

Method of Test for Pesticide Residues in Foods-Multiresidue Analysis (5)

Taiwan Food and Drug Administration
Correction Announcement No. 1031900615. (2014_0703)

1. Scope:

The test method is suitable for 310 pesticide Multi-residues analysis in food from fruits and vegetables, cereals, dried beans, tea, spice plants and other herbs etc.

2. Test methods:

The sample is pre-treated using QuEChERS method (Quick-Easy-Cheap-Effective-Rugged-Safe) and then for the method of analysis with Liquid Chromatography Tandem Mass Spectrometry LC/MS/MS) and Gas Chromatograph/Tandem mass spectrometer, GC/MS/MS).

2.1 Device:

2.1.1 Liquid Chromatograph/Tandem Mass Spectrometer:

2.1.1.1 Ion Source: Electrospray Ionization, ESI).

2.1.1.2 Chromatography Column: Acquity UPLCR HSS T3, 1.8 μ m, an inner diameter of 2.1 mm \times 10 cm, or products with same quality.

2.1.2 Gas Chromatography Tandem Mass Spectrometry:

2.1.2.1 Ion Source: Electron Impact Ionization, EI.

2.1.2.2 Chromatography Column: DB-5MS UI capillary, inner film layer thickness 0.25 μ m, 0.25 mm ID \times 30 m, or products with same quality.

2.1.3. Stirring homogenizer (Blender).

2.1.4 Grinder.

2.1.5 High-speed oscillation grinding tissue homogenizer (SPEX SamplePrep 2010 GenoGrinderR): 1000 rpm or more, or products with same quality.

2.1.6 Centrifuger: Up to 3000 \times g or more, control the temperature up to those below 15 $^{\circ}$ C.

2.1.7. Nitrogen evaporator for concentration.

2.2 Reagent:

Acetic acid, Formic acid and ammonium acetate are of GR/Guaranteed Reagent Grade;

Hexane and Acetone are of residual grade;

Acetonitrile and methanol are of Liquid Chromatography Grade.

Anhydrous sodium acetate, Anhydrous magnesium sulfate, Primary secondary amine(PSA), Octadecylsilane, end-capped(C18 EC) and Graphitized Carbon Black(GCB) are of analytical grade;

Deionized water (resistivity at 25 $^{\circ}$ C Up to 18 M ohm \cdot cm or above);

310 pesticide Reference Standards as 3-keto carbofuran (items shown in Table I. Table 2 and Table 3);

Triphenyl phosphate (triphenylphosphate, TPP) internal standard.

2.3 Equipment and materials:

2.3.1 Centrifuge tubes: 15 mL and 50 mL, PP material.

2.3.2 Membrane: Pore size 0.22 μ m, PVDF material.

2.3.3 Volumetric flasks: 25 mL and 50 mL, amber.

2.3.4 Homogeneous ceramic stone (Ceramic homogenizer) (Note 1):

Using Bond Elut QuEChERS P/N 5982-9313, or products with same quality.

- 2.3.5 Extracting powder (Note 2): with Anhydrous magnesium sulfate (MgSO_4) 4 g, and Anhydrous sodium acetate (NaOAc) 1 g.
- 2.3.6 Purification centrifuge tube TypeI (Note 2): with PSA 300 mg and Anhydrous magnesium sulfate (MgSO_4) 900 mg, extracting solution loading capacity 6 mL, suitable for fruits and vegetables samples with high water content.
- 2.3.7 Purification centrifuge tube TypeII (Note 2): with PSA 300 mg, C18EC 300 mg and Anhydrous magnesium sulfate (MgSO_4) 900 mg, extracting solution loading capacity 6 mL, suitable for cereals samples with high wax, fat and sugar content.
- 2.3.8 Purifying centrifuge tube TypeIII (Note 2): with PSA 450 mg, Anhydrous magnesium sulfate (MgSO_4) 900 mg, C18 EC 300 mg and GCB 50 mg, extracting solution loading capacity 6 mL, suitable for samples with high pigment content and tea analogues.

Note 1: The Ceramic homogenizer could be arbitrarily used according to the user's assessment of the viscosity of sample.

Note 2: According to their demands, the users could make their assessment for applying various extraction and purification kits commercially available.

2.4 Mobile Phase Solution Preparations:

2.4.1 Mobile Phase Solution A:

Take 50 mL of Methanol and mix with 450 mL of deionized water, add and to dissolve Ammonium Acetate 0.19g and mixed completely, filter with membrane. The filtrate is for mobile phase A.

2.4.2 Mobile Phase Solution B:

Take 450 mL of Methanol and mix with 50 mL of deionized water, add and to dissolve Ammonium Acetate 0.19g and mixed completely, filter with membrane. The filtrate is for mobile phase B.

2.5 Internal Standard solution preparation:

Take Triphenylphosphate(TPP) internal standard about 40 mg, accurately weighed, dissolved in methanol and dilute to 50 mL, as an Internal Standard Stock Solution, stored at -18°C in dark for use.

2.5.1 Take appropriate amount of Internal Standard Stock Solution and then dilute with Methanol to $75\mu\text{g}/\text{mL}$, that will be the Internal Standard Solution used for the Test Solution Preparation in section 2.8.

2.5.2 Take appropriate amount of Internal Standard Stock Solution and then dilute with Methanol to $7.5\mu\text{g}/\text{mL}$, that will be the Internal Standard Solution used for LC/MS/MS

analysis in section 2.9.1

2.5.3 Take appropriate amount of Internal Standard Stock Solution and then dilute with Acetone to $7.5\mu\text{g}/\text{mL}$, that will be the Internal Standard Solution used for GC/MS/MS analysis in section 2.9.2

2.6 Reagents Preparation:

2.6.1 1% Acetic Acid(HOAc) in Acetonitrile(MeCN) solution:

Take 10 mL of Glacial Acetic Acid(HOAc) and mixed with 990 mL of

Acetonitrile(MeCN).

2.6.2 5% Formic Acid in Acetonitrile(MeCN) solution:

Take 5 mL Formic acid and mixed with 95 mL of Acetonitrile(MeCN).

2.6.3 Acetone: Hexane(1:1,v/v)solution:

Take Acetone and n-Hexane mixed to 1:1 (v/v)ratio.

2.7 Standard Solution Preparation:

2.7.1 Take about 25 mg pesticide reference standards, accurately weighed and dissolved in Acetonitrile(MeCN) to 25 mL as the Standard Stock solution, store at -18°C in dark for use.

Take appropriate amount of the Standard Stock solution and diluted with Methanol to 1 µg/mL, as the Standard solution used for LC/MS/MS analysis in section 2.9.1.

2.7.2 Take about 25 mg pesticide reference standards, accurately weighed and dissolved in Acetone or Hexane to 25 mL as the Standard Stock solution, store at -18°C in dark for use.

Take appropriate amount of the Standard Stock solution and diluted with Acetone: Hexane (1:1, v/v) solution to 1 µg/mL, as the Standard solution used for GC/MS/MS analysis in section 2.9.2.

2.8. Test Solution Preparation:

2.8.1 Fruits and vegetables, spice plants and other herbs(fresh meal):

Accurately weigh about 10g homogeneous sample into a centrifuge tube, frozen and then add 1% Acetic Acid(HOAc) in Acetonitrile(MeCN) solution 10 mL, and 75µg/mL Internal Standard Solution 10µL, and then sequentially add one Ceramic homogenizer and extracting powder.

