

Application Brief



Contents



Pesticide Analysis

- 03** Determination of 331 Pesticides and Its Metabolites in Plant-Derived Foods (LC-MS/MS, SGC0E-21-16)
- 05** Determination of 72 Pesticides and Its Metabolites in Plant-Derived Foods (LC-MS/MS, SGLC-LCMS-054)
- 06** Determination of 208 Pesticides and Its Metabolites in Plant-Derived Foods (GC-MS/MS, SGLC-GCMS-004)
- 07** Determination of 208 Pesticides and Its Metabolites in Plant-Derived Foods (GC-MS/MS)
- 09** Determination of 9 Carbamate Pesticides and Metabolites Residues in Mushroom (HPLC, LC-281 & SOP-021-038)
- 10** Determination of glyphosate and its metabolite AMPA in tea and rice by derivatization method (LC-MS/MS, SGLC-LCMS-035)
- 11** Determination of Fipronil and Metabolites Residues in Egg (LC-MS/MS, SGLC-LCMS-020)
- 12** Determination of Fipronil and Metabolites Residues in Egg (LC-MS/MS, SGLC-LCMS-019)
- 13** Determination of Fipronil and Metabolites in Egg by SHIMSEN QuEChERS and GC-MS/MS (GCMSMS-119)



Biological Sample

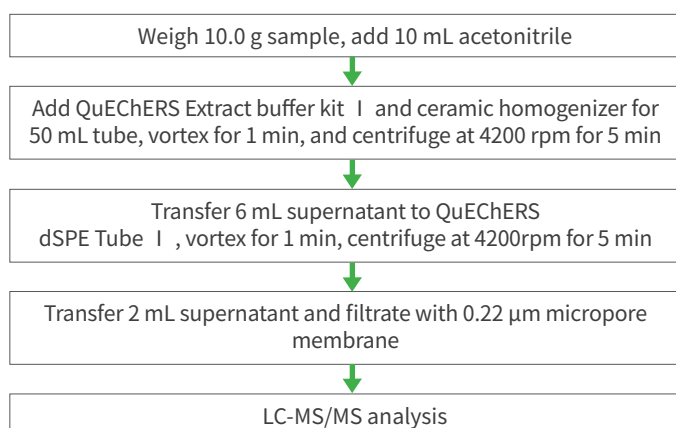
- 14** Determination of enalapril and Enalaprilat in plasma

Method: GB 23200.121-2021 Determination of 331 Pesticides and Its Metabolites in Plant-Derived Foods (LC-MS/MS, SGC0E-21-16)

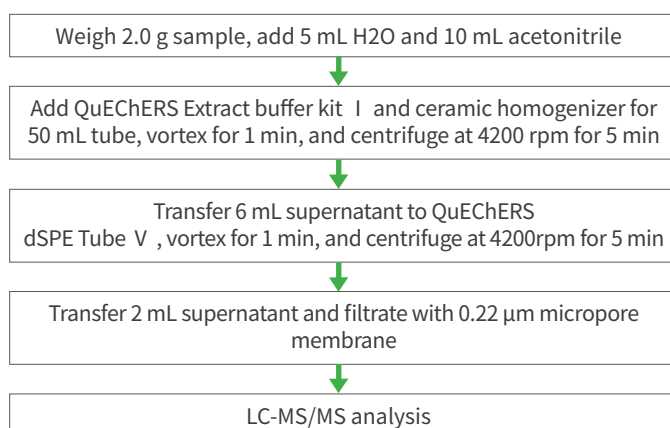
- Shim-pack GIST C18-AQ LC Column (1.9 μm , 100 \times 2.1 mm, PN: 227-30807-02)
- ShimNex Filter Holder (PN: 380-00341-05)
- SHIMSEN Arc Disc Hydrophilic PTFE, 13 mm, 0.22 μm (PN: 380-00341-05)

Sample Preparation (QuEChERS Method)

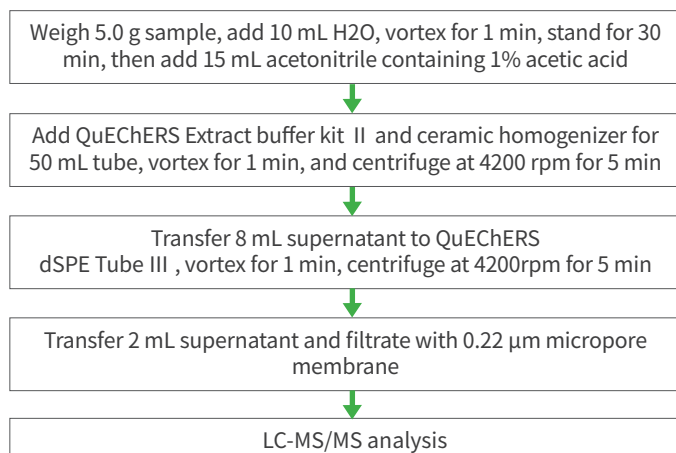
● Vegetables, fruits, mushrooms and sugars



