	226	225	15
Dazomet	11.77	162	44	18
Dazomet	11.77	162	89	6
Deltamethrin_cis(I+II)	29.65	181	152.1	22
Deltamethrin_cis(I+II)	29.65	252.8	92.9	16
Deltamethrin_cis(I+II)	29.65	252.8	172	8
Denatonium benzoate	22.93	176.1	103	25
Denatonium benzoate	22.93	176.1	105.1	15
Denatonium benzoate	22.93	176.1	147.1	15

Name	RT	Parent Mass	Product Mass	Collision Energy
Diafenthiuron	19	311.1	254.1	15
Diafenthiuron	19	311.1	278.2	10
Diafenthiuron	19	311.1	296.1	10
Dialifos	24.77	208	89.1	26
Dialifos	24.77	208	180.9	10
Dialifos	24.77	209.7	182.9	10
Dichlobenil	8.45	170.9	99.9	24
Dichlobenil	8.45	170.9	136	14
Dichlobenil	8.45	172.8	99.8	24
Dichlofenthion	13.48	222.9	205	12
Dichlofenthion	13.48	250.9	223	8
Dichlofenthion	13.48	279	223	12
Dicloran	11.72	160	124.1	8
Dicloran	11.72	176	148	12
Dicloran	11.72	206	176	10
Dicrotophos	10.99	127	94.9	16
Dicrotophos	10.99	127	109	10
Dicrotophos	10.99	192.7	127	8
Diethofencarb	14.9	168	96.1	12
Diethofencarb	14.9	196	96	16
Diethofencarb	14.9	225.1	96	24
Diflufenican	21.16	266	238.1	12
Diflufenican	21.16	266	246.1	10
Diflufenican	21.16	394	266.1	12
Dimethachlor	13.5	134	77	24
Dimethachlor	13.5	134	105.1	12
Dimethachlor	13.5	197	148.1	10
Dimethenamid	13.52	154.1	111	10
Dimethenamid	13.52	154.1	137	8
Dimethenamid	13.52	230	154.1	10
Dimethomorph(I)	30.14	301	139	14
Dimethomorph(I)	30.14	301	165.1	10
Dimethomorph(I)	30.14	387.1	301.1	10
Dimethomorph(II)	30.6	301	139	14
Dimethomorph(II)	30.6	301	165.1	10
Dimethomorph(II)	30.6	387.1	301.1	10
Dimoxystrobin	22	116.1	62.9	24
Dimoxystrobin	22	116.1	89	14
Dimoxystrobin	22	205.1	116.1	10
Diniconazole	19.2	232	149	14
Diniconazole	19.2	268	136	34
Diniconazole	19.2	268	232	8
Disulfoton-sulfone	17.08	213	96.9	8
Disulfoton-sulfone	17.08	213.01	125.01	10
Disulfoton-sulfone	17.08	213.01	153.01	5

Name	RT	Parent Mass	Product Mass	Collision Energy
Dodemorph(I)	15.66	154.1	56.5	16
Dodemorph(I)	15.66	154.1	81.9	18
Dodemorph(I)	15.66	154.1	96.6	10
Dodemorph(II)	16.21	154.1	56.5	16
Dodemorph(II)	16.21	154.1	82	18
Dodemorph(II)	16.21	154.1	97.2	10
Endosulfan-alpha	17.02	158.9	123	12
Endosulfan-alpha	17.02	194.7	125	22
Endosulfan-alpha	17.02	240.6	205.9	14
Endosulfan-beta	18.75	158.9	123	12
Endosulfan-beta	18.75	194.7	125	22
Endosulfan-beta	18.75	194.7	159.4	8
Endosulfan-beta	18.75	240.6	205.9	14
Endosulfan-sulfate	20.1	238.7	203.9	12
Endosulfan-sulfate	20.1	271.7	234.9	12
Endosulfan-sulfate	20.1	274	239	8
Endrin-ketone	22	209	139.1	25
Endrin-ketone	22	245	173	25
Endrin-ketone	22	280.9	245	10
EPN	21.8	157	77	22
EPN	21.8	169	77	22
EPN	21.8	169	141	8
Epoxiconazole	21.18	165	138	8
Epoxiconazole	21.18	192	111	22
Epoxiconazole	21.18	192	138	12
Ethalfluralin	10.84	276	202	14
Ethalfluralin	10.84	276	248.1	8
Ethalfluralin	10.84	315.9	276.1	8
Ethofumesate	14.49	161.1	77.1	28
Ethofumesate	14.49	161.1	105.1	10
Ethofumesate	14.49	207.1	137.1	10
Etofenprox	27.53	163.1	77.1	32
Etofenprox	27.53	163.1	107.1	16
Etofenprox	27.53	163.1	135.1	10
Etoxazole	22.56	140.9	62.9	26
Etoxazole	22.56	140.9	113	14
Etoxazole	22.56	204	176.1	10
Etridiazole	9.21	182.8	139.9	14
Etridiazole	9.21	211	139.9	20
Etridiazole	9.21	211	182.9	10
Famoxadone	30.62	224.1	167.2	18
Famoxadone	30.62	224.1	196.1	8
Famoxadone	30.62	329.8	224.1	8
Fenamidone	22.59	238.08	194.07	20
Fenamidone	22.59	238.08	210.07	20

Name	RT	Parent Mass	Product Mass	Collision Energy
Fenamidone	22.59	238.08	237.08	20
Fenarimol	23.96	139	74.9	26
Fenarimol	23.96	139	111	14
Fenarimol	23.96	219	107	10
Fenazaquin	22.45	145.1	91	24
Fenazaquin	22.45	145.1	117.1	12
Fenazaquin	22.45	160.1	145.1	8
Fenbuconazole	26.18	129	77.8	18
Fenbuconazole	26.18	129	102	14
Fenbuconazole	26.18	198.1	129.1	8
Fenchlorphos	14.11	124.9	47	12
Fenchlorphos	14.11	124.9	79	6
Fenitrothion	14.17	125	79	8
Fenitrothion	14.17	277	109	16
Fenitrothion	14.17	277	260	6
Fenoxaprop-P-ethyl	25.09	288	119	5
Fenoxaprop-P-ethyl	25.09	361	288	10
Fenoxycarb	22	116	44.1	16
Fenoxycarb	22	116	88	8
Fenoxycarb	22	255.1	186.1	10
Fenpropathrin	22.14	181	126.8	28
Fenpropathrin	22.14	181	151.9	22
Fenpropathrin	22.14	208	181	5
Fenpropimorph	14.75	128.1	70.1	12
Fenpropimorph	14.75	128.1	110.1	8
Fenpropimorph	14.75	303	128	5
Fenson	15.2	141	77	8
Fenson	15.2	268	77	20
Fenson	15.2	268	141	10
Fenthion	14.7	245.3	125	12
Fenthion	14.7	278	109	15
Fenthion	14.7	278	169	10
Fenvalerate(I+II)	29.025	125	89	18
Fenvalerate(I+II)	29.025	167	89	32
Fenvalerate(I+II)	29.025	167	125	10
Flonicamid	10.27	146	126	8
Flonicamid	10.27	174	69	36
Flonicamid	10.27	174	146	10
Fluazifop-p-butyl	18.34	282	91.1	18
Fluazifop-p-butyl	18.34	282	238.1	16
Fluazifop-p-butyl	18.34	383.1	282.1	14
Flucythrinate(I)	27.6	157	107.1	12
Flucythrinate(I)	27.6	199	157.1	8
Flucythrinate(I)	27.6	199.1	107.1	22
Flucythrinate(II)	28	157	107	12

Name	RT	Parent Mass	Product Mass	Collision Energy
Flucythrinate(II)	28	199	107	22
Flucythrinate(II)	28	199	157.1	8
Fludioxonil	17.44	153.7	127	8
Fludioxonil	17.44	248	127	26
Fludioxonil	17.44	248	153.8	10
Fluensulfone	10.39	108	88	10
Fluensulfone	10.39	119	92	10
Fluensulfone	10.39	226	206	15
Flufenacet	15.1	122.7	122	8
Flufenacet	15.1	151.1	95	24
Flufenacet	15.1	151.1	136.1	10
Flumetralin	17.11	143	107	25
Flumetralin	17.11	143	108	25
Flumetralin	17.11	157	129	20
Flumioxazin	28.79	354.1	176.1	16
Flumioxazin	28.79	354.1	312	8
Flumioxazin	28.79	354.1	326.1	8
Fluopicolide	20.64	209	182	17
Fluopicolide	20.64	347	172	25
Fluopyram	16.19	173	145	15
Fluopyram	16.19	396	223	10
Flupyradifurone	7.17	206.1	156.1	15
Flupyradifurone	7.17	275.1	206.1	15
Flurochloridone	15.3	311	174	15
Flurochloridone	15.3	311	187	15
Flurprimidol	13.56	107	52	18
Flurprimidol	13.56	269	107.1	14
Flurtamone	23.14	157	137	12
Flurtamone	23.14	198.9	157	16
Flurtamone	23.14	333.2	120.1	12
Flutianil	28.14	200.1	199.1	10
Flutianil	28.14	231.1	216.1	10
Flutianil	28.14	426	231.1	10
Flutolanil	17.56	173	95	28
Flutolanil	17.56	173	145	14
Flutolanil	17.56	281	173	10
Fonofos	12.46	137	109	6
Fonofos	12.46	246	109	14
Fonofos	12.46	246	137	6
HCH-alpha	11.32	180.9	145	8
HCH-alpha	11.32	182.8	146.7	12
HCH-alpha	11.32	218.8	146.6	20
HCH-beta	11.86	180.9	145	14
HCH-beta	11.86	218.7	146.6	18
HCH-beta	11.86	218.7	183	8

Name	RT	Parent Mass	Product Mass	Collision Energy
Heptachlorepoxide-cis	16.35	183.1	119	20
Heptachlorepoxide-cis	16.35	262.9	192.9	30
Heptachlorepoxide-cis	16.35	352.8	252.9	15
Heptachlorepoxide-trans	16.22	351	261	15
Heptachlorepoxide-trans	16.22	352.8	252.9	15
Heptachlorepoxide-trans	16.22	353	263	15
Heptenophos	9.99	124	62.9	28
Heptenophos	9.99	124	89	12
Heptenophos	9.99	250	124	10
Hexaconazole	17.24	213.9	123.5	28
Hexaconazole	17.24	213.9	159	18
Hexaconazole	17.24	231	175	10
Hexythiazox	16.64	184	59	20
Hexythiazox	16.64	184	149	6
Hexythiazox	16.64	227	149.1	8
Indoxacarb	29.53	203	106.1	22
Indoxacarb	29.53	203	134	20
Ipconazole	24.26	125	89.1	15
Ipconazole	24.26	249.1	125	20
Iprodione	21.6	314	245	10
Iprodione	21.6	315.7	247	10
Iprodione	21.6	315.7	273	8
Iprovalicarb(I)	17.72	118.9	117.1	8
Iprovalicarb(I)	17.72	134.1	42	20
Iprovalicarb(II)	17.93	118.9	117.1	8
Iprovalicarb(II)	17.93	134.1	42	20
Isocarbophos	15.23	121.1	65	14
Isocarbophos	15.23	136	69	30
Isocarbophos	15.23	136	108	12
Isofenphos-methyl	15.4	199	65	34
Isofenphos-methyl	15.4	199	121	10
Isofenphos-methyl	15.4	214.1	121.1	20
Isoprocarb	9.85	121.1	77	18
Isoprocarb	9.85	136.1	121.1	8
Isoprothiolane	17.37	204	85	28
Isoprothiolane	17.37	204	118	8
Isoprothiolane	17.37	290	118	12
Isoxathion	18.58	105.1	51	28
Isoxathion	18.58	105.1	77	18
Isoxathion	18.58	177	130	8
Jodofenfos	17.29	125	47	12
Jodofenfos	17.29	376.8	361.8	16
Jodofenfos	17.29	379	364	20
Kresoxim-methyl	17.8	130.9	130.1	10
Kresoxim-methyl	17.8	206	116	4