Close the cap and immediately followed with intense oscillations for times to prevent from caking of the salt, and then vigorously shaken by hand or by high speed tissue grinding and oscillating homogenizer in 1000rpm for 1 minute, and centrifuged at 3000 × g for 1 min at 15 °C.

Transfer the supernatant 6 mL to a Purification centrifuge tube(Typel) and then vigorously shaken by hand or by high speed tissue grinding and oscillating homogenizer in 1000rpm for 1 minute, and centrifuged at 3000 × g for 2 min at 15°C.

Transfer the supernatant 1 mL to a scaled vials and evaporated with nitrogen to just dried, and the residue was dissolved in an appropriate amount of Methanol, with 5% Formic Acid in Acetonitrile(MeCN) solution 10 µL added, to get 1mL volume. Mix homogeneously and filter with membrane to get the Test Solution I, for the LC/MS/MS analysis.

Transfer another supernatant 1 mL to a scaled vials and evaporated with nitrogen to just dried, and the residue was dissolved in an appropriate amount of Acetone: Hexane (1: 1, v/v) solution, with 5% Formic Acid in Acetonitrile(MeCN) solution 10 µL added, to get 1mL volume. Mix homogeneously and filter with membrane to get the Test Solution II, for the GC/MS/MS analysis.

2.8.2 Cereals and dried beans:

Accurately weigh about 5g homogeneous grinded sample into a centrifuge tube, add pre-cooling deionized water 10 mL and stand for 20 minutes, and then add 1% Acetic Acid(HOAc) in Acetonitrile(MeCN) solution 10 mL.

The following procedures are the sample as that in the section 2.8.1, except that the Purification centrifuge tube(Typell) is used instead.

2.8.3 Tea, spice plants and other herbs (dried):

Accurately weigh about 2g homogeneous grinded sample into a centrifuge tube, add pre-cooling deionized water 10 mL and stand for 20 minutes, and then add 1% Acetic Acid(HOAc) in Acetonitrile(MeCN) solution 10 mL.

The following procedures are the sample as that in the section 2.8.1, except that the Purification centrifuge tube(Typell) is used instead.

2.9 Matrix-matched calibration curve preparation

2.9.1 LC/MS/MS:

Take a blank sample and process according to the 2.8.Test Solution Preparation steps without the addition of Internal Standard solution to produce the supernatant after SPE purification.

For each standard levels, transfer 1mL supernatant to scaled vial and evaporate with nitrogen to just dried, and the residue was dissolved in an appropriate amount of Methanol, with 1 μ g/mL (Note 3) Standard Solution 2 ~ 200 μ L respectively, 7.5 μ g/mL of Internal Standard solution 10 μ L, and 5% Formic Acid in Acetonitrile(MeCN) solution 10 μ L added, to get 1mL volume. mix homogenously.

The prepared Matrix-matched calibration standards are analyzed by the following conditions. The Matrix-matched calibration curves are produced as a plot of (peak area/internal standard peak area)ratio of each pesticides versus the corresponding concentration of each pesticides in the 0.002~0.2 μ g/mL range (Fipronil is 0.0004 ~ 0.04 μ g/mL).

Liquid Chromatography Tandem Mass Spectrometry measurement conditions (Note 4):

Chromatography Column: Acquity UPLCR HSS T3, 1.8 μ m, 2.1mm(ID) \times 10 cm.

Mobile phase solution: Analysis with the following Gradient conditions for A and B solution

Mobile phase flow rate: 0.3 mL/min.

Capillary voltage :

Positive ion electrospray ionization (ESI +) using 3.5 kV,

Negative ion electrospray ionization (ESI-) using 1.6 kV.

Ion source temperature (Ion source temperature): 150 $^{\circ}$ C.

Solvent volatilization temperature (Desolvation temperature): 450 $^{\circ}$ C.

Injection cone gas flow rate (Cone gas flow): 30 L/hr.

Flow rate of vaporized solvent (Desolvation flow): 900 L/hr.

Detection mode: Multiple reaction monitoring(MRM).

Detective Measured ion pair, injection cone voltage (cone voltage) and collision energy (collision energy) as shown in Table 1 and Table 2.

2.9.2 GC/MS/MS:

Take a blank sample and process according to the 2.8.Test Solution Preparation steps without the addition of Internal Standard solution to produce the supernatant after SPE purification.

For each standard levels, transfer 1mL supernatant to scaled vial and evaporate with

nitrogen to just dried, and the residue was dissolved in an appropriate amount of Acetone: Hexane(1:1, v/v)solution, with 1 μ g/mL Standard Solution 4 ~ 500 μ L respectively, 7.5 μ g/mL of Internal Standard solution 10 μ L, and 5% Formic Acid in Acetonitrile(MeCN) solution 10 μ L added, to get 1mL volume. mix homogenously.

The prepared Matrix-matched calibration standards are analyzed by the following conditions. The Matrix-matched calibration curves are produced as a plot of (peak area/internal standard peak area)ratio of each pesticides versus the corresponding concentration of each pesticides in the 0.004~0.5 μ g/mL range.

Gas Chromatography Tandem Mass Spectrometry measurement conditions (Note 4):

Chromatography Column: DB-5MS UI capillary, inner film layer thickness 0.25 μ m, 0.25 mm ID \times 30 m.

Chromatography Column temperature: initial temperature: 60 $^{\circ}$ C, 1 min;

Heating rate: 40 $^{\circ}$ C/min;

Temperature: 170 $^{\circ}$ C;

Heating rate: 10 $^{\circ}$ C/min;

Final temperature: 310 $^{\circ}$ C, 2.25 min.

Mobile phase flow rate: Helium, 1 mL/min.

Injector temperature : 280 $^{\circ}$ C.

Injection mode: splitless.

Ionization modes: electron impact, 70 eV.

Ion source temperature: 300 $^{\circ}$ C.

Detection mode: Multiple reaction monitoring, MRM, as detection ion pairs and collision energy shown in Table III.

Note 3: Select appropriate standard solution spikings for producing the Matrix-matched calibration curve of Fipronil.

Note 4: Setting suitable measurement conditions according to the instrument used if the measurement conditions listed above are not suitable.

2.10 Identification Test and Quantitation:

2.10.1. LC/MS/MS :

Exactly measure 10 μ L of Test solution and Standard solution and inject into the Liquid Chromatography Tandem Mass spectrometry respectively.

Perform analysis in accordance with the measurement conditions from section 2.9.1, Identifications are based on the peak retention time and the Multiple reaction monitoring(MRM) relative ion strength

of the Test solution and Standard solution(Note 5), and calculated in accordance with the following formula, to obtain the content of each pesticides(ppm) of samples :

The content of each pesticide in a sample (ppm) = C x V / M

C: Each pesticides concentrations(μ g/mL) of Test solution obtained/indexed from corresponding Matrix-Matched calibration curve for each pesticides.

V: Volume of extracted sample(10 mL) with 1% Acetic Acid(HOAc) in Acetonitrile(MeCN) solution.

M: Sampled weight of the sample for analysis(g)

2.10.2. GC/MS/MS :

Exactly measure 10 μ L of Test solution and Standard solution and inject into the Gas Chromatography Tandem Mass spectrometry respectively.

Perform analysis in accordance with the measurement conditions from section 2.9.2, Identifications are based on the peak retention time and the Multiple reaction monitoring(MRM) relative ion strength of the Test solution and Standard solution(Note 5), and calculated in accordance with the following formula, to obtain the content of each pesticides(ppm) of samples :

The content of each pesticide in a sample (ppm) = C x V / M

C: Each pesticides concentrations(μ g/mL) of Test solution obtained/indexed from corresponding Matrix-Matched calibration curve for each pesticides.

V: Volume of extracted sample(10 mL) with 1% Acetic Acid(HOAc) in Acetonitrile(MeCN) solution.

M: Sampled weight of the sample for analysis(g)

Note 5: Relative Ionic Strength is obtained from the from the ratio of the peak areas from the qualitative and quantitative ion pair (<=100%), acceptable range is as follows:

Relative Ionic strength(%) Acceptable range(%)

1. The Quantitation Limits of this test method are shown in Table I, Table 2 and Table 3.
2. The items listed in this test method could be assessed for the demands to the analysis with GC/MS/MS or LC/MS/MS.
3. The method does not apply to analysis of Benfuracarb and Pymetrozine in Tea matrix.
4. If there are interfering substances in the food that affect the result of analysis, the practioner should check and study the cause and solution.

TableI, The Multiple reaction monitoring(MRM) parameters and Quantitative detection limits(by LC/MS/MS in positive ion mode) for 144 pesticide items as 3-keto carbofuran and Internal Standard.

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TableII, The Multiple reaction monitoring(MRM) parameters and Quantitative detection limits(by LC/MS/MS in negative ion mode) for 6 pesticide items as Talon.

TableIII, The Multiple reaction monitoring(MRM) parameters and Quantitative detection limits(by LC/MS/MS in positive ion mode) for 160 pesticide items as Acetochlor and Internal Standard.

a Suitable for vegetables and fruit, spice plants and other herbs(fresh meal).

b Applies to cereals and dried beans.

c Suitable for tea, spice plants and other herbs(dried).

表一、3-酮加保扶等 144 項農藥及內部標準品之多重反應偵測模式參數及定量極限(LC/MS/MS 正離子模式)

Item	Analyte		Quantitation Ion Pair			Qualitative ion pair			Quantitation limits(ppm)		
	Englis	Chinese	Precursor ion (m/z) > Product ion	Injection Cone voltage(V)	Collision energy(eV)	Precursor ion (m/z) > Product ion	Injection Cone voltage(V)	Collision energy(eV)	Fruits and vegetable	Cereal ^b	Tea ^c
1	Benfuracarb	免扶克	411>190	1	10	411>252	10	10	0.01	0.02	-
2	Carbofuran	加保扶	222>165	2	10	222>123	20	10	0.01	0.02	0.05
3	Carbosulfan	丁基加保扶	381>160	2	15	381>118	20	15	0.01	0.02	0.05
4	3-keto Carbofuran	3-酮基加保扶	236>208	2	10	236>151	25	10	0.01	0.02	0.05
5	3-OH Carbofuran	3-羥基加保扶	238>181	2	10	238>163	20	10	0.01	0.02	0.05
6	Abamectin	阿巴汀	890.5>567	1	16	890.5>305	17	17	0.01	0.01	0.05
7	Aldicarb	得滅克	208>116	1	8	208>89	10	8	0.01	0.02	0.02
8	Aldicarb sulfone	得滅克颯	223>86	2	5	223>166	20	5	0.01	0.02	0.02
9	Aldicarb sulfoxide	得滅克亞颯	207>89	1	10	207>132	16	10	0.01	0.02	0.02
10	Acephate	毆殺松	184>143	1	8	184>125	18	18	0.01	0.02	0.05
11	Acetamiprid	亞滅培	223>56	2	15	223>126	20	15	0.01	0.02	0.05
12	Alloxydim (sodium)	亞汰草	324>234	2	15	324>266	25	11	0.01	0.02	0.05
13	Ametryn	草殺淨	228>186	3	19	228>96	32	25	0.01	0.02	0.05
14	Amisulbrom	安美速	468>229	2	16	468>148	20	50	0.01	0.03	0.05
15	Atrazine	草脫淨	216>174	3	18	216>96	39	23	0.01	0.02	0.05
16	Azoxystrobin	亞托敏	404>372	2	15	404>344	25	25	0.01	0.01	0.05
17	Benalaxyl	本達樂	326>148	2	20	326>91	26	34	0.01	0.02	0.05
18	Bendiocarb	免敵克	224>109	2	20	224>81	20	20	0.01	0.02	0.05
19	Bensulfuron-methyl	免速隆	411>149	2	21	411>182	26	20	0.01	0.02	0.05
20	Benthiazole	佈生	239>180	1	12	239>136	15	30	0.01	0.02	0.05
21	Bifenazate	必芬蟎	301>198	1	10	301>170	16	22	0.01	0.02	0.05

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Item	Analyte		Quantitation Ion Pair			Qualitative ion pair			Quantitation limits(ppm)		
	Englis	Chinese	Precursor ion (m/z) > Product	Injection Cone voltage(V)	Collis ion	Precursor ion (m/z) > Product	Injection Cone voltage(V)	Collis ion	Fruits and vegetable	Cereal ^b	Tea ^c
22	Boscalid	白克列	343>307	36	18	343>140	36	18	0.01	0.02	0.05
23	Buprofezin	布芬淨	306>201	20	13	306>116	20	15	0.01	0.02	0.05
24	Butocarboxim	佈嘉信	213>75	35	15	213>116	35	15	0.01	0.02	0.05
25	Carbaryl	加保利	202>145	20	20	202>127	20	20	0.01	0.02	0.05
26	Carbendazim	貝芬替	192>160	30	30	192>132	30	35	0.01	0.02	0.05
27	Carpropamid	加普胺	334>139	20	20	334>196	20	14	0.01	0.02	0.05
28	Chlorantraniliprole	剋安勃	484>453	24	18	484>286	24	18	0.01	0.02	0.05
29	Chlorfluazuron	克福隆	540>383	32	20	540>158	32	20	0.01	0.02	0.05
30	Chromafenozide	可芬諾	395>175	15	17	395>339	15	8	0.01	0.02	0.05
31	Cinosulfuron	西速隆	414>183	25	23	414>157	25	23	0.01	0.02	0.05
32	Clofentezine	克芬蟎	303>138	22	22	303>102	22	35	0.01	0.02	0.05
33	Clomazone	可滅蹤	240>125	29	20	240>89	29	44	0.01	0.02	0.05
34	Clomeprop	克普草	324>203	25	17	324>120	25	15	0.01	0.02	0.05
35	Clothianidin	可尼丁	250>169	20	20	250>132	20	30	0.01	0.02	0.05
36	Cyazofamid	賽座滅	325>108	15	15	325>261	15	9	0.01	0.02	0.05
37	Cyclosulfamuron	環磺隆	422>261	24	16	422>218	24	27	0.01	0.02	0.05
38	Cyflumetofen	賽芬蟎	448>173	28	28	448>249	28	8	0.01	0.02	0.05
39	Cymoxanil	克絕	199>128	17	8	199>111	17	18	0.01	0.02	0.05
40	Cyprodinil	賽普洛	226>93	50	33	226>108	50	25	0.01	0.01	0.05
41	Demeton-S-methyl	滅賜松	231>89	13	10	231>61	13	32	0.01	0.02	0.05
42	Diclotophos	雙特松	238>112	20	10	238>193	20	10	0.01	0.02	0.05