Name	RT	Parent Mass	Product Mass	Collision Energy
Kresoxim-methyl	17.8	206	131	10
Lindane	12	180.9	109	26
Lindane	12	180.9	145	14
Lindane	12	218.7	183	8
Linuron	14.45	159.8	133	12
Linuron	14.45	187	124	20
Linuron	14.45	248	61.1	8
Mandestrobin	21.81	160.1	91.1	20
Mandestrobin	21.81	160.1	119.1	5
Mandestrobin	21.81	192.1	160.1	5
Mefentrifluconazole	23	295	185.1	25
Mefentrifluconazole	23	295	232.1	15
Mefentrifluconazole	23	340	320	10
Metazachlor	15.95	133.1	117.3	22
Metazachlor	15.95	133.1	132.1	12
Metazachlor	15.95	209	132.1	16
Methacrifos	9.34	125	79	8
Methacrifos	9.34	180	93	10
Methacrifos	9.34	240	180	10
Metobromuron	13.3	169.7	91	14
Metobromuron	13.3	171.6	91.1	14
Metobromuron	13.3	258	61.1	8
Metolachlor	14.9	162.1	132.9	14
Metolachlor	14.9	238.1	132.8	26
Metolachlor	14.9	238.1	162.2	10
Metrafenone	24.71	393	346.9	20
Metrafenone	24.71	393	362.7	16
Metrafenone	24.71	393	377.6	10
Metribuzin	13.31	198	82.1	16
Metribuzin	13.31	198	110	10
Metribuzin	13.31	214	198	5
Mevinphos	8.85	127	95	14
Mevinphos	8.85	127	109	10
Mevinphos	8.85	192	127	10
Molinate	9.99	126.1	55.1	12
Molinate	9.99	126.1	83.1	6
Molinate	9.99	187.1	126.1	6
Myclobutanil	17.74	179	90	28
Myclobutanil	17.74	179	125	14
Myclobutanil	17.74	179	151.7	8
Nuarimol	20.53	139	111	12
Nuarimol	20.53	235	139	14
Ofurace	19.56	232.1	158.1	18
Ofurace	19.56	232.1	186.1	8
Oxadiargyl	19.11	213	150	5

Name	RT	Parent Mass	Product Mass	Collision Energy
Oxadiargyl	19.11	340	150	15
Oxadixyl	18.8	163.1	117	24
Oxadixyl	18.8	163.1	132.1	8
Oxychlordane	16.23	115	50.9	22
Oxychlordane	16.23	184.9	84.9	26
Oxychlordane	16.23	185	121	10
Paclobutrazol	16.73	125	89	18
Paclobutrazol	16.73	236	125	12
Paclobutrazol	16.73	236	167	10
Parathion	14.83	235	139	8
Parathion	14.83	291	81	20
Parathion	14.83	291	109	12
Parathion-methyl	13.5	124.9	47	12
Parathion-methyl	13.5	124.9	79	6
Parathion-methyl	13.5	263	109	12
Penconazole	15.75	158.9	89	28
Penconazole	15.75	248	157	22
Penconazole	15.75	248	192	12
Pencycuron	11.84	125	89	16
Pencycuron	11.84	125	99	16
Pendimethalin	15.57	252.1	161	14
Pendimethalin	15.57	252.1	162	8
Pendimethalin	15.57	252.1	191.3	8
Penflufen	19.7	141	84	10
Penflufen	19.7	274	141	10
Pentachloraniline	13.38	264.9	193.9	20
Pentachloraniline	13.38	266.9	194	20
Pentachloroanisole	11.79	277.86	234.88	20
Pentachloroanisole	11.79	279.86	236.88	20
Penthiopyrad	19.22	177	101	15
Penthiopyrad	19.22	302	177	15
Permethrin(I+II)	25.335	183.1	153	12
Permethrin(I+II)	25.335	183.1	165.1	12
Phenthoate	16	246	121	8
Phenthoate	16	274	121	10
Phorate-sulfone	14.72	153	96.9	10
Phorate-sulfone	14.72	199	143	10
Phorate-sulfoxide	14.74	96.9	65	16
Phorate-sulfoxide	14.74	125	97	6
Phorate-sulfoxide	14.74	153	97	10
Phosalone	22.96	182	74.8	30
Phosalone	22.96	182	111	14
Phosalone	22.96	367	182	5
Phosmet	21.7	160	50.9	34
Phosmet	21.7	160	76.9	22

Name	RT	Parent Mass	Product Mass	Collision Energy
Phosmet	21.7	160	133	10
Picolinafen	22.35	145	95	12
Picolinafen	22.35	238	145.1	22
Picolinafen	22.35	376.1	238.7	12
Picoxystrobin	17.24	145.1	102.1	25
Picoxystrobin	17.24	145.1	115.1	15
Picoxystrobin	17.24	145.1	130	15
Piperonylbutoxide	21.36	176.1	103.1	22
Piperonylbutoxide	21.36	176.1	117	18
Piperonylbutoxide	21.36	176.1	131.1	12
Pirimicarb	12.72	166.1	55	18
Pirimicarb	12.72	166.1	96	12
Pirimicarb	12.72	238.1	166.1	10
Pirimiphos-ethyl	15.52	304	168.1	12
Pirimiphos-ethyl	15.52	318.1	166.1	12
Pirimiphos-ethyl	15.52	318.1	182.1	10
Pirimiphos-methyl	14.06	290.1	125	20
Pirimiphos-methyl	14.06	290.1	233	8
Pirimiphos-methyl	14.06	305.1	180.1	8
Profenofos	17.5	296.7	268.9	10
Profenofos	17.5	336.9	266.9	12
Profenofos	17.5	336.9	308.9	8
Propachlor	10.54	120	50.9	35
Propachlor	10.54	120	77	15
Propachlor	10.54	176.1	57.1	10
Propham	9.21	92.9	65.9	12
Propham	9.21	137	93	8
Propham	9.21	179.1	93.1	14
Propiconazole(I+II)	20.1175	172.9	74	38
Propiconazole(I+II)	20.1175	172.9	109	26
Propiconazole(I+II)	20.1175	259	173	15
Propyzamide	12.14	172.9	74	38
Propyzamide	12.14	172.9	109	26
Propyzamide	12.14	172.9	145	14
Proquinazid	21.21	288	245	15
Proquinazid	21.21	330	288	5
Prothiofos	17.39	266.7	220.9	18
Prothiofos	17.39	266.7	238.9	8
Prothiofos	17.39	308.9	239	14
Pyraclofos	24.93	194	138	18
Pyraclofos	24.93	360	194.1	12
Pyraflufen-ethyl	20.59	349	238	16
Pyraflufen-ethyl	20.59	349	266.1	10
Pyraflufen-ethyl	20.59	412	349	12
Pyrazophos	23.99	221	148.7	14

Name	RT	Parent Mass	Product Mass	Collision Energy
Pyrazophos	23.99	221	193.1	8
Pyrazophos	23.99	231.9	204.1	10
Pyridaben	25.4	147.1	117.1	20
Pyridaben	25.4	147.1	119.1	8
Pyridaben	25.4	147.1	132.1	12
Pyridalyl	28	163.8	146.1	12
Pyridalyl	28	204	148.1	18
Pyridalyl	28	204	176.1	10
Pyridaphenthion	21.45	199	77.1	24
Pyridaphenthion	21.45	199	92.1	14
Pyridaphenthion	21.45	340	199.1	8
Pyrimethanil	12.38	198.1	117.9	30
Pyrimethanil	12.38	198.1	157.6	18
Pyrimethanil	12.38	198.1	182.9	14
Pyriproxyfen	23.3	136.1	78	20
Pyriproxyfen	23.3	136.1	96	10
Pyriproxyfen	23.3	226.1	186.1	12
Quinalphos	16.37	146	118.1	8
Quinalphos	16.37	157.1	102	22
Quinalphos	16.37	157.1	129	14
Quinoxyfen	20.05	237	208	26
Quinoxyfen	20.05	271.8	237.1	12
Quinoxyfen	20.05	307	237	18
Quintozene	12.22	142	107	25
Quintozene	12.22	213.9	179	10
Quintozene	12.22	294.9	236.9	15
Sedaxane	24.56	130.1	77.1	25
Sedaxane	24.56	159.1	139	10
Sedaxane	24.56	172.1	130.1	10
Silafluofen	28.18	179.1	151.1	10
Silafluofen	28.18	258.1	181.1	16
Silafluofen	28.18	258.1	243.1	14
Simazine	11.67	172.7	138	6
Simazine	11.67	172.7	172.2	8
Simazine	11.67	186	91	8
Spiromesifen	21.7	254.1	209.1	10
Spiromesifen	21.7	272.1	254.2	8
Sulfotep	11.11	202	145.9	10
Sulfotep	11.11	265.9	145.9	15
Sulfotep	11.11	322	202	10
Tebuconazole	20.6	125	89	16
Tebuconazole	20.6	125	99	16
Tebuconazole	20.6	250	125	20
Tebufenpyrad	22.35	276.1	171	10
Tebufenpyrad	22.35	318.1	131.1	14

Name	RT	Parent Mass	Product Mass	Collision Energy
Tebufenpyrad	22.35	318.1	145.1	14
Tefluthrin	12.42	177	127	14
Tefluthrin	12.42	177	137	16
Tefluthrin	12.42	197	141.1	10
Terbuthylazine	12.28	214.1	104	16
Terbuthylazine	12.28	214.1	132	10
Tetrachlorvinphos	17	109	79	6
Tetrachlorvinphos	17	328.9	109	18
Tetrachlorvinphos	17	330.8	109	18
Tetraconazole	14.9	100.9	51	10
Tetraconazole	14.9	171	136	10
Tetraconazole	14.9	336	204	28
Tetradifon	22.8	159	74.8	32
Tetradifon	22.8	159	111	20
Tetradifon	22.8	159	131	10
Tefluthrin	12.42	177	127	14
Tefluthrin	12.42	177	137	16
Tefluthrin	12.42	197	141.1	10
Tetrasul	19.81	251.9	173	34
Tetrasul	19.81	251.9	181.9	32
Tetrasul	19.81	251.9	216.9	22
Thiobencarb	14.94	72	44	6
Thiobencarb	14.94	100.1	44	10
Thiobencarb	14.94	100.1	72	6
Thiometon	11.47	125	79	8
Thiometon	11.47	158	125	10
Tioxazafen	15.37	228	111	10
Tioxazafen	15.37	228	119.1	10
Tolclofos-methyl	13.55	265	219.9	20
Tolclofos-methyl	13.55	265	250	12
Tolclofos-methyl	13.55	266.8	252	12
Tralomethrin	29.79	171.9	93.1	10
Tralomethrin	29.79	173.8	93.1	8
Tralomethrin	29.79	181	152	22
Triadimefon	14.8	208	111	20
Triadimefon	14.8	208	126.7	12
Triadimefon	14.8	208	180.8	8
Trichloronate	15.44	268.9	222.9	20
Trichloronate	15.44	270.8	224.9	22
Trichloronate	15.44	297	269	12
Tricyclazole	17.37	162	84.9	18
Tricyclazole	17.37	162	133.9	8
Trifloxystrobin	19.87	116.1	89	8
Trifloxystrobin	19.87	186	145	10
Trifloxystrobin	19.87	222	190	5

Name	RT	Parent Mass	Product Mass	Collision Energy
Triflumizole	16.54	179	144	14
Triflumizole	16.54	206	179	14
Triflumizole	16.54	206	186	8
Trifluralin	10.74	306.1	159.7	20
Trifluralin	10.74	306.1	206	10
Trifluralin	10.74	306.1	264.1	8
Triflusulfuron-methyl	9.73	237	208	8
Triflusulfuron-methyl	9.73	237	222	15
Triticonazole	22.95	217	167	18
Triticonazole	22.95	235.1	181.9	12
Triticonazole	22.95	235.1	217.1	8
Tritosulfuron	9.71	145	95	5
Tritosulfuron	9.71	161	141	5
Valifenalate	23.7	116.1	98.1	5
Valifenalate	23.7	155.1	139	20
Valifenalate	23.7	158.1	98.1	10
Vinclozolin	13.44	198	145	15
Vinclozolin	13.44	285	212	5