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43	Dimethenamid	汰草滅	276>244	25	14	276>168	25	23	0.01	0.02	0.05
44	Dimethoate	大滅松	230>199	17	9	230>125	17	23	0.01	0.02	0.05
45	Dimethomorph	達滅芬	388>165	25	25	388>301	25	40	0.01	0.02	0.05
46	Dinotefuran	達特南	203>157	20	8	203>129	20	14	0.01	0.02	0.05
47	Diuron	達有龍	233>72	23	15	233>160	23	27	0.01	0.02	0.05
48	Dymron	汰草龍	269>151	30	10	269>91	30	40	0.01	0.02	0.05
49	Ethiprole	益斯普	397>351	34	18	397>255	34	36	0.01	0.02	0.05
50	Ethirimol	依瑞莫	210>140	38	22	210>98	38	28	0.01	0.02	0.05
51	Etoazole	依殺蟎	360>141	35	35	360>304	35	17	0.01	0.02	0.05
52	Famoxadone	凡殺同	392>331	10	12	392>238	10	14	0.01	0.02	0.05
53	Fenamiphos	芬滅松	304>217	26	22	304>202	26	35	0.01	0.01	0.05
54	Fenazaquin	芬殺蟎	307>161	20	20	307>57	20	20	0.01	0.02	0.05
55	Fenbutatin-oxide	芬佈賜	519>197	44	54	519>351	44	32	0.01	0.02	0.05
56	Fenhexamid	-	302>97	35	22	302>55	35	38	0.01	0.02	0.05
57	Fenobucarb	丁基滅必蝨	208>95	20	10	208>152	20	10	0.01	0.02	0.05
58	Fenothiocarb	芬硫克	254>160	17	11	254>107	17	26	0.01	0.02	0.05
59	Fenoxycarb	芬諾克	302>116	28	11	302>88	28	20	0.01	0.02	0.05
60	Fenpyroximate	芬普蟎	422>366	20	25	422>135	20	25	0.01	0.02	0.05
61	Fenthion	芬殺松	279>169	27	16	279>247	27	13	0.01	0.01	0.05
62	Flazasulfuron	伏速隆	408>182	20	15	408>139	20	45	0.01	0.02	0.05
63	Flonicamid	氟尼胺	230>203	32	18	230>174	32	18	0.01	0.02	0.05

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	English	Chinese	Precursor ion (m/z) > Product ion (m/z)	Injection Cone voltage(V) (V)	Collision energy	Precursor ion (m/z) > Product ion (m/z)	Injection Cone voltage(V) (V)	Collision energy	Fruits and vegetable ^a	Cereal ^b	Tea ^c
64	Fluazifop-P-butyl	伏寄普	384>282	34	22	384>328	34	17	0.01	0.02	0.05
65	Fludioxonil	護汰寧	266>158	13	33	266>185	13	34	0.01	0.02	0.06
66	Flufenoxuron	氟芬隆	489>158	25	30	489>141	25	30	0.01	0.02	0.05
67	Fluopicolide	氟比來	385>175	29	23	385>147	29	49	0.01	0.02	0.05
68	Flusilazole	護矽得	316>165	25	25	316>247	25	25	0.01	0.02	0.05
69	Flutriafol	護汰芬	302>70	20	25	302>123	20	25	0.01	0.02	0.05
70	Formetanate	覆滅蟎	222>165	25	17	222>46	25	24	0.01	0.02	0.05
71	Furametpyr	福拉比	334>157	28	32	334>131	28	24	0.01	0.02	0.05
72	Haloxyfop-methyl	甲基合氯氟	376>319	25	20	376>91	25	20	0.01	0.02	0.05
73	Hexaconazole	菲克利	314>70	31	20	314>159	31	36	0.01	0.02	0.05
74	Hexaflumuron	六伏隆	461>158	25	25	461>141	25	25	0.05	0.05	0.1
75	Hexythiazox	合賽多	353>228	20	20	353>168	20	20	0.01	0.02	0.05
76	Imazalil	依滅列	297>159	40	22	297>69	40	22	0.01	0.01	0.05
77	Imidacloprid	益達胺	256>209	25	20	256>175	25	20	0.01	0.02	0.05
78	Indoxacarb	因得克	528>150	20	30	528>293	20	20	0.01	0.01	0.01
79	Isazofos	依殺松	314>162	20	20	314>120	20	20	0.01	0.02	0.05
80	Isoprocarb	滅必蟲	194>95	20	10	194>137	20	10	0.01	0.02	0.05
81	Isouron	愛速隆	212>167	30	15	212>72	30	23	0.01	0.02	0.05
82	Linuron	理有龍	249>160	21	21	249>182	21	18	0.01	0.02	0.05
83	Mecarbam	滅加松	330>227	21	8	330>97	21	35	0.01	0.02	0.05

表一、3-酮加保扶等 144 項農藥及內部標準品之多重反應偵測模式參數及定量極限(LC/MS/MS 正離子模式)(續)

Item	Analyte		Quantitation Ion Pair			Qualitative ion pair			Quantitation limits(ppm)		
	Englis	Chinese	Precursor ion (<i>m/z</i>) > Product	Injection Cone voltage(V)	Collis ion	Precursor ion (<i>m/z</i>) > Product	Injection Cone voltage(V)	Collis ion	Fruits and vegetable	Cereal ^b	Tea ^c
84	Mepanipyrim	滅派林	224>106	38	24	224>131	38	22	0.01	0.02	0.05
85	Metaflumizon	美氟綜	507>287	40	26	507>267	40	32	0.01	0.02	0.05
86	Metalaxyl	滅達樂	280>220	26	13	280>192	26	17	0.01	0.02	0.05
87	Metconazole-cis	滅特座	320>70	34	36	320>125	34	36	0.01	0.02	0.05
88	Methamidophos	達馬松	142>94	21	13	142>125	21	13	0.01	0.02	0.05
89	Methiocarb	滅賜克	226>121	20	15	226>169	20	15	0.01	0.02	0.05
90	Methomyl	納乃得	163>88	10	10	163>106	10	10	0.01	0.02	0.05
91	Methoxyfenozide	滅芬諾	369>149	34	18	369>313	34	8	0.01	0.01	0.05
92	Metobromuron	撲多草	259>170	25	20	259>148	25	15	0.01	0.02	0.05
93	Metolcarb	治滅蝨	166>109	15	25	166>94	15	35	0.01	0.02	0.05
94	Metrafenone	滅芬農	409>209	20	17	409>227	20	29	0.01	0.02	0.05
95	Metribuzin	滅必淨	215>187	25	20	215>84	25	20	0.01	0.02	0.05
96	Monocrotophos	亞素靈	224>127	20	16	224>98	20	13	0.01	0.01	0.05
97	Norflurazon	-	304>284	39	24	304>160	39	33	0.01	0.02	0.05
98	Novaluron	諾伐隆	493>158	28	20	493>141	28	46	0.01	0.02	0.05
99	Omethoate	歐滅松	214>125	19	22	214>183	19	11	0.01	0.02	0.05
100	Oxamyl	歐殺滅	237>72	11	13	237>90	11	13	0.01	0.01	0.05
101	Oxycarboxin	嘉保信	268>175	26	16	268>147	26	25	0.01	0.02	0.05
102	Pencycuron	賓克隆	329>125	20	15	329>218	20	15	0.01	0.02	0.05
103	Penoxsulam	平速爛	484>195	36	32	484>164	36	34	0.01	0.01	0.05
104	Phosphamidon	福賜米松	300>174	29	13	300>127	29	21	0.01	0.02	0.05