Appendix 1b. MRM transitions for LC-MS/MS

Name	RT	ESI mode	Parent Mass	Product Mass	Collision Energy
1-Naphthylacetamide	3.52	Positive	185.8	141	15
1-Naphthylacetamide	3.52	Positive	186.1	115.1	35
3-hydroxycarbofuran	2.61	Positive	238	163	13
3-hydroxycarbofuran	2.61	Positive	238	181	9.5
Acetamiprid	2.65	Positive	223	126	17
Acetamiprid	2.65	Positive	223	56	9.5
Aldicarb-sulfone	1.97	Positive	240.4	148.18	13
Aldicarb-sulfone	1.97	Positive	240.4	86.3	21
Aldicarb-sulfone	1.97	Positive	240.1	223.3	20
Aldicarb-sulfoxide	1.91	Positive	223.95	131.98	10
Aldicarb-sulfoxide	1.91	Positive	223.95	89.2	21
Ametoctradin	6.58	Positive	276	149	38
Ametoctradin	6.58	Positive	276	176	30
Amidosulfuron	4.13	Positive	370	218	25
Amidosulfuron	4.13	Positive	370	261	15
Amisulbrom	6.9	Positive	466	227	13
Amisulbrom	6.9	Positive	466	148	30
Asulam	1.91	Positive	231	92	22
Asulam	1.91	Positive	231	156	9
Atrazine	4.54	Positive	216	174	15
Atrazine	4.54	Positive	216	104	24.5
Azimsulfuron	4.56	Positive	425.2	182.1	15
Azimsulfuron	4.56	Positive	425.2	156.1	15
Azinphos-methyl	4.9	Positive	318	261	5.5
Azinphos-methyl	4.9	Positive	318	132	11
Azoxystrobin	5.14	Positive	404	372	15
Azoxystrobin	5.14	Positive	404	344	21
Benalaxyl	6.29	Positive	326	148	19
Benalaxyl	6.29	Positive	326	208	14.5
Bendiocarb	3.83	Positive	224	167	7.5
Bendiocarb	3.83	Positive	224	109	14
Bensulfuron-methyl	4.9	Positive	411	149	17.5
Bensulfuron-methyl	4.9	Positive	411	182	17.5
Bifenazate	5.69	Positive	301	170	17
Bifenazate	5.69	Positive	301	198	8
Bifenthrin	8.3	Positive	440	181	10
Bifenthrin	8.3	Positive	440	166	35
Bispyribac	5.33	Positive	431	243	34
Bispyribac	5.33	Positive	431	275.1	25
Bispyribac	5.33	Positive	431	413.2	18
Bitertanol	6.53	Positive	338	70	5
Bitertanol	6.53	Positive	338	268	8.5
Bixafen	6.15	Positive	414	394	15
Bixafen	6.15	Positive	414	266	25
Boscalid	5.39	Positive	343	271	24
Boscalid	5.39	Positive	343	307	12.5
Bromadiolone	7.09	Positive	509	251.2	20
Bromadiolone	7.09	Positive	511	251.2	20
Bromadiolone	7.09	Positive	510.9	276.9	20

Bromadiolone	7.09	Positive	510.9	250.9	20
Bromuconazole	5.63	Positive	377.9	159	17.5
Bromuconazole	5.63	Positive	377.9	70	9
Bupirimate	5.62	Positive	317	166	23
Bupirimate	5.62	Positive	317	108	25
Buprofezin	6.97	Positive	306	116	14
Buprofezin	6.97	Positive	306	201	8
Butralin	7.53	Positive	296	240	11
Butralin	7.53	Positive	296	222	19
Carbaryl	4.09	Positive	202	145	7
Carbaryl	4.09	Positive	202	127	26.5
Carbendazim	2.01	Positive	192	160	13
Carbendazim	2.01	Positive	192	105	31.5
Carbetamide	3.51	Positive	237	192	5
Carbetamide	3.51	Positive	237	72	20
Carboxin	4.04	Positive	236	143	11
Carboxin	4.04	Positive	236	93	27.5
Carfentrazone-ethyl	6.14	Positive	412.2	346	20
Carfentrazone-ethyl	6.14	Positive	412.2	366	17
Chlorantraniliprole	4.92	Positive	484.3	285	15
Chlorantraniliprole	4.92	Positive	484	453	15
Chlorfluazuron	7.71	Positive	540	158	17
Chlorfluazuron	7.71	Positive	540	383	19.5
Chlorotoluron	4.38	Positive	213	72	20
Chlorotoluron	4.38	Positive	213	140	20
Chlorsulfuron	4.11	Positive	358	167	16.5
Chlorsulfuron	4.11	Positive	358	141	14.5
Chromafenozide	5.71	Positive	395	175	17
Chromafenozide	5.71	Positive	395	339.2	5
Cinidon-ethyl	7.04	Positive	411	348	25
Cinidon-ethyl	7.04	Positive	411	107	35
Cinosulfuron	3.49	Positive	414	183	20
Cinosulfuron	3.49	Positive	414	215	20
Clethodim	6.87	Positive	360	166	24.5
Clethodim	6.87	Positive	360	164	17.5
Clethodim-sulfoxide	3.67/4.92	Positive	376.2	206.1	12
Clethodim-sulfoxide	3.67/4.92	Positive	376.2	164.1	16
Clethodim-sulfoxide	3.67/4.92	Positive	376.2	298.1	11
Clodinafop-propargyl	6.14	Positive	350	266	12
Clodinafop-propargyl	6.14	Positive	350	91	26
Clofentezine	6.52	Positive	303	138	11.5
Clofentezine	6.52	Positive	303	102	30
Coumaphos	6.3	Positive	363	227	35
Coumaphos	6.3	Positive	363	306.9	25
Cyantraniliprole	4.24	Positive	475	286	12
Cyantraniliprole	4.24	Positive	475	177	41
Cyazofamid	5.92	Positive	325	108	9.5
Cyazofamid	5.92	Positive	325	217	12.5
Cycloxydim	6.77	Positive	326	280	8
Cycloxydim	6.77	Positive	326	182	20
Cyflufenamid	6.5	Positive	413	295	12
Cyflufenamid	6.5	Positive	413	203	35
Cyflumetofen	6.9	Positive	465	173	23

Cyflumetofen	6.9	Positive	465	249	20
Cymiazol	2.38	Positive	219.2	77	50
Cymiazol	2.38	Positive	219.2	144	43
Cypermethrin	7.78	Positive	433	191	14
Cypermethrin	7.78	Positive	435	193	14
Demeton-S-methylsulfone	2.11	Positive	263	109	24
Demeton-S-methylsulfone	2.11	Positive	263	121	12
Demeton-S-methylsulfone	2.11	Positive	263	169	13.5
Desmedipham	4.82	Positive	318	154	21
Desmedipham	4.82	Positive	318	182	13
Diafenthiuron	7.56	Positive	385.3	278.1	25
Diafenthiuron	7.56	Positive	385.3	236.1	37
Dialifos	6.58	Positive	394	187	5
Dialifos	6.58	Positive	394	208	15
Diethofencarb	5.13	Positive	268	226	9
Diethofencarb	5.13	Positive	268	180	17
Difenacoum	7.72	Positive	445	179	35
Difenacoum	7.72	Positive	445	257	15
Difenoconazole	6.7	Positive	406	251	23.5
Difenoconazole	6.7	Positive	406	188	42
Dimethachlor	4.84	Positive	256	224	8
Dimethachlor	4.84	Positive	256	148	23
Dimethenamid	5.29	Positive	276	244	10
Dimethenamid	5.29	Positive	276	168	20
Diniconazole	6.64	Positive	326	70	16.5
Diniconazole	6.64	Positive	326	159	30.5
Dinotefuran	1.87	Positive	203	157	5
Dinotefuran	1.87	Positive	203	129	10
Disulfoton-sulfone	4.5	Positive	307	97	26
Disulfoton-sulfone	4.5	Positive	307	125.5	17
Disulfoton-sulfoxide	4.41	Positive	291	213	8
Disulfoton-sulfoxide	4.41	Positive	291	185	12
Ditalimphos	5.65	Positive	300	130	30
Ditalimphos	5.65	Positive	300	148	16
DMF	3.52	Positive	150	106.8	20
DMF	3.52	Positive	150	132.2	35
DMST	4.01	Positive	215	106.1	13
DMST	4.01	Positive	215	77	43
Dodemorph	4.06	Positive	282	98	18.5
Dodemorph	4.06	Positive	282	116	12.5
Dodine	5.77	Positive	228	60.3	20
Dodine	5.77	Positive	228	57.3	20
Emamectin_benzoate	6.3	Positive	886.7	158	295
Emamectin_benzoate	6.3	Positive	886.7	302	28
Epoxiconazole	5.86	Positive	330	121	17.5
Epoxiconazole	5.86	Positive	330	101	30
Ethiofencarb	4.25	Positive	226	107	11
Ethiofencarb	4.25	Positive	226	165	5.5
Ethiprole	5.325	Positive	397	350.8	16
Ethiprole	5.325	Positive	397	254.9	33
Ethirimol	2.87	Positive	210	140	19.5
Ethirimol	2.87	Positive	210	98	25.5
Ethofumesate	5.16	Positive	287	258.9	5

Ethofumesate	5.16	Positive	287	162.2	20
Ethoxysulfuron	5.49	Positive	399.1	261	16
Ethoxysulfuron	5.49	Positive	399.1	218	25
Etofenprox	8.21	Positive	394	177	13.5
Etofenprox	8.21	Positive	394	135	22.5
Etoxazole	7.44	Positive	360	141	23.5
Etoxazole	7.44	Positive	360	177	12.5
Fenamidone	5.42	Positive	312.1	165	33
Fenamidone	5.42	Positive	312.1	160	13
Fenamiphos-sulfone	3.99	Positive	336	188	31
Fenamiphos-sulfone	3.99	Positive	336	266	50
Fenazaquin	7.8	Positive	307	161.1	14
Fenazaquin	7.8	Positive	307	57.4	20
Fenbuconazole	6	Positive	337	125	25
Fenbuconazole	6	Positive	337	70.2	16
Fenoxaprop-P-ethyl	6.94	Positive	362	288	14.5
Fenoxaprop-P-ethyl	6.94	Positive	362	119	22
Fenoxycarb	6.09	Positive	302	116	8
Fenoxycarb	6.09	Positive	302	88	13.5
Fenpicoxamid	6.83	Positive	615	239	22
Fenpicoxamid	6.83	Positive	615	515.2	12
Fenpicoxamid-sulfone	4.77	Positive	325.3	268.9	11
Fenpicoxamid-sulfone	4.77	Positive	325.3	296.9	7
Fenpropidin	4.4	Positive	274	147	23.5
Fenpropidin	4.4	Positive	274	117	30.5
Fenpyrazamine	5.58	Positive	332	230	15
Fenpyrazamine	5.58	Positive	332	216	25
Fenpyroximate	7.55	Positive	422	366	15.5
Fenpyroximate	7.55	Positive	422	135	28.5
Fenthion	6.26	Positive	279	169	15.5
Fenthion	6.26	Positive	279	105	20.5
Fenthion-oxon	4.97	Positive	263	216	20
Fenthion-oxon	4.97	Positive	263	231	30
Fenthion-oxon-sulfone	2.7	Positive	295	217	20
Fenthion-oxon-sulfone	2.7	Positive	295	104.1	33
Fenthion-oxon-sulfoxide	2.59	Positive	279.09	264	15
Fenthion-oxon-sulfoxide	2.59	Positive	279.09	104	20
Fenthion-sulfone	4.2	Positive	328	125.1	22
Fenthion-sulfone	4.2	Positive	328	279	22
Fenthion-sulfone	4.2	Positive	328	311	7
Fenthion-sulfoxide	4.02	Positive	295	280	17
Fenthion-sulfoxide	4.02	Positive	295	109.2	26
Fipronil-sulfone	6.38	Negative	451	415	15
Fipronil-sulfone	6.38	Negative	451	282	25
Florpyrauxifen-benzyl	6.6	Positive	439	91.2	16
Florpyrauxifen-benzyl	6.6	Positive	439	65.3	36
Fluazifop-p-butyl	7.01	Positive	384	282	18
Fluazifop-p-butyl	7.01	Positive	384	254	17.5
Flufenacet	5.81	Positive	364	152	17
Flufenacet	5.81	Positive	364	194	9
Fluopicolide	5.49	Positive	383	173	20
Fluopicolide	5.49	Positive	383	175	20
Fluopyram	5.72	Positive	397	173	30