表一、3-酮加保扶等 144 項農藥及內部標準品之多重反應偵測模式參數及定量極限(LC/MS/MS 正離子模式)(續)

Item	Analyte		Quantitation Ion Pair			Qualitative ion pair			Quantitation limits(ppm)		
	English	Chinese	Precursor ion (<i>m/z</i>) > Product ion (<i>m/z</i>)	Injection Cone voltage(V) (V)	Collis ion energ	Precursor ion (<i>m/z</i>) > Product ion (<i>m/z</i>)	Injection Cone voltage(V) (V)	Collis ion energ	Fruits and vegetable s ^a	Cereal ^b	Tea ^c
105	Phoxim	巴賽松	299>129	20	11	299>153	20	7	0.01	0.02	0.05
106	Pirimicarb	比加普	239>72	20	15	239>182	20	15	0.01	0.02	0.05
107	Prochloraz	撲克拉	376>308	17	11	376>266	17	14	0.01	0.02	0.05
108	Profenophos	佈飛松	373>128	29	45	373>303	29	19	0.01	0.02	0.05
109	Promecarb	普滅克	208>151	15	10	208>109	15	10	0.01	0.02	0.02
110	Propamocarb hydrochlorid	普拔克	189>102	27	17	189>144	27	13	0.01	0.02	0.05
111	Propanil	除草靈	218>162	20	20	218>127	20	20	0.01	0.02	0.05
112	Propargite	毆蟎多	368>231	15	10	368>175	15	20	0.01	0.02	0.05
113	Propoxur	安丹	210>111	12	20	210>93	12	20	0.01	0.02	0.05
114	Pymetrozine	派滅淨	218>105	28	16	218>79	28	32	0.01	0.01	-
115	Pyraclostrobin	百克敏	388>194	20	12	388>163	20	21	0.01	0.01	0.05
116	Pyridaben	畢達本	365>147	20	26	365>309	20	14	0.01	0.02	0.05
117	Pyridate	必汰草	379>207	19	18	379>351	19	10	0.01	0.02	0.06
118	Pyrifenox	比芬諾	295>93	31	22	295>67	31	60	0.01	0.02	0.05
119	Quinoxifen	快諾芬	308>197	43	31	308>162	43	44	0.01	0.02	0.05
120	Quizalofop-ethyl	快伏草	373>299	25	25	373>181	25	45	0.01	0.02	0.05
121	Simazine	草滅淨	202>124	40	16	202>96	40	22	0.01	0.02	0.05
122	Spinetoram J	賜諾特 J	749>142	80	31	749>98	80	62	0.01	0.01	0.05
123	Spinetoram L	賜諾特 L	760>142	80	29	760>98	80	40	0.01	0.01	0.05
124	Spinosad A (spinosin A)	賜諾殺 A	733>142	56	31	733>98	56	59	0.01	0.01	0.05

表一、3-酮加保扶等 144 項農藥及內部標準品之多重反應偵測模式參數及定量極限(LC/MS/MS 正離子模式)(續)

Item	Analyte		Quantitation Ion Pair			Qualitative ion pair			Quantitation limits(ppm)		
	English	Chinese	Precursor ion (<i>m/z</i>) > Product ion (<i>m/z</i>)	Injection Cone voltage(V) (V)	Collis ion energ	Precursor ion (<i>m/z</i>) > Product ion (<i>m/z</i>)	Injection Cone voltage(V) (V)	Collis ion energ	Fruits and vegetable s ^a	Cereal ^b	Tea ^c
125	Spinosad D (spinosin D)	賜諾殺 D	747>142	51	31	747>98	51	53	0.01	0.01	0.05
126	Spirodiclofen	賜派芬	411>313	25	11	411>71	25	15	0.01	0.02	0.05
127	Spirotetramat	賜派滅	374>302	25	17	374>216	25	35	0.01	0.02	0.05
128	Tebufenozide	得芬諾	353>297	19	8	353>133	19	20	0.01	0.02	0.05
129	Tebufenpyrad	得芬瑞	334>117	52	34	334>145	52	28	0.01	0.02	0.05
130	Tepraloxydim	得殺草	342>250	20	15	342>166	20	23	0.01	0.02	0.05
131	Thiabendazole	腐絕	202>175	30	30	202>131	30	30	0.01	0.02	0.05
132	Thiacloprid	賽果培	253>126	41	20	253>90	41	40	0.01	0.02	0.05
133	Thiamethoxam	賽速安	292>211	20	15	292>181	20	25	0.01	0.01	0.05
134	Thiobencarb	殺丹	258>125	20	15	258>100	20	10	0.01	0.02	0.05
135	Thiodicarb	硫敵克	355>88	25	15	355>108	25	15	0.01	0.02	0.05
136	Tolfenpyrad	脫芬瑞	384>197	37	28	384>145	37	28	0.01	0.02	0.05
137	Trichlorfon	三氯松	257>109	25	17	257>79	25	30	0.01	0.02	0.05
138	Tricyclazole	三賽唑	190>163	38	24	190>136	38	26	0.01	0.02	0.05
139	Trifloxystrobin	三氟敏	409>186	15	15	409>206	15	15	0.01	0.01	0.05
140	Triforine	賽福寧	437>392	16	12	437>217	16	29	0.01	0.02	0.05
141	Vamidotion	繁米松	288>146	17	13	288>118	17	22	0.01	0.02	0.05
142	XMC (Macbal)	滅克蟲	180>123	12	20	180>95	12	20	0.01	0.02	0.05
143	Xyllycarb	滅爾蟲	180>123	20	13	180>108	20	29	0.01	0.02	0.05

表一、3-酮加保扶等 144 項農藥及內部標準品之多重反應偵測模式參數及定量極限(LC/MS/MS 正離子模式)(續)

Item	Analyte		Quantitation Ion Pair			Qualitative ion pair			Quantitation limits(ppm)		
	English	Chinese	Precursor ion (<i>m/z</i>) > Product ion (<i>m/z</i>)	Injection Cone voltage(V) (V)	Collis ion energ	Precursor ion (<i>m/z</i>) > Product ion (<i>m/z</i>)	Injection Cone voltage(V) (V)	Collis ion energ	Fruits and vegetable a	Cereal ^b	Tea ^c
144	Zoxamide	座賽胺	336>187	32	25	336>159	32	38	0.01	0.02	0.05
L.S.	Triphenylphosphate	磷酸三苯酯	327>77	40	35	-	-	-	-	-	-