Fluopyram	5.72	Positive	397	208	22
Fluoxastrobin	5.76	Positive	459.2	427.1	17
Fluoxastrobin	5.76	Positive	459.2	188	45
Flurochloridone	5.62	Positive	312	292	19
Flurochloridone	5.62	Positive	312	89	22
Flurprimidol	5.54	Positive	313	270	25
Flurprimidol	5.54	Positive	313	189	51
Flurtamone	5.2	Positive	334	247	25
Flurtamone	5.2	Positive	334	178	45
Flutianil	6.22	Positive	427	192	23
Flutianil	6.22	Positive	427	411	19
Flutolanil	5.46	Positive	324	242	18.5
Flutolanil	5.46	Positive	324	262	11
Fluxapyroxad	5.51	Positive	382	342	15
Fluxapyroxad	5.51	Positive	382	362	10
Fonofos	6.29	Positive	247	109	20
Fonofos	6.29	Positive	247	137	10
Foramsulfuron	4.06	Positive	453	182	19
Foramsulfuron	4.06	Positive	453	139	39
Forchlorfenuron	4.66	Positive	248	129	15
Forchlorfenuron	4.66	Positive	248	155	14
Fosthiazate	4.31	Positive	284.4	104.1	25
Fosthiazate	4.31	Positive	284.4	228.2	30
Furathiocarb	6.99	Positive	383	195	15
Furathiocarb	6.99	Positive	383	252	10
Halosulfuron-methyl	5.75	Positive	435	83	43
Halosulfuron-methyl	5.75	Positive	435	182	20
Haloxyfop	6.36	Positive	362	316	12
Haloxyfop	6.36	Positive	360	288	12
Heptenophos	4.78	Positive	251	127.1	14
Heptenophos	4.78	Positive	251	125	12
Hexythiazox	7.35	Positive	353	228	14.5
Hexythiazox	7.35	Positive	353	168	23.5
Imazalil	3.93	Positive	297	159	16.5
Imazalil	3.93	Positive	297	201	13
Imazamox	2.95	Positive	306	193	20
Imazamox	2.95	Positive	306	246	17.5
Imazaquin	3.92	Positive	312	199	24
Imazaquin	3.92	Positive	312	267	21.5
Imazosulfuron	5.37	Positive	413	153	12
Imazosulfuron	5.37	Positive	413	257.9	23
Imidacloprid	2.42	Positive	256	209	13.5
Imidacloprid	2.42	Positive	256	175	16.5
Indoxacarb	6.75	Positive	528	293	12
Indoxacarb	6.75	Positive	528	150	23.5
Iodosulfuron-methyl-sodium	4.89	Positive	530.07	163.1	13
Iodosulfuron-methyl-sodium	4.89	Positive	530.07	390	21
Iprodione	6.05	Positive	330	245	12
Iprodione	6.05	Positive	330	101	25
Iprovalicarb	5.7	Positive	321	119	14
Iprovalicarb	5.7	Positive	321	203	7

Isoprothiolane	5.46	Positive	291	231	10
Isoprothiolane	5.46	Positive	291	189	20
Isoproturon	4.64	Positive	207	72	11.5
Isoproturon	4.64	Positive	207	165	12
Isopyrazam	6.69	Positive	360.3	243.9	20
Isopyrazam	6.69	Positive	360.3	320	20
Isoxaflutole	4.66	Positive	360	251	16
Isoxaflutole	4.66	Positive	360	220	37
Malaoxon	3.88	Positive	315	127	10
Malaoxon	3.88	Positive	315	99	20
Malathion	5.44	Positive	331	127	10
Malathion	5.44	Positive	331	99	18
Mandestrobin	6.28	Positive	314.4	192	7
Mandestrobin	6.28	Positive	314.4	160	17
Mandipropamid	5.41	Positive	412	328	10
Mandipropamid	5.41	Positive	412	125	39
Mefentrifluconazole	6.42	Positive	398.1	70.3	17
Mefentrifluconazole	6.42	Positive	398.1	182	25
Mepanipyrim	5.68	Positive	224	106	20
Mepanipyrim	5.68	Positive	224	77	49
Metaflumizone	7.15	Negative	505.1	302.1	25
Metaflumizone	7.15	Negative	505.1	328	15
Metalaxyl	4.66	Positive	280	192	16.5
Metalaxyl	4.66	Positive	280	220	12.5
Metconazole	6.49	Positive	320	125	32.5
Metconazole	6.49	Positive	320	70	14.5
Methiocarb-sulfone	2.72	Positive	275	107	33.5
Methiocarb-sulfone	2.72	Positive	275	122	14.5
Methiocarb-sulfone	2.72	Positive	275	201	7
Methiocarb-sulfoxide	2.48	Positive	242	122	23
Methiocarb-sulfoxide	2.48	Positive	242	185	20
Methoxyfenozide	5.51	Positive	369	149	11.5
Methoxyfenozide	5.51	Positive	369	313	5
Metobromuron	4.45	Positive	259	170	15.5
Metobromuron	4.45	Positive	259	148	13
Metolachlor	5.92	Positive	284	176	25
Metolachlor	5.92	Positive	284	252	14
Metosulam	4	Positive	417.9	174.9	20
Metosulam	4	Positive	417.9	140	40
Metrafenone	6.56	Positive	411	229	14
Metrafenone	6.56	Positive	409	227	27
Metsulfuron-methyl	3.79	Positive	382	167	14
Metsulfuron-methyl	3.79	Positive	382	199	27
Mevinphos	2.62	Positive	225	127	13
Mevinphos	2.62	Positive	225	193	6
Milbemectin_A4	8.14	Positive	525.5	109	19
Milbemectin_A4	8.14	Positive	525.5	145	34
Milbemectin_A4	8.14	Positive	526	161	26
Molinate	5.55	Positive	188	126	12
Molinate	5.55	Positive	188	55	23
Monolinuron	4.21	Positive	215	126	17
Monolinuron	4.21	Positive	215	148	13
Napropamide	5.85	Positive	272	129	14

Napropamide	5.85	Positive	272	171	18
Nicosulfuron	3.67	Positive	411	182	18
Nicosulfuron	3.67	Positive	411	213	16
Nitenpyram	1.95	Positive	271	189	10.5
Nitenpyram	1.95	Positive	271	130	8
Novaluron	6.86	Positive	493	158	20
Novaluron	6.86	Positive	493	141	50
Ofurace	3.87	Positive	282	160	22
Ofurace	3.87	Positive	282	236	14
Oxadiargyl	6.47	Positive	341	223	15
Oxadiargyl	6.47	Positive	341	258	10
Oxathiapiprolin	5.44	Positive	540.3	500.1	21
Oxathiapiprolin	5.44	Positive	540.3	163	39
Oxycarboxin	2.91	Positive	268	175	13
Oxycarboxin	2.91	Positive	268	147	24
Oxyfluorfen	6.38	Positive	362	316	15
Oxyfluorfen	6.38	Positive	362	237	25
Penconazole	6.27	Positive	284	159	27.5
Penconazole	6.27	Positive	284	173	16.5
Pencycuron	6.62	Positive	329	125	20
Pencycuron	6.62	Positive	329	218	13.5
Pendimethalin	7.37	Positive	282.1	212	10
Pendimethalin	7.37	Positive	282.1	194	10
Penflufen	6.18	Positive	318	233.9	15
Penflufen	6.18	Positive	318	141	30
Penoxsulam	4.16	Positive	484	164	30
Penoxsulam	4.16	Positive	484	195	25
Penthiopyrad	6.26	Positive	360	177	37
Penthiopyrad	6.26	Positive	360	256	19
Pethoxamide	5.82	Positive	296.2	131	20
Pethoxamide	5.82	Positive	296.2	116	40
Phenmedipham	4.93	Positive	318	168	11
Phenmedipham	4.93	Positive	318	136	20
Phorate-sulfoxide	4.4	Positive	277	198.7	10
Phorate-sulfoxide	4.4	Positive	277	142.7	20
Phosmet	4.93	Positive	335	133	36
Phosmet	4.93	Positive	335	160	17
Phosmet-oxon	3.28	Positive	302	160	21
Phosmet-oxon	3.28	Positive	302	133	31
Phoxim	6.43	Positive	299	129	9
Phoxim	6.43	Positive	299	153	6
Picoxystrobin	6.06	Positive	368	145	18
Picoxystrobin	6.06	Positive	368	205	6
Piperonylbutoxide	7.12	Positive	356.4	119	26
Piperonylbutoxide	7.12	Positive	356.4	177	7
Pirimicarb	3.11	Positive	239	72.1	16
Pirimicarb	3.11	Positive	239	182.3	25
Pirimiphos-methyl	6.39	Positive	306	164	20
Pirimiphos-methyl	6.39	Positive	306	108	20
Prochloraz	6.33	Positive	376	308	10.5
Prochloraz	6.33	Positive	376	266	16.5
Profoxydim	7.74	Positive	466	280	10
Profoxydim	7.74	Positive	466	180	20

Propachlor	4.63	Positive	212	170	13
Propachlor	4.63	Positive	212	94.1	25
Propamocarb	1.78	Positive	189	102	13
Propamocarb	1.78	Positive	189	74	23
Propaquizafop	7.06	Positive	444	371	12
Propaquizafop	7.06	Positive	444	299	31
Propargite	7.48	Positive	368	231	9.5
Propargite	7.48	Positive	368	175	15
Propham	4.47	Positive	180	138	5
Propham	4.47	Positive	180	120	15
Propiconazole	6.38	Positive	342	159	20
Propiconazole	6.38	Positive	342	69	20
Propoxur	3.8	Positive	210.3	111.2	13
Propoxur	3.8	Positive	210.3	168.3	30
Propyzamide	5.48	Positive	256	190	13
Propyzamide	5.48	Positive	256	145	35
Prosulfocarb	6.89	Positive	252	91	20
Prosulfocarb	6.89	Positive	252	128	10
Pymetrozine	1.66	Positive	218	105	15
Pymetrozine	1.66	Positive	218	79	20
Pyraclofos	6.48	Positive	360.9	138	40
Pyraclofos	6.48	Positive	360.9	256.9	21
Pyraclostrobin	6.44	Positive	388	163	18.5
Pyraclostrobin	6.44	Positive	388	194	7.5
Pyridate	8.01	Positive	379	207	17
Pyridate	8.01	Positive	379	351	8.5
Pyrimethanil	4.69	Positive	200	107	19.5
Pyrimethanil	4.69	Positive	200	82	20.5
Pyriofenone	6.57	Positive	366	209	10
Pyriofenone	6.57	Positive	366	186	10
Pyriproxyfen	7.22	Positive	322	96.2	14
Pyriproxyfen	7.22	Positive	322	184.9	22
Pyroxsulam	3.74	Positive	435	195	29
Pyroxsulam	3.74	Positive	435	124	39
Quinmerac	2.86	Positive	222.3	204	12
Quinmerac	2.86	Positive	222.3	141.1	30
Quinoxyfen	7.31	Positive	308	161.9	47
Quinoxyfen	7.31	Positive	308	197	31
Quizalofop	6.19	Negative	343	271	22
Quizalofop	6.19	Negative	345	273	22
Rotenone	6.01	Positive	395	213	20.5
Rotenone	6.01	Positive	395	192	21.5
Simazine	3.81	Positive	202	124	17
Simazine	3.81	Positive	202	132	32
Sintofen	4.4	Positive	375.1	234	24
Sintofen	4.4	Positive	375.1	208	38
Spinetoram_major	5.95	Positive	748.5	142	28
Spinetoram_major	5.95	Positive	748.5	98	34
Spinosad_A	5.67	Positive	733	142	21.5
Spinosad_A	5.67	Positive	733	189	30
Spinosad_D	5.92	Positive	747	142	22
Spinosad_D	5.92	Positive	747	189	27.5
Spirodiclofen	7.63	Positive	411	313	20

Spirodiclofen	7.63	Positive	411	71	20
Spirotetramat	5.73	Positive	374.2	330.2	10
Spirotetramat	5.73	Positive	374.2	302.2	15
Spirotetramat-cis-enol	4.29	Positive	302	117	31
Spirotetramat-cis-enol	4.29	Positive	302	216	30
Spirotetramat-cis-enol	4.29	Positive	302	270	20
Spirotetramat-cis-keto-hydroxy	4.76	Positive	318	214	25
Spirotetramat-cis-keto-hydroxy	4.76	Positive	318	268	15
Spirotetramat-enol-glucoside	2.35	Positive	464	216	42
Spirotetramat-enol-glucoside	2.35	Positive	464	270	32
Spirotetramat-enol-glucoside	2.35	Positive	464	302	12
Spirotetramat-mono-hydroxy	3.71	Positive	304	211	22
Spirotetramat-mono-hydroxy	3.71	Positive	304	254	15
Sulfotep	6.17	Positive	323	171	11
Sulfotep	6.17	Positive	323	115	25
Sulfoxaflor	2.81	Positive	278.3	174	8
Sulfoxaflor	2.81	Positive	278.3	154	25
Tebufenozide	6.04	Positive	353	133	17
Tebufenozide	6.04	Positive	353	297	7.5
Tebufenpyrad	7.09	Positive	334	145	24
Tebufenpyrad	7.09	Positive	334	117	31
Teflubenzuron	7.22	Negative	379	339	9
Teflubenzuron	7.22	Negative	379	195	20.5
Tepraloxydim	5.67	Positive	342	250	11.5
Tepraloxydim	5.67	Positive	342	166	20.5
Terbuthylazine	5.32	Positive	230.1	96.1	15
Terbuthylazine	5.32	Positive	230.1	174	13
Tetrachlorvinphos	6.12	Positive	367	127	14
Tetrachlorvinphos	6.12	Positive	367	240.7	19
Tetramethrin	7.02	Positive	332	164	25
Tetramethrin	7.02	Positive	332	135	15
Thiabendazole	2.16	Positive	202	175	19.5
Thiabendazole	2.16	Positive	202	131	27
Thiacloprid	2.92	Positive	253	126	17
Thiacloprid	2.92	Positive	253	90	30
Thiamethoxam	2.16	Positive	292	211	11.5
Thiamethoxam	2.16	Positive	292	132	18.5
Thiencarbazone-methyl	3.46	Positive	391	130	16
Thiencarbazone-methyl	3.46	Positive	391	359	5
Thifensulfuron-methyl	3.65	Positive	388	167	14
Thifensulfuron-methyl	3.65	Positive	388	205	25.5
Thiobencarb	6.57	Positive	258	125	15
Thiobencarb	6.57	Positive	258	89.2	39
Thiodicarb	4.22	Positive	355	88	8.5
Thiodicarb	4.22	Positive	355	108	11.5
Thiodicarb	4.22	Positive	355	149	8.5

Tioxazafen	6.59	Positive	229.4	111.1	12
Tioxazafen	6.59	Positive	229.4	82.9	10
Triallate	6.98	Positive	306	144.9	23
Triallate	6.98	Positive	306	86	24
Tribenuron-methyl	4.44	Positive	396.1	155	17
Tribenuron-methyl	4.44	Positive	396.1	181	22
Tricyclazole	3.08	Positive	190	136	25.5
Tricyclazole	3.08	Positive	190	109	31.5
Trifloxystrobin	6.77	Positive	409	186	11
Trifloxystrobin	6.77	Positive	409	145	36
Triflumizole	6.73	Positive	346	278	9
Triflumizole	6.73	Positive	346	73	12
Triflumuron	6.48	Positive	359.1	156.1	25
Triflumuron	6.48	Positive	359.1	138.8	20
Triflusulfuron-methyl	5.34	Positive	493	264	30
Triflusulfuron-methyl	5.34	Positive	493	238	30
Trinexapac-ethyl	4.72	Positive	253	69	12
Trinexapac-ethyl	4.72	Positive	253	207	10
Triticonazole	5.84	Positive	318	70	12
Triticonazole	5.84	Positive	318	125	30.5
Valifenalate	5.52	Positive	399	116	20
Valifenalate	5.52	Positive	399	155	31
Zoxamide	6.38	Positive	336	187	17
Zoxamide	6.38	Positive	336	132	11

Appendix 2. Recoveries, repeatability (RSD_r), internal reproducibility (RSDR), expanded uncertainty without recovery correction (U), expanded uncertainty with recovery correction (Cu) and Limit of Quantification (LOQ) for pesticides validated on rice based babyfood using QuEChERS.

		Spike level 0.0005 mg/kg					Spike level 0.001 mg/kg					
	Compound	Recovery %	RSD_r %	RSD_R %	U %	Cu %	Recovery %	RSD_r %	RSD_R, %	U %	Cu %	LOQ
GC	1-4-dimethylnaphthalene	97	17	19	40	20	95	15	16	34	16	0.0005
LC	1-Naphthylacetamide	98	20	19	40	20	103	14	15	32	16	0.0005
GC	2-Phenylphenol	110	14	15	38	16	104	19	20	42	21	0.0005
LC	3-hydroxycarbofuran	93	17	18	40	19	94	14	21	46	22	0.0005
LC	Acetamiprid	90	19	19	44	19	89	11	21	49	22	0.0005
GC	Acetochlor						99	13	14	29	15	0.001
GC	Aclonifen	112	12	11	34	11	108	9	12	30	12	0.0005
GC	Acrinathrin Sum	113	5	11	35	12	100	7	8	16	8	0.0005
LC	Aldicarb-sulfone	114	14	15	42	16	93	15	16	35	16	0.0005
LC	Aldicarb-sulfoxide						99	12	12	24	12	0.001
GC	Aldimorph1	53	14	17	101	17	62	8	19	84	19	0.0005
GC	Aldimorph2	60	10	15	86	16	64	8	18	81	19	0.0005
LC	Ametoctradin	95	18	20	42	20	101	15	16	32	16	0.0005
LC	Amidosulfuron	96	15	19	40	20	106	15	17	36	17	0.0005
LC	Amisulbrom	86	20	19	49	20	87	17	19	48	20	0.0005
LC	Asulam						97	20	19	40	20	0.001
GC	Atrazine	67	13	17	75	17	94	12	15	33	15	0.0005
LC	Atrazine	62	15	19	85	20	91	11	13	33	14	0.0005
LC	Azimsulfuron	125	11	11	55	12	116	14	14	43	14	0.0005
LC	Azinphos-methyl						99	10	18	36	18	0.001
GC	Azoxystrobin	106	6	7	19	7	99	6	7	15	8	0.0005
LC	Azoxystrobin	101	9	9	18	9	103	12	13	28	14	0.0005
GC	Benalaxyl	107	10	10	25	10	98	7	8	17	8	0.0005
LC	Benalaxyl	100	12	14	28	14	106	6	6	18	6	0.0005
GC	Bendiocarb	110	6	12	33	13	98	6	10	20	10	0.0005
LC	Bendiocarb	138	15	18	84	19	130	9	12	64	12	0.0005
GC	Benfluralin	96	6	16	35	17	91	7	8	24	8	0.0005
LC	Bensulfuron-methyl	124	11	13	54	13	116	9	10	37	10	0.0005
GC	Benzovindiflupyr	115	8	13	40	14	102	8	9	19	9	0.0005
GC	Bifenazate	106	13	16	35	17	92	9	11	28	11	0.0005
LC	Bifenazate	111	11	18	44	19	99	16	15	31	15	0.0005
GC	Bifenthrin	100	6	6	13	6	98	8	12	25	12	0.0005
LC	Bifenthrin	88	15	17	42	17	98	13	17	34	17	0.0005
GC	Biphenyl						86	20	20	50	21	0.001
LC	Bispyribac	93	11	19	43	20	94	13	13	28	13	0.0005
GC	Bitertanol	101	6	14	28	14	90	8	7	26	8	0.0005
LC	Bitertanol	104	16	20	41	20	97	14	28	57	28	0.0005

		Spike level 0.0005 mg/kg					Spike level 0.001 mg/kg					
	Compound	**Recovery %**	**RSD$_r$ %**	**RSD$_R$ %**	**U %**	**Cu %**	**Recovery %**	**RSD$_r$ %**	**RSD$_R$, %**	**U %**	**Cu %**	**LOQ**
GC	Bixafen	105	7	10	22	10	97	7	7	16	7	0.0005
LC	Bixafen	104	14	20	42	21	107	13	13	30	13	0.0005
GC	Boscalid	112	6	9	30	9	101	8	9	18	9	0.0005
LC	Boscalid	103	19	18	37	18	113	13	15	39	15	0.0005
LC	Bromadiolone						108	11	15	35	16	0.001
GC	Bromophos-ethyl	61	8	18	86	18	81	8	12	45	12	0.0005
GC	Bromopropylate	111	6	6	25	6	98	8	11	23	11	0.0005
LC	Bromuconazole	116	15	17	48	18	104	14	19	40	20	0.0005
GC	Bromuconazole						98	13	12	26	13	0.001
GC	Bupirimate						102	13	17	35	18	0.001
LC	Bupirimate	114	11	10	35	11	106	9	11	26	11	0.0005
LC	Buprofezin	100	12	11	23	12	98	11	14	29	14	0.0005
LC	Butralin	96	10	10	22	10	98	6	10	21	10	0.0005
LC	Carbaryl	109	8	9	25	9	105	9	11	25	11	0.0005
LC	Carbendazim	105	5	5	14	5	94	16	15	33	15	0.0005
LC	Carbetamide						99	20	20	42	21	0.001
GC	Carbosulfan	121	7	20	59	20	93	8	19	42	20	0.0005
GC	Carboxin	119	8	12	46	13	92	11	14	33	14	0.0005
LC	Carboxin	101	9	14	28	14	99	10	11	23	11	0.0005
GC	Carfentrazone-ethyl	109	6	6	22	6	102	4	5	12	6	0.0005
LC	Carfentrazone-ethyl						100	12	17	34	17	0.001
LC	Chlorantraniliprole	111	15	14	38	15	109	11	11	29	11	0.0005
GC	Chlordane-trans	90	10	13	34	13	88	6	11	33	11	0.0005
GC	Chlorfenapyr	110	12	20	47	21	99	13	17	35	17	0.0005
GC	Chlorfenson	76	7	17	59	17	87	8	11	35	12	0.0005
LC	Chlorfluazuron	95	17	20	43	21	102	13	16	33	16	0.0005
GC	Chlorobenzilate	109	5	7	23	7	100	6	10	20	10	0.0005
GC	Chloropropylate	105	4	4	13	4	99	3	4	9	4	0.0005
LC	Chlorotoluron	107	11	13	31	14	105	12	13	27	13	0.0005
GC	Chlorpropham	111	8	8	27	9	101	6	7	14	7	0.0005
GC	Chlorpyrifos-methyl	108	8	10	25	10	98	6	7	15	7	0.0005
LC	Chlorsulfuron	97	19	20	41	21	107	15	17	39	18	0.0005
GC	Chlorthal-dimethyl	108	9	9	25	9	98	7	9	19	9	0.0005
LC	Chromafenozide	101	13	19	40	20	106	10	15	33	15	0.0005
GC	Cinidon-ethyl	90	8	9	27	9	84	8	8	35	8	0.0005
LC	Cinidon-ethyl						88	10	15	38	15	0.001
LC	Cinosulfuron						97	10	17	36	18	0.001
LC	Clethodim	95	17	19	40	20	104	13	20	42	21	0.0005
LC	Clethodim-sulfoxide	138	16	17	84	17	124	15	16	58	16	0.0005
GC	Clodinafop-propargyl	103	6	11	24	12	95	6	7	18	7	0.0005
LC	Clodinafop-propargyl	90	13	17	39	17	100	8	11	23	11	0.0005
LC	Clofentezine	128	8	16	65	16	100	15	20	41	21	0.0005
GC	Clomazone	68	8	12	69	13	89	6	8	27	8	0.0005