^a 適用於蔬果類、香辛植物及其他草本植物(鮮食)。

^b 適用於穀類及乾豆類。

^c 適用於茶類、香辛植物及其他草本植物(乾燥)。

表二、本達隆等 6 項農藥之多重反應偵測模式參數及定量極限(LC/MS/MS 負離子模式)

Item	Analyte		Quantitation Ion Pair			Qualitative ion pair			Quantitation limits(ppm)		
	English	Chinese	Precursor ion (m/z) > Product ion (m/z)	Injection Cone voltage(V) (V)	Collision ion energy (eV)	Precursor ion (m/z) > Product ion (m/z)	Injection Cone voltage(V) (V)	Collision ion energy (eV)	Fruits and vegetable ^a	Cereal ^b	Tea ^c
1	Bentazone	本達隆	239>132	35	25	239>137	35	20	0.01	0.02	0.05
2	Diflubenzuron	二福隆	309>289	20	10	309>156	20	10	0.01	0.02	0.05
3	Fipronil	芬普尼	435>330	25	20	435>250	25	25	0.001	0.001	0.002
4	Fluazinam	扶吉胺	463>416	30	20	463>398	30	20	0.01	0.02	0.05
5	Lufenuron	祿芬隆	509>326	25	20	509>175	25	40	0.01	0.02	0.05
6	Teflubenzuron	得福隆	379>339	20	10	379>196	20	20	0.01	0.02	0.05

^a 適用於蔬果類、香辛植物及其他草本植物(鮮食)。

^b 適用於穀類及乾豆類。

^c 適用於茶類、香辛植物及其他草本植物(乾燥)。

表三、Acetochlor 等 160 項農藥及內部標準品之多重反應偵測模式參數及定量極限(GC/MS/MS)(續)

項次	分析物		定量離子對		定性離子對		定量極限(ppm)		
	英文名	中文名	前驅離子(m/z) > 產物離子(m/z)	碰撞能量 (eV)	前驅離子(m/z) > 產物離子(m/z)	碰撞能量 (eV)	蔬果類 ^a	穀類 ^b	茶類 ^c
1	α -BHC	α -蟲必死	181>145	15	181>109	30	0.01	0.02	0.03
2	β -BHC	β -蟲必死	181>145	15	181>109	30	0.01	0.02	0.05
3	γ -BHC (Lindane)	γ -蟲必死(靈丹)	181>145	15	181>109	30	0.01	0.02	0.05
4	δ -BHC	δ -蟲必死	181>145	15	181>109	30	0.01	0.02	0.05
5	α -Endosulfan	α -安殺番	241>206	15	241>170	25	0.01	0.02	0.05
6	β -Endosulfan	β -安殺番	241>206	15	241>170	25	0.01	0.04	0.1
7	Endosulfan-sulfate	安殺番硫酸鹽	272>237	15	272>235	15	0.01	0.04	0.1
8	cis- Chlordane	cis-可氯丹	373>266	25	375>301	10	0.01	0.02	0.05
9	trans-Chlordane	trans-可氯丹	373>266	25	375>301	10	0.01	0.02	0.05
10	<i>o,p'</i> -DDT	<i>o,p'</i> -滴滴涕	235>165	40	235>200	10	0.01	0.02	0.02
11	<i>p,p'</i> -DDT	<i>p,p'</i> -滴滴涕	235>165	25	235>200	10	0.01	0.02	0.02
12	<i>o,p'</i> -DDD	<i>o,p'</i> -滴滴滴	235>165	20	237>165	20	0.01	0.02	0.02
13	<i>p,p'</i> -DDD	<i>p,p'</i> -滴滴滴	235>165	25	235>199	20	0.01	0.02	0.02
14	<i>o,p'</i> -DDE	<i>o,p'</i> -滴滴易	248>176	30	246>176	30	0.01	0.02	0.02
15	<i>p,p'</i> -DDE	<i>p,p'</i> -滴滴易	246>176	40	246>211	20	0.01	0.02	0.02
16	Aldrin	阿特靈	263>193	40	263>226	25	0.01	0.02	0.03
17	Dieldrin	地特靈	263>193	40	263>228	25	0.01	0.02	0.05
18	Acetochlor	-	146>130	30	223>146	10	0.01	0.02	0.1
19	Acrinathrin	阿納寧	208>181	5	181>152	30	0.01	0.02	0.05
20	Alachlor	拉草	188>160	10	160>132	10	0.01	0.02	0.05

表三、Acetochlor 等 160 項農藥及內部標準品之多重反應偵測模式參數及定量極限(GC/MS/MS)(續)

項次	分析物		定量離子對		定性離子對		定量極限(ppm)		
	英文名	中文名	前驅離子(m/z) > 產物離子(m/z)	碰撞能量 (eV)	前驅離子(m/z) > 產物離子(m/z)	碰撞能量 (eV)	蔬果類 ^a	穀類 ^b	茶類 ^c
21	Allethrin	亞烈寧	123>81	10	123>95	10	0.02	0.1	0.1
22	Azinphos-methyl	谷速松	160>132	5	160>77	20	0.01	0.02	0.1
23	Benfluralin	倍尼芬	292>206	10	292>160	20	0.01	0.02	0.05
24	Bifenox	必芬諾	341>310	10	341>281	15	0.01	0.02	0.05
25	Bifenthrin	畢芬寧	181>166	10	181>153	10	0.01	0.02	0.05
26	Bitertanol	比多農	170>115	40	170>141	25	0.01	0.02	0.05
27	Bromacil	克草	205>188	15	205>162	15	0.01	0.02	0.05
28	Bromophos-ethyl	乙基溴磷松	359>303	15	359>331	5	0.01	0.02	0.05
29	Bromophos-methyl	(甲基)溴磷松	331>316	20	331>286	30	0.01	0.02	0.1
30	Bromopropylate	新殺蟎	183>155	15	341>185	20	0.01	0.02	0.05
31	Bromuconazole	溴克座	295>173	15	173>145	15	0.01	0.02	0.05
32	Bupirimate	布瑞莫	273>193	5	208>165	15	0.01	0.02	0.05
33	Butachlor	丁基拉草	237>160	10	176>147	15	0.01	0.02	0.05
34	Butralin	比達寧	266>174	25	266>190	10	0.01	0.02	0.05
35	Carbophenothion	加芬松	342>157	10	342>296	5	0.01	0.02	0.05
36	Chinomethionat	蟎離丹	206>148	15	234>148	25	0.01	0.02	0.05
37	Chlorfenapyr	克凡派	247>227	15	247>200	30	0.01	0.02	0.1
38	Chloropropylate	克氯蟎	139>111	15	251>139	15	0.01	0.02	0.02
39	Chlorothalonil	四氯異苯腈	266>168	30	266>229	20	0.02	0.04	0.1
40	Chlorpropham	-	213>171	5	127>65	25	0.01	0.02	0.05

表三、Acetochlor 等 160 項農藥及內部標準品之多重反應偵測模式參數及定量極限(GC/MS/MS)(續)