		Spike level 0.0005 mg/kg					Spike level 0.001 mg/kg					
	Compound	**Recovery %**	**RSD_r %**	**RSD_R %**	**U %**	**Cu %**	**Recovery %**	**RSD_r %**	**RSD_R, %**	**U %**	**Cu %**	**LOQ**
GC	Coumaphos	111	8	13	34	13	95	7	11	25	11	0.0005
LC	Coumaphos	91	14	14	34	15	102	11	13	27	13	0.0005
LC	Cyantraniliprole	106	18	20	42	20	112	19	20	48	21	0.0005
LC	Cyazofamid						94	12	13	30	14	0.001
LC	Cycloxydim	125	16	20	65	21	122	17	15	55	16	0.0005
GC	Cyflufenamid	89	7	6	26	7	90	6	6	25	7	0.0005
LC	Cyflufenamid	90	19	20	46	21	93	15	17	37	17	0.0005
LC	Cyflumetofen	115	13	13	41	13	107	7	10	25	11	0.0005
GC	Cyflutrin	91	6	10	28	10	92	6	10	26	10	0.0005
LC	Cymiazol	106	18	19	41	20	99	20	19	39	19	0.0005
GC	Cypermethrin	88	17	18	44	18	95	5	5	14	5	0.0005
LC	Cypermethrin	89	11	13	34	13	100	15	16	34	17	0.0005
GC	Cyproconazole	69	8	12	67	12	85	10	9	36	10	0.0005
GC	Cyprodinil						102	8	13	26	13	0.001
GC	Dazomet	87	8	11	35	11	73	8	19	67	19	0.0005
GC	Deltamethrin						93	15	20	45	21	0.001
LC	Demeton-S-methylsulfone	80	14	16	51	17	86	20	19	48	20	0.0005
GC	Denatonium-benzoate	108	11	17	39	18	104	10	15	33	16	0.0005
LC	Desmedipham	132	14	13	70	14	118	11	10	42	11	0.0005
GC	Diafenthiuron						124	12	18	61	19	0.001
LC	Diafenthiuron	156	10				78	14				0.001
GC	Dialifos	105	5	5	14	5	95	6	7	18	7	0.0005
LC	Dialifos	108	15	20	44	21	105	13	17	37	17	0.0005
GC	Dichlobenil	104	11	19	41	20	104	13	13	27	13	0.0005
GC	Dichlofenthion	100	4	6	12	6	92	4	8	22	8	0.0005
GC	Dicloran	120	10	17	53	17	101	17	16	32	16	0.0005
GC	Dicrotophos						85	16	17	47	18	0.001
GC	Diethofencarb	111	13	13	35	13	104	7	12	25	12	0.0005
LC	Diethofencarb	102	15	19	39	19	109	11	14	34	15	0.0005
LC	Difenacoum	122	6	15	54	16	111	4	8	27	8	0.0005
LC	Difenoconazole	106	16	19	40	19	106	12	19	40	19	0.0005
GC	Difenoconazole	106	5	6	17	6	98	6	7	15	7	0.0005
GC	Diflufenican	102	3	4	9	4	93	4	6	19	6	0.0005
GC	Dimethachlor	104	6	8	18	8	97	5	5	12	5	0.0005
LC	Dimethachlor	117	20	19	52	19	114	8	9	33	9	0.0005
GC	Dimethenamid	103	5	6	13	6	99	5	5	11	5	0.0005
LC	Dimethenamid	104	8	7	17	8	104	11	14	29	14	0.0005
GC	Dimethomorph	105	5	7	19	8	96	6	9	19	9	0.0005
GC	Dimoxystrobin	113	6	8	31	8	106	4	4	15	4	0.0005
GC	Diniconazole	106	6	8	21	8	98	6	8	17	8	0.0005
LC	Diniconazole						89	19	20	48	21	0.001
LC	Dinotefuran	112	17	18	45	19	100	17	16	33	17	0.0005
GC	Disulfoton-sulfone	93	12	16	36	16	97	8	9	19	9	0.0005

		Spike level 0.0005 mg/kg					Spike level 0.001 mg/kg					
	Compound	**Recovery %**	**RSD_r %**	**RSD_R %**	**U %**	**Cu %**	**Recovery %**	**RSD_r %**	**RSD_R, %**	**U %**	**Cu %**	**LOQ**
LC	Disulfoton-sulfone	109	19	30	65	31	111	11	20	46	20	0.0005
LC	Disulfoton-sulfoxide	112	13	15	40	16	106	14	14	30	14	0.0005
LC	Ditalimphos	64	14	16	79	16	93	11	12	29	13	0.0005
LC	DMF	102	7	11	23	12	102	11	16	34	17	0.0005
LC	DMST	85	12	15	43	16	95	11	14	31	15	0.0005
LC	Dodemorph	118	19	18	51	19	110	15	19	44	20	0.0005
GC	Dodemorph	97	8	17	35	17	92	6	9	23	9	0.0005
LC	Dodine	110	20	19	44	20	92	18	17	38	17	0.0005
LC	Emamectin_benzoate	122	17	18	58	19	105	20	19	40	19	0.0005
GC	Endosulfan-alpha	95	8	15	32	15	94	7	13	29	13	0.0005
GC	Endosulfan-beta	109	10	12	30	12	102	14	14	29	14	0.0005
GC	Endosulfan-sulfate	115	8	9	36	10	104	6	9	21	10	0.0005
GC	Endrin-ketone						94	14	20	42	20	0.001
GC	EPN						99	14	20	41	20	0.001
GC	Epoxiconazole	113	4	6	29	6	99	7	9	20	10	0.0005
LC	Epoxiconazole	117	16				114	10				0.0005
GC	Ethalfluralin	87	14	16	42	16	90	5	7	26	8	0.0005
LC	Ethiofencarb	68	16	19	75	19	89	12	12	34	13	0.0005
LC	Ethiprole	105	13	18	38	18	101	13	14	28	14	0.0005
LC	Ethirimol						98	18	19	40	20	0.001
GC	Ethofumesate	107	8	11	27	11	101	6	6	12	6	0.0005
LC	Ethofumesate						111	17	17	41	17	0.001
LC	Ethoxysulfuron	81	15	20	56	21	93	13	14	32	15	0.0005
GC	Etofenprox	96	6	8	18	8	89	6	5	25	6	0.0005
LC	Etofenprox	77	16	19	59	19	90	11	12	33	13	0.0005
GC	Etoxazole	107	6	5	17	5	99	7	7	14	7	0.0005
LC	Etoxazole	89	11	12	33	13	99	5	6	11	6	0.0005
GC	Etridiazole	101	10	20	41	20	99	12	12	24	12	0.0005
GC	Famoxadone	109	12	12	31	13	95	8	8	20	9	0.0005
GC	Fenamidone	106	9	12	28	13	100	7	9	19	10	0.0005
LC	Fenamidone	94	16	18	39	19	103	12	12	25	12	0.0005
LC	Fenamiphos-sulfone	97	17	18	37	18	101	16	16	33	16	0.0005
GC	Fenarimol	114	6	10	35	11	98	4	5	10	5	0.0005
GC	Fenazaquin	105	6	9	20	9	88	6	7	28	7	0.0005
LC	Fenazaquin	80	10	12	47	12	88	12	14	38	14	0.0005
GC	Fenbuconazole	100	4	12	24	12	98	7	7	16	8	0.0005
LC	Fenbuconazole	105	11	21	46	22	107	15	18	39	18	0.0005
GC	Fenchlorphos	122	13	13	52	13	100	10	15	30	15	0.0005
GC	Fenhexamid						79	18	20	58	21	0.001
GC	Fenitrotion	119	5	6	40	6	103	8	9	19	9	0.0005
GC	Fenoxaprop-P-ethyl	113	6	6	29	7	100	5	4	9	4	0.0005
LC	Fenoxaprop-P-ethyl	101	13	14	29	14	97	10	12	25	12	0.0005
GC	Fenoxycarb						104	7	12	25	12	0.001

		Spike level 0.0005 mg/kg					Spike level 0.001 mg/kg					
	Compound	**Recovery %**	**RSD_r %**	**RSD_R %**	**U %**	**Cu %**	**Recovery %**	**RSD_r %**	**RSD_R, %**	**U %**	**Cu %**	**LOQ**
LC	Fenoxycarb	115	12	14	41	14	108	10	10	26	10	0.0005
LC	Fenpicoxamid	95	13	18	38	18	98	8	11	23	11	0.0005
LC	Fenpicoxamid-sulfone	113	16	18	46	19	108	11	12	30	12	0.0005
GC	Fenpropathrin	105	9	13	29	14	97	8	10	22	11	0.0005
LC	Fenpropidin	100	8	10	20	10	94	14	17	37	17	0.0005
GC	Fenpropimorph	100	6	7	15	8	95	6	8	19	8	0.0005
LC	Fenpyrazamine	95	10	18	38	18	100	9	10	20	10	0.0005
LC	Fenpyroximate	103	8	10	22	11	102	4	6	12	6	0.0005
GC	Fenson	77	7	11	52	11	88	8	12	35	13	0.0005
GC	Fenthion	115	14	13	41	14	105	18	17	35	17	0.0005
LC	Fenthion	101	10	19	39	20	102	14	16	33	16	0.0005
LC	Fenthion-oxon	110	11	11	30	11	103	6	10	21	10	0.0005
LC	Fenthion-oxon-sulfone	85	19	18	46	18	98	16	20	41	20	0.0005
LC	Fenthion-oxon-sulfoxide	93	16	15	34	15	91	8	20	46	21	0.0005
LC	Fenthion-sulfone	113	16	19	48	20	106	12	14	31	14	0.0005
LC	Fenthion-sulfoxide	104	12	13	28	13	103	10	11	23	11	0.0005
GC	Fenvalerate	88	6	14	38	14	92	5	9	25	9	0.0005
LC	Fipronil-sulfone	84	15	20	53	21	92	10	16	37	17	0.0005
GC	Flonicamid	111	6	8	26	8	92	7	7	22	7	0.0005
LC	Florpyrauxifen-benzyl	90	16	20	46	20	95	11	11	25	12	0.0005
GC	Fluazifop-P-butyl	81	8	16	50	16	89	8	10	30	10	0.0005
LC	Fluazifop-p-butyl	54	15	20	100	21	85	10	15	43	15	0.0005
GC	Flucythrinate	101	6	6	13	6	95	7	10	24	11	0.0005
GC	Fludioxonil	112	5	14	38	15	99	7	10	21	10	0.0005
GC	Fluensulfone	107	11	11	28	12	98	5	6	13	6	0.0005
GC	Flufenacet	104	8	11	24	11	98	6	6	12	6	0.0005
LC	Flufenacet	106	11	16	35	16	106	13	12	28	12	0.0005
GC	Flumetralin	99	7	7	15	8	93	4	8	22	8	0.0005
GC	Flumioxazin						109	13	19	43	20	0.001
GC	Fluopicolide	102	5	12	24	12	97	6	7	16	7	0.0005
LC	Fluopicolide	103	13	20	42	21	105	12	13	29	13	0.0005
GC	Fluopyram	102	7	8	17	8	97	4	5	12	5	0.0005
LC	Fluopyram	99	15	15	31	16	106	14	13	30	14	0.0005
LC	Fluoxastrobin	75	20	19	64	20	94	13	15	33	16	0.0005
GC	Flupyradifurone	81	15	20	56	21	88	13	13	35	13	0.0005
GC	Flurochloridone	108	9	11	28	11	98	7	8	17	8	0.0005
LC	Flurochloridone	96	17	28	58	29	91	19	18	42	19	0.0005
GC	Flurprimidol	101	6	6	12	6	97	5	5	12	5	0.0005
LC	Flurprimidol	95	13	20	41	20	99	14	13	27	13	0.0005
GC	Flurtamone	111	4	10	30	10	99	6	8	17	9	0.0005
LC	Flurtamone	106	10	16	35	16	106	8	10	24	10	0.0005
GC	Flutianil	113	8	9	32	10	100	6	9	19	10	0.0005
LC	Flutianil	102	13	17	36	18	104	9	11	23	11	0.0005