項次	分析物		定量離子對		定性離子對		定量極限(ppm)		
	英文名	中文名	前驅離子(m/z) > 產物離子(m/z)	碰撞能量 (eV)	前驅離子(m/z) > 產物離子(m/z)	碰撞能量 (eV)	蔬果類 ^a	穀類 ^b	茶類 ^c
41	Chlorpyrifos	陶斯松	314>258	15	314>286	5	0.01	0.02	0.05
42	Chlorpyrifos-methyl	甲基陶斯松	286>96	40	286>271	15	0.01	0.02	0.05
43	Chlorthal-dimethyl	大克草	301>223	30	332>301	10	0.01	0.02	0.05
44	Chlozolate	克氯得	331>259	5	259>188	10	0.01	0.02	0.05
45	Cyanofenphos	施力松	169>141	5	185>157	5	0.01	0.02	0.05
46	Cyfluthrin	賽扶寧	163>91	15	163>127	5	0.01	0.02	0.05
47	Cyhalofop-butyl	丁基賽伏草	256>120	10	120>91	15	0.01	0.02	0.05
48	Cypermethrin	賽滅寧	163>91	15	163>127	5	0.01	0.03	0.5
49	Alpha-cypermethrin	亞滅寧	163>91	15	199>127	8	0.01	0.03	0.5
50	Cyproconazole	環克座	222>125	25	222>82	10	0.01	0.02	0.05
51	Deltamethrin	第滅寧	253>93	20	253>174	5	0.01	0.02	0.05
52	Diazinon	大利松	304>179	15	304>162	5	0.01	0.02	0.05
53	Dichlorvos	二氯松	185>93	10	185>109	15	0.01	0.02	0.05
54	Dicloran	大克爛	206>175	10	206>148	20	0.01	0.02	0.05
55	Dicofol	大克蟎	139>111	15	251>139	15	0.01	0.02	0.05
	Dicofol (DCBP)	大克蟎代謝物	139>111	15	250>139	15			
56	Difenoconazole	待克利	323>265	15	323>202	40	0.01	0.02	0.05
57	Diniconazole	達克利	268>232	10	268>135	40	0.01	0.02	0.05
58	Dinitramine	撻乃安	261>195	20	261>241	10	0.01	0.02	0.05
59	Diphenamid	大芬滅	167>152	20	239>167	5	0.01	0.02	0.05

表三、Acetochlor 等 160 項農藥及內部標準品之多重反應偵測模式參數及定量極限(GC/MS/MS)(續)

項次	分析物		定量離子對		定性離子對		定量極限(ppm)		
	英文名	中文名	前驅離子(m/z) > 產物離子(m/z)	碰撞能量 (eV)	前驅離子(m/z) > 產物離子(m/z)	碰撞能量 (eV)	蔬果類 ^a	穀類 ^b	茶類 ^c
60	Disulfoton	二硫松	88>60	5	274>88	5	0.01	0.02	0.05
61	Ditalimfos	普得松	148>130	10	130>102	15	0.01	0.02	0.03
62	Edifenphos	護粒松	173>109	10	310>173	10	0.01	0.02	0.05
63	Endrin	安特靈	263>193	40	263>228	25	0.01	0.02	0.05
64	EPN	一品松	157>77	25	157>110	15	0.01	0.02	0.03
65	Epoconazole	依普座	192>138	15	192>157	5	0.01	0.02	0.05
66	Ethion	愛殺松	231>175	10	231>185	10	0.01	0.02	0.05
67	Ethoprophos	普伏松	200>158	5	158>114	5	0.01	0.01	0.05
68	Etofenprox	依芬寧	163>135	10	163>107	20	0.01	0.02	0.05
69	Etrimfos	益多松	292>181	5	292>153	20	0.01	0.02	0.05
70	Fenarimol	芬瑞莫	251>139	15	139>111	15	0.01	0.02	0.05
71	Fenbuconazole	芬克座	198>129	5	198>102	30	0.01	0.02	0.05
72	Fenitrothion	撲滅松	277>109	20	277>260	5	0.01	0.02	0.05
73	Fenoxaprop-ethyl	芬殺草	361>288	10	361>261	10	0.01	0.02	0.05
74	Fenpropathrin	芬普寧	265>210	10	265>89	40	0.01	0.02	0.05
75	Fenpropimorph	芬普福	128>70	10	303>128	10	0.01	0.02	0.05
76	Fensulfothion	繁福松	156>141	15	292>109	15	0.01	0.04	0.25
77	Fenvalerate	芬化利	225>119	15	225>147	10	0.01	0.02	0.05
78	Esfenvalerate	益化利	225>119	15	225>147	10	0.01	0.02	0.05
79	Flucythrinate	護賽寧	199>157	5	199>107	25	0.01	0.02	0.05

表三、Acetochlor等160項農藥及內部標準品之多重反應偵測模式參數及定量極限(GC/MS/MS)(續)

項次	分析物		定量離子對		定性離子對		定量極限(ppm)		
	英文名	中文名	前驅離子(m/z) > 產物離子(m/z)	碰撞能量 (eV)	前驅離子(m/z) > 產物離子(m/z)	碰撞能量 (eV)	蔬果類 ^a	穀類 ^b	茶類 ^c
80	Flutolanil	福多寧	173>145	20	281>173	10	0.01	0.02	0.05
81	Fluvalinate	福化利	250>200	20	250>208	30	0.01	0.02	0.05
82	Fonofos	大福松	246>137	5	246>109	15	0.01	0.02	0.05
83	Formothion	福木松	224>125	20	224>155	10	0.01	0.02	0.05
84	Fthalide	熱必斯	243>215	20	243>179	30	0.01	0.02	0.05
85	Halfenprox	合芬寧	263>235	15	263>115	25	0.01	0.02	0.05
86	Heptachlor	飛佈達	272>237	20	237>143	30	0.01	0.04	0.05
87	Heptachlor epoxide	環氧飛佈達	353>263	20	353>282	20	0.01	0.02	0.05
88	Heptenophos	飛達松	124>89	15	124>63	35	0.01	0.02	0.05
89	Hexazinone	菲殺淨	171>71	20	171>85	15	0.01	0.02	0.05
90	Imibenconazole	易胺座	125>89	20	253>82	5	0.02	0.04	0.25
91	Iprobenfos	丙基喜樂松	204>91	10	204>122	15	0.01	0.02	0.05
92	Iprodione	依普同	314>245	10	314>271	5	0.01	0.02	0.05
93	Isofenphos	亞芬松	213>185	5	213>121	15	0.01	0.02	0.05
94	Isoprothiolane	亞賜圍	290>204	5	290>118	10	0.01	0.02	0.05
95	Isoxathion	加福松	105>77	20	105>51	40	0.01	0.02	0.1
96	Kresoxim-methyl	克收欣	116>89	15	206>116	5	0.01	0.02	0.05
97	Malathion	馬拉松	173>127	5	173>99	15	0.01	0.02	0.05
98	Mefenacet	滅芬草	192>136	15	192>109	35	0.01	0.02	0.05
99	Mephosfolan	美福松	196>168	5	196>140	10	0.01	0.02	0.05

表三、Acetochlor 等 160 項農藥及內部標準品之多重反應偵測模式參數及定量極限(GC/MS/MS)(續)

項次	分析物		定量離子對		定性離子對		定量極限(ppm)		
	英文名	中文名	前驅離子(m/z) > 產物離子(m/z)	碰撞能量 (eV)	前驅離子(m/z) > 產物離子(m/z)	碰撞能量 (eV)	蔬果類 ^a	穀類 ^b	茶類 ^c
100	Mepronil	滅普寧	119>91	15	269>119	15	0.01	0.02	0.05
101	Metazachlor	滅草胺	133>117	30	209>132	20	0.01	0.02	0.05
102	Methacrifos	滅克松	125>79	5	125>62	5	0.01	0.02	0.1
103	Methidathion	滅大松	145>85	5	145>58	15	0.01	0.02	0.05
104	Metolachlor	莫多草	238>162	10	162>133	15	0.01	0.02	0.05
105	Mevinphos	美文松	127>109	10	192>127	5	0.01	0.02	0.2
106	Mirex	滅蟻樂	272>237	20	332>262	40	0.01	0.04	0.05
107	Molinate	稻得壯	126>55	15	187>126	5	0.01	0.02	0.25
108	Myclobutanil	邁克尼	179>125	15	179>152	5	0.01	0.02	0.05
109	Napropamide	滅落脫	271>128	5	128>72	5	0.01	0.02	0.05
110	Nuarimol	尼瑞莫	235>139	15	235>123	15	0.01	0.02	0.05
111	Oxadiazon	樂滅草	258>175	5	258>112	30	0.01	0.02	0.05
112	Oxadixyl	毆殺斯	163>132	10	163>117	30	0.01	0.02	0.05
113	Oxyfluorfen	復祿芬	302>274	10	252>146	40	0.01	0.02	0.05
114	Paclobutrazol	巴克素	236>125	10	236>167	10	0.01	0.02	0.05
115	Parathion	巴拉松	291>109	10	291>137	5	0.01	0.02	0.05
116	Parathion-methyl	甲基巴拉松	125>47	15	125>79	5	0.01	0.02	0.05
117	Penconazole	平克座	248>157	30	248>192	15	0.01	0.02	0.05
118	Pendimethalin	施得圍	252>162	10	252>191	5	0.01	0.02	0.05
119	Permethrin	百滅寧	183>153	15	183>168	15	0.01	0.02	0.05

表三、Acetochlor等160項農藥及內部標準品之多重反應偵測模式參數及定量極限(GC/MS/MS)(續)

項次	分析物		定量離子對		定性離子對		定量極限(ppm)		
	英文名	中文名	前驅離子(m/z) > 產物離子(m/z)	碰撞能量 (eV)	前驅離子(m/z) > 產物離子(m/z)	碰撞能量 (eV)	蔬果類 ^a	穀類 ^b	茶類 ^c
120	Phenthoate	賽達松	274>246	5	274>121	10	0.01	0.02	0.05
121	Phorate	福瑞松	260>75	10	260>231	5	0.01	0.02	0.05
122	Phosalone	裕必松	182>111	15	182>138	5	0.01	0.02	0.05
123	Phosmet	益滅松	160>77	25	160>133	15	0.01	0.02	0.05
124	Pirimiphos-ethyl	乙基亞特松 (必滅松)	318>166	15	318>182	15	0.01	0.02	0.05
125	Pirimiphos-methyl	亞特松	290>125	25	290>151	20	0.01	0.02	0.05
126	Pretilachlor	普拉草	176>147	15	176>134	15	0.01	0.04	0.25
127	Procymidone	撲滅寧	283>95	20	283>255	10	0.01	0.02	0.05
128	Prometryn	佈滅淨	241>199	5	184>69	15	0.01	0.02	0.05
129	Propaphos	加護松	220>140	10	220>125	30	0.01	0.02	0.05
130	Propiconazole	普克利	173>145	15	259>69	10	0.01	0.02	0.05
131	Prothiofos	普硫松	267>239	10	267>221	20	0.01	0.02	0.05
132	Pyraclufos	白克松	360>194	10	360>139	15	0.01	0.02	0.05
133	Pyrazophos	白粉松	221>193	10	232>204	10	0.01	0.02	0.05
134	Pyridaphenthion	必芬松	340>199	5	340>109	20	0.01	0.02	0.05
135	Pyrimethanil	派美尼	198>156	25	198>118	40	0.02	0.04	0.05
136	Pyrimidifen	畢汰芬	184>169	20	161>135	15	0.01	0.02	0.05
137	Pyriproxyfen	百利普芬	136>96	15	136>78	25	0.01	0.01	0.05
138	Pyroquilon	百快隆	173>130	25	173>144	25	0.01	0.02	0.05
139	Quinalphos	拜裕松	298>156	10	298>190	10	0.01	0.02	0.05

表三、Acetochlor等160項農藥及內部標準品之多重反應偵測模式參數及定量極限(GC/MS/MS)(續)

項次	分析物		定量離子對		定性離子對		定量極限(ppm)		
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140	Quintozene (PCNB)	五氯硝苯	295>214	40	295>237	20	0.01	0.02	0.02
141	Methyl pentachlorophenyl sulfide	五氯苯基甲基硫化物	296>246	35	296>281	20	0.01	0.02	0.02
142	Pentachloroaniline	五氯苯胺	265>158	20	265>167	20	0.01	0.02	0.02
143	Salithion	殺力松	216>201	10	216>183	10	0.01	0.02	0.03
144	Silafluofen	矽護芬	179>151	10	179>91	25	0.01	0.02	0.05
145	Tebuconazole	得克利	250>125	25	250>153	10	0.01	0.02	0.05
146	Terbufos	托福松	231>175	10	153>97	10	0.01	0.01	0.05
147	Tetraconazole	四克利	336>218	20	336>204	35	0.01	0.02	0.05
148	Tetradifon	得脫蟎	356>159	10	356>229	10	0.01	0.02	0.05
149	Tetramethrin	治滅寧	164>107	15	164>135	5	0.01	0.02	0.05
150	Thenylchlor	欣克草	288>141	10	127>59	10	0.01	0.02	0.05
151	Thifluzamide	賽氟滅	194>166	10	194>125	30	0.01	0.02	0.05
152	Tolclofos-methyl	脫克松	265>250	15	250>220	10	0.01	0.02	0.05
153	Triadimefon	三泰芬	208>181	5	208>111	25	0.01	0.02	0.05
154	Triadimenol	三泰隆	168>70	15	128>65	25	0.01	0.02	0.05
155	Triazophos	三落松	257>162	5	257>119	30	0.01	0.02	0.05
156	Tridiphane	三地芬	187>159	15	173>145	15	0.01	0.02	0.05
157	Triflumizole	賽福座	278>73	5	206>179	15	0.01	0.02	0.05
158	Trifluralin	三福林	306>264	5	306>206	15	0.01	0.02	0.04

表三、Acetochlor 等 160 項農藥及內部標準品之多重反應偵測模式參數及定量極限(GC/MS/MS)(續)

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159	Vinclozolin	免克寧	285>212	10	285>178	15	0.01	0.02	0.05
160	λ-Cyhalothrin	賽洛寧	181>152	30	197>141	15	0.01	0.02	0.05
I.S.	Triphenylphosphate	磷酸三苯酯	326>169	30	-	-	-	-	-

a Suitable for vegetables and fruit, spice plants and other herbs(fresh meal).

b Applies to cereals and dried beans.

c Suitable for tea, spice plants and other herbs(dried).