		Spike level 0.0005 mg/kg					Spike level 0.001 mg/kg					
	Compound	**Recovery %**	**RSD_r %**	**RSD_R %**	**U %**	**Cu %**	**Recovery %**	**RSD_r %**	**RSD_R, %**	**U %**	**Cu %**	**LOQ**
GC	Flutolanil	96	9	12	25	12	95	5	10	22	10	0.0005
LC	Flutolanil	102	11	11	22	11	97	12	12	25	12	0.0005
GC	Fluvalinate-tau	106	20	19	41	19	86	12	12	38	13	0.0005
LC	Fluxapyroxad	98	10	12	25	12	101	12	11	22	11	0.0005
GC	Fonofos	95	9	14	30	14	94	6	6	17	6	0.0005
LC	Fonofos	97	11	20	42	21	107	6	10	24	10	0.0005
LC	Foramsulfuron	123	14	15	55	15	108	15	16	36	16	0.0005
LC	Forchlorfenuron	116	12	13	41	13	112	9	8	30	9	0.0005
LC	Fosthiazate	109	8	10	27	10	104	7	10	22	10	0.0005
LC	Furathiocarb	103	10	13	28	14	98	9	15	31	15	0.0005
LC	Halosulfuron-methyl	103	13	20	41	20	110	10	11	30	12	0.0005
LC	Haloxyfop						101	14	19	39	19	0.001
GC	HCH-alpha	100	17	19	39	20	102	13	13	28	14	0.0005
GC	HCH-beta	96	7	8	19	9	97	7	9	20	10	0.0005
GC	Heptachlorepoxide-cis	95	15	17	36	17	94	14	17	37	17	0.0005
GC	Heptachlorepoxide-trans	106	9	14	32	15	96	11	11	23	11	0.0005
GC	Heptenophos	82	11	17	51	17	91	7	8	25	8	0.0005
LC	Heptenophos	62	19	20	87	21	92	9	11	28	11	0.0005
GC	Hexaconazole						119	21	24	63	25	0.001
LC	Hexythiazox	110	9	12	32	13	95	10	12	26	12	0.0005
LC	Imazalil	86	16	19	48	19	97	15	18	38	19	0.0005
LC	Imazamox						91	20	18	41	19	0.001
LC	Imazaquin	97	12	17	36	18	106	12	11	26	11	0.0005
LC	Imazosulfuron	97	16	16	34	17	103	11	13	27	13	0.0005
LC	Imidacloprid	80	19	18	55	19	102	11	11	22	11	0.0005
GC	Indoxacarb	109	10	12	31	12	97	11	11	23	11	0.0005
LC	Indoxacarb	118	12	19	54	20	106	15	17	37	18	0.0005
LC	Iodosulfuron-methyl-sodium						88	14	19	45	19	0.001
GC	Ipconazole	109	8	12	30	12	96	6	13	28	13	0.0005
GC	Iprodione						107	15	17	38	18	0.001
LC	Iprodione	114	17	20	50	21	106	16	19	40	19	0.0005
LC	Iprovalicarb	110	10	14	35	14	106	9	12	26	12	0.0005
GC	Iprovalicarb	125	10	10	55	10	102	11	11	23	11	0.0005
GC	Isocarbophos	94	13	17	37	18	89	9	11	32	12	0.0005
GC	Isofenphos-methyl	118	4	14	45	14	104	4	10	23	11	0.0005
GC	Isoprocarb	105	4	9	21	9	104	6	7	16	7	0.0005
GC	Isoprothiolane	115	8	9	34	9	103	14	15	32	16	0.0005
LC	Isoprothiolane	105	9	9	21	9	104	8	9	20	9	0.0005
LC	Isoproturon	101	10	11	24	12	104	10	12	26	12	0.0005
LC	Isopyrazam	100	15	15	30	15	101	13	12	24	12	0.0005
LC	Isoxaflutole	123	19	18	58	19	126	11	17	62	18	0.0005
GC	Isoxathion	109	4	4	19	4	90	5	6	23	7	0.0005
GC	Jodofenfos						86	7	15	43	16	0.001

		Spike level 0.0005 mg/kg					Spike level 0.001 mg/kg					
	Compound	**Recovery %**	**RSD_r %**	**RSD_R %**	**U %**	**Cu %**	**Recovery %**	**RSD_r %**	**RSD_R, %**	**U %**	**Cu %**	**LOQ**
GC	Kresoxim-methyl	108	11	16	37	17	101	8	14	29	15	0.0005
GC	Lindane	87	13	13	37	13	96	7	9	20	9	0.0005
GC	Linuron						101	16	19	39	20	0.001
LC	Malaoxon	97	9	17	34	17	104	11	12	26	12	0.0005
LC	Malathion	107	14	12	29	13	105	12	14	31	15	0.0005
GC	Mandestrobin	110	5	7	25	7	102	4	6	13	6	0.0005
LC	Mandestrobin	108	10	10	27	11	108	6	6	19	6	0.0005
LC	Mandipropamid	102	6	7	15	7	103	6	10	21	10	0.0005
GC	Mefentrifluconazole	109	7	9	26	9	98	5	8	17	8	0.0005
LC	Mefentrifluconazole	107	14	14	31	14	107	8	8	22	9	0.0005
LC	Mepanipyrim	112	17	17	43	17	103	12	16	32	16	0.0005
LC	Metaflumizone	89	14	19	46	20	102	20	19	39	19	0.0005
LC	Metalaxyl	109	10	10	28	11	104	9	9	21	9	0.0005
GC	Metazachlor	108	5	5	20	6	99	5	5	11	5	0.0005
LC	Metconazole	97	13	14	29	14	95	15	19	41	20	0.0005
GC	Methacrifos						98	17	17	35	17	0.001
LC	Methiocarb-sulfone	101	14	20	42	21	99	12	15	30	15	0.0005
LC	Methiocarb-sulfoxide	96	15	18	37	18	89	10	19	45	19	0.0005
LC	Methoxyfenozide	105	16	17	37	18	105	12	12	26	12	0.0005
GC	Metobromuron	77	11	18	61	19	93	15	15	33	15	0.0005
LC	Metobromuron	120	16	17	52	17	115	11	16	45	17	0.0005
GC	Metolachlor	104	5	5	13	5	99	5	5	11	5	0.0005
LC	Metolachlor	98	19	19	40	20	101	13	14	28	14	0.0005
LC	Metosulam	99	14	15	31	16	107	12	15	34	15	0.0005
GC	Metrafenone	106	18	16	36	17	99	8	8	18	9	0.0005
LC	Metrafenone	84	15	16	46	17	97	15	14	30	15	0.0005
GC	Metribuzin	113	5	6	29	7	101	5	7	15	7	0.0005
LC	Metsulfuron-methyl	53	17	18	102	19	87	12	12	36	13	0.0005
GC	Mevinphos	89	16	15	38	16	92	9	19	42	19	0.0005
LC	Mevinphos	64	19	19	83	19	81	9	18	52	18	0.0005
LC	Milbemectin_A4	119	13	18	54	19	111	16	15	39	16	0.0005
GC	Molinate	99	9	13	28	14	100	8	8	16	8	0.0005
LC	Molinate						94	15	19	41	19	0.001
LC	Monolinuron	66	13	13	73	13	90	11	14	34	14	0.0005
GC	Myclobutanil						101	10	16	34	17	0.001
LC	Napropamide	98	15	18	38	19	103	11	10	22	10	0.0005
LC	Nicosulfuron	88	16	15	40	16	97	16	18	38	19	0.0005
LC	Nitenpyram	100	17	20	41	21	93	18	19	42	20	0.0005
LC	Novaluron						83	15	16	48	17	0.001
GC	Nuarimol	94	8	19	42	20	93	8	10	26	10	0.0005
GC	Ofurace	83	8	8	37	8	91	9	11	29	11	0.0005
LC	Ofurace						88	17	18	44	18	0.001
GC	Oxadiargyl	110	14	14	35	14	98	9	9	19	9	0.0005

		Spike level 0.0005 mg/kg					Spike level 0.001 mg/kg					
	Compound	**Recovery %**	**RSD_r %**	**RSD_R %**	**U %**	**Cu %**	**Recovery %**	**RSD_r %**	**RSD_R, %**	**U %**	**Cu %**	**LOQ**
LC	Oxadiargyl	114	19	19	48	20	115	20	19	49	19	0.0005
GC	Oxadixyl	116	5	7	34	7	96	6	6	15	6	0.0005
LC	Oxathiapiprolin	110	11	15	36	15	101	10	10	21	10	0.0005
LC	Oxycarboxin						81	16	20	56	21	0.001
GC	Oxychlordane	96	11	11	25	12	91	9	11	29	11	0.0005
LC	Oxyfluorfen	99	16	16	33	17	110	7	7	24	7	0.0005
GC	Paclobutrazol	95	15	20	42	20	93	10	13	29	13	0.0005
GC	Parathion corrected	94	17	18	40	19	94	11	19	40	19	0.0005
GC	Parathion-methyl	113	5	5	27	5	97	5	6	14	6	0.0005
GC	Penconazole	116	8	16	46	17	97	11	17	35	17	0.0005
LC	Penconazole	97	15	20	42	21	110	16	20	45	20	0.0005
GC	Pencycuron	68	8	11	69	12	88	6	6	27	7	0.0005
LC	Pencycuron	89	16	18	43	19	96	13	16	35	17	0.0005
GC	Pendimethalin	110	8	20	46	21	101	9	14	29	15	0.0005
LC	Pendimethalin	99	10	13	27	13	99	9	14	29	14	0.0005
GC	Penflufen	108	5	6	21	6	101	4	6	13	7	0.0005
LC	Penflufen	106	13	15	32	15	111	7	7	26	7	0.0005
LC	Penoxsulam	92	18	18	41	19	102	18	20	42	21	0.0005
GC	Pentachloraniline	103	10	13	28	14	96	6	8	17	8	0.0005
GC	Pentachloroanisole	88	7	6	27	6	84	6	12	41	12	0.0005
GC	Penthiopyrad	109	8	8	24	8	101	5	7	15	8	0.0005
LC	Penthiopyrad	104	16	18	38	19	109	9	9	25	9	0.0005
GC	Permethrin II						88	12	11	33	11	0.001
LC	Pethoxamide	95	12	20	43	21	101	10	10	21	10	0.0005
LC	Phenmedipham	122	11	16	55	16	113	10	16	42	16	0.0005
GC	Phenthoate	118	5	6	39	6	102	7	9	19	9	0.0005
GC	Phorate-sulfone	97	10	17	36	18	90	11	19	44	20	0.0005
GC	Phorate-sulfoxide						70	20	19	72	20	0.001
LC	Phorate-sulfoxide	114	11	18	46	18	107	16	15	34	15	0.0005
GC	Phosalone						94	6	14	32	15	0.001
GC	Phosmet	111	14	19	44	19	80	12	12	47	12	0.0005
LC	Phosmet	108	15	16	36	16	98	20	20	42	21	0.0005
LC	Phosmet-oxon	97	13	18	37	18	101	10	14	28	14	0.0005
LC	Phoxim	98	15	20	42	21	94	14	15	34	16	0.0005
GC	Picolinafen	105	7	7	17	7	93	7	8	21	8	0.0005
GC	Picoxystrobin	105	7	6	17	7	101	6	8	16	8	0.0005
LC	Picoxystrobin	104	12	13	27	13	110	8	9	26	9	0.0005
GC	Piperonylbutoxide	102	7	14	29	14	87	5	20	48	21	0.0005
LC	Piperonylbutoxide	104	20	20	42	20	107	12	12	28	12	0.0005
GC	Pirimicarb	112	5	6	28	6	100	5	7	15	7	0.0005
LC	Pirimicarb	95	12	14	31	14	97	9	14	29	14	0.0005
GC	Pirimiphos-ethyl	105	6	10	22	10	95	6	8	20	8	0.0005
GC	Pirimiphos-methyl	104	5	5	13	5	100	6	7	15	7	0.0005

		Spike level 0.0005 mg/kg					Spike level 0.001 mg/kg					
	Compound	**Recovery %**	**RSD_r %**	**RSD_R %**	**U %**	**Cu %**	**Recovery %**	**RSD_r %**	**RSD_R, %**	**U %**	**Cu %**	**LOQ**
LC	Pirimiphos-methyl	99	17	18	37	18	111	14	15	38	15	0.0005
LC	Prochloraz	109	11	10	27	10	108	11	12	30	13	0.0005
GC	Profenofos	119	12	11	44	11	95	10	14	29	14	0.0005
LC	Profoxydim	110	9	13	33	13	101	8	12	25	12	0.0005
GC	Propachlor	105	7	7	17	7	99	7	8	16	8	0.0005
LC	Propachlor	124	13	12	54	12	112	10	10	32	10	0.0005
LC	Propamocarb	77	9	19	60	20	95	18	19	39	19	0.0005
LC	Propaquizafop	77	18	19	60	19	85	13	14	42	14	0.0005
LC	Propargite	94	10	15	33	15	93	9	10	26	10	0.0005
GC	Propham	102	9	15	31	15	94	9	9	21	9	0.0005
LC	Propham	112	18	20	47	20	111	12	15	38	15	0.0005
LC	Propiconazole	103	11	16	33	16	107	14	13	31	14	0.0005
GC	Propiconazole	112	6	9	31	9	100	7	6	13	6	0.0005
LC	Propoxur	58	16	19	93	20	88	13	16	42	17	0.0005
GC	Propyzamide	114	4	5	30	5	100	6	8	16	8	0.0005
LC	Propyzamide	114	13	12	38	13	107	8	10	24	10	0.0005
GC	Proquinazid	101	4	4	10	5	92	4	6	20	6	0.0005
LC	Prosulfocarb	57	18	19	95	20	89	15	18	43	18	0.0005
GC	Prothiofos	91	6	11	28	11	91	6	10	27	10	0.0005
LC	Pymetrozine						56	20	18	95	19	0.001
GC	Pyraclofos	127	7	8	57	8	96	8	7	16	7	0.0005
LC	Pyraclofos	104	17	20	42	21	99	14	14	28	14	0.0005
LC	Pyraclostrobin	101	12	11	23	12	101	11	12	24	12	0.0005
GC	Pyraflufen-ethyl	105	9	11	25	11	97	9	9	19	9	0.0005
GC	Pyrazophos	110	5	17	40	17	94	8	10	25	11	0.0005
GC	Pyridaben	76	4	14	56	15	71	7	11	62	11	0.0005
GC	Pyridalyl	73	6	11	58	12	75	7	14	58	15	0.0005
GC	Pyridaphenthion						84	23	24	59	25	0.001
LC	Pyridate						133	11	18	75	18	0.001
GC	Pyrimethanil	113	10	10	34	10	99	9	15	30	15	0.0005
LC	Pyrimethanil	112	7	18	44	18	108	13	17	38	17	0.0005
LC	Pyriofenone	106	19	18	38	18	104	17	18	37	18	0.0005
GC	Pyriproxyfen	96	10	11	25	12	84	12	14	43	14	0.0005
LC	Pyriproxyfen	99	8	8	16	8	94	10	12	28	13	0.0005
LC	Pyroxsulam	106	18	20	43	21	108	15	14	33	14	0.0005
GC	Quinalphos	101	11	15	32	16	99	6	8	16	8	0.0005
LC	Quinmerac						89	20	20	47	21	0.001
GC	Quinoxyfen	120	5	5	42	5	97	7	8	18	8	0.0005
LC	Quinoxyfen	93	13	17	37	17	98	13	13	27	14	0.0005
GC	Quintozene	96	7	17	36	18	87	8	14	40	15	0.0005
LC	Quizalofop	102	17	20	41	20	94	20	18	39	19	0.0005
LC	Rotenone	107	19	20	44	21	99	11	11	23	11	0.0005
GC	Sedaxane	103	13	15	31	15	93	9	16	35	16	0.0005

		Spike level 0.0005 mg/kg					Spike level 0.001 mg/kg					
	Compound	**Recovery %**	**RSD$_r$ %**	**RSD$_R$ %**	**U %**	**Cu %**	**Recovery %**	**RSD$_r$ %**	**RSD$_R$, %**	**U %**	**Cu %**	**LOQ**
GC	Silafluofen	97	4	12	26	13	89	6	12	33	12	0.0005
GC	Simazine	98	14	16	34	17	96	9	10	22	10	0.0005
LC	Simazine	56	19	19	96	20	83	13	18	49	18	0.0005
LC	Sintofen	142	17	18	91	19	119	19	18	52	18	0.0005
LC	Spinetoram_major	118	12	18	53	19	120	16	18	55	19	0.0005
LC	Spinosad_A	110	14	20	45	20	104	20	20	42	21	0.0005
LC	Spinosad_D	98	15	18	38	19	97	21	19	41	20	0.0005
LC	Spirodiclofen	97	17	15	32	16	95	12	13	28	13	0.0005
GC	Spiromesifen	91	7	14	33	14	87	6	9	32	9	0.0005
LC	Spirotetramat	70	11	20	74	21	101	8	8	16	8	0.0005
LC	Spirotetramat-cis-enol	216	12	19	236	20	171	14	16	146	16	0.0005
LC	Spirotetramat-cis-keto-						100	12	17	35	18	0.001
LC	Spirotetramat-enol-glucoside	91	16	18	41	18	86	20	19	48	19	0.0005
LC	Spirotetramat-mono-hydroxy	115	19	18	47	18	114	17	19	47	19	0.0005
GC	Sulfotep	102	7	8	16	8	99	7	10	22	11	0.0005
LC	Sulfotep	107	13	18	39	18	106	8	8	20	8	0.0005
LC	Sulfoxaflor						100	18	19	40	20	0.001
GC	Tebuconazole	120	14	17	53	18	106	10	13	30	14	0.0005
LC	Tebufenozide	107	15	20	44	21	114	16	19	47	19	0.0005
GC	Tebufenpyrad	120	8	9	43	9	104	10	15	31	15	0.0005
LC	Tebufenpyrad	97	17	16	33	16	98	13	20	42	21	0.0005
LC	Teflubenzuron	117	19	18	50	19	102	20	19	39	19	0.0005
GC	Tefluthrin	90	6	8	26	8	91	7	8	24	8	0.0005
LC	Tepraloxydim	107	18	18	40	18	113	16	15	41	15	0.0005
GC	Terbuthylazine	109	8	10	26	10	103	6	7	16	7	0.0005
LC	Terbuthylazine	104	8	12	27	13	100	8	9	18	9	0.0005
GC	Tetrachlorvinphos	106	11	13	29	13	93	10	11	26	11	0.0005
LC	Tetrachlorvinphos	91	16	16	37	16	99	9	9	19	10	0.0005
GC	Tetraconazole	114	17	17	45	17	94	13	13	29	13	0.0005
GC	Tetradifon	110	6	11	30	11	100	8	12	25	12	0.0005
GC	Tetramethrin	129	13	20	72	21	114	13	13	39	14	0.0005
LC	Tetramethrin	105	12	17	36	17	103	10	13	27	13	0.0005
GC	Tetrasul	81	10	15	49	16	78	7	20	60	21	0.0005
LC	Thiabendazole	104	7	12	26	12	85	10	11	36	11	0.0005
LC	Thiacloprid	94	17	17	37	18	100	10	16	32	16	0.0005
LC	Thiamethoxam	98	10	11	23	12	91	13	17	39	17	0.0005
LC	Thiencarbazone-methyl						99	18	20	42	21	0.001
LC	Thifensulfuron-methyl						101	17	20	42	21	0.001
GC	Thiobencarb	103	9	8	18	9	94	4	5	15	5	0.0005
LC	Thiobencarb	105	18	17	36	17	88	18	20	48	20	0.0005
LC	Thiodicarb	95	11	10	23	10	89	9	17	40	17	0.0005
GC	Thiometon						102	12	18	38	19	0.001
GC	Tioxazafen	100	8	9	18	9	83	7	10	41	11	0.0005

		Spike level 0.0005 mg/kg					Spike level 0.001 mg/kg					
	Compound	**Recovery %**	**RSD_r %**	**RSD_R %**	**U %**	**Cu %**	**Recovery %**	**RSD_r %**	**RSD_R, %**	**U %**	**Cu %**	**LOQ**
LC	Tioxazafen	102	20	20	41	20	90	19	19	44	20	0.0005
GC	Tolclofos-methyl	109	6	5	21	6	100	6	7	14	7	0.0005
GC	Tralomethrin	98	9	20	42	21	96	6	6	16	7	0.0005
GC	Triadimefon	121	6	19	57	19	107	8	17	38	18	0.0005
LC	Triallate	48	18	17	110	18	82	19	20	55	21	0.0005
LC	Tribenuron-methyl	102	14	14	29	14	103	17	18	38	19	0.0005
GC	Trichloronate	97	8	8	18	8	88	4	10	31	10	0.0005
GC	Tricyclazole						103	8	20	42	21	0.001
LC	Tricyclazole	90	14	16	39	17	96	8	15	32	16	0.0005
GC	Trifloxystrobin	105	13	15	32	15	101	9	12	24	12	0.0005
LC	Trifloxystrobin	104	7	14	30	14	102	10	12	25	12	0.0005
GC	Triflumizole	108	13	12	29	12	96	8	8	17	8	0.0005
LC	Triflumizole	106	13	14	32	15	106	12	13	30	14	0.0005
LC	Triflumuron	103	15	15	30	15	97	13	20	42	21	0.0005
GC	Trifluralin	94	15	15	33	15	99	12	13	27	13	0.0005
GC	Triflusulfuron-methyl	68	17	20	76	20	72	10	11	61	12	0.0005
LC	Triflusulfuron-methyl	100	12	15	31	16	103	11	12	26	12	0.0005
LC	Trinexapac-ethyl	110	19	29	62	29	114	10	16	43	16	0.0005
GC	Triticonazole	115	14	17	46	18	90	9	19	45	20	0.0005
LC	Triticonazole	121	17	16	53	16	112	13	16	41	17	0.0005
GC	Tritosulfuron	88	18	20	49	21	69	13	17	71	18	0.0005
GC	Valifenalate	105	8	7	18	8	98	6	7	16	8	0.0005
LC	Valifenalate	105	10	14	31	15	104	11	10	22	10	0.0005
GC	Vinclozolin	73	8	19	68	20	85	7	12	39	13	0.0005
LC	Zoxamide	112	11	11	33	11	103	11	13	27	13	0.0005

Appendix 3: Principles of the QuEChERS method for extraction of babyfood