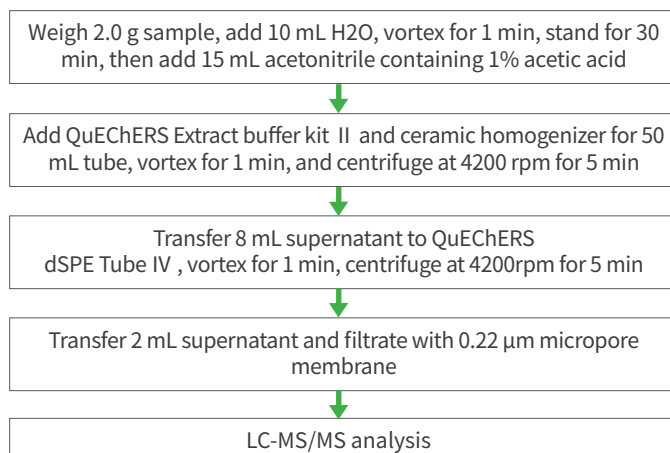
● Vegetable oil



● Grains, oil crops and nuts



● Tea and spices



Analysis Condition

Instrument: Shimadzu Nexera LC-40 XR + LCMS-8050

LC Column: Shim-pack GIST C18-AQ (1.9 μm , 100 \times 2.1 mm, PN: 227-30807-02)

UHPLC Condition

Flow Rate: 0.3 mL/min Column Temperature: 40 °C

Mobile Phase A: 2 mM Ammonium formate in water + 0.01% Formic acid

Mobile Phase B: 2 mM Ammonium formate in methanol + 0.01% Formic acid

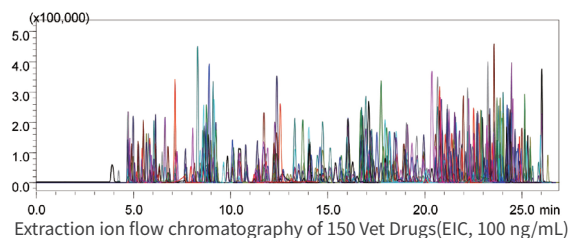
Injection volume: 2 μL (Co-injection with 10 μL water)

Gradient Program

Time (Min)	0	1	1.5	2.5	18	23	27	27.1	30
A (%)	97	97	85	50	30	2	2	97	97
B (%)	3	3	15	50	70	98	98	3	3

MS Condition

Electron Ionization Mode: ESI±; Scan Mode: MRM
 Heating block temp.: 400°C; Interface temp.: 300 °C; DL temp.: 150 °C
 Heating gas flow: 10.0 L/min; Drying gas flow: 10.0 L/min; Nebulizing gas flow: 3.0 L/min; Please check the MRM parameters in GB 23200.121-2021 method



Related Application

Application Serial Number	Application Theme
SGCOE-21-16	GB 23200.121-2021 Method Total Solution: Analysis of 331 Residual Pesticides and Metabolites in Plant-Derived Food by LC-MS/MS System
SOP-21-032	Standard Operation Procedure: Analysis of 331 Residual Pesticides and Metabolites in Plant-Derived Food by LC-MS/MS System
SGLC-LCMS-048	Analysis of 331 Residual Pesticides and Metabolites in Garlic by LC-MS/MS System
SGLC-LCMS-049	Analysis of 331 Residual Pesticides and Metabolites in Grape by LC-MS/MS System
SGLC-LCMS-050	Analysis of 331 Residual Pesticides and Metabolites in Ginger by LC-MS/MS System
SGLC-LCMS-051	Analysis of 331 Residual Pesticides and Metabolites in Canola Oil by LC-MS/MS System

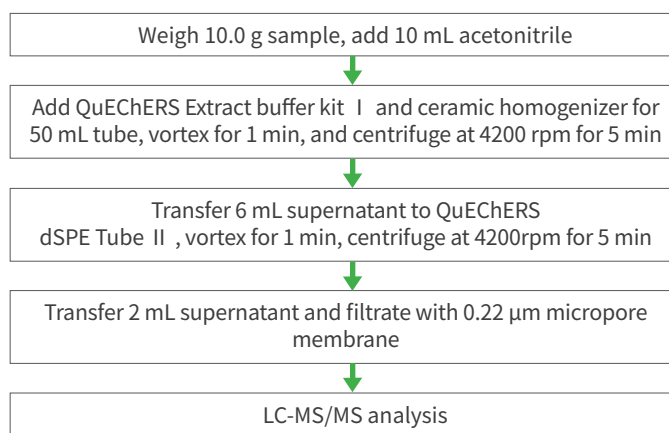
Related Product Kit

Kit Number and Description	Type	Product Number	Product Description	Sample Matrix Application
QuEChERS Extraction Kit for Pesticides Analysis in Plant-Derived Food Kit Number: PRC-KIT-001-01	QuEChERS Extraction Salt	380-00149	SHIMSEN QuEChERS Extraction Salts I , 4g MgSO ₄ , 1g NaCl, 0.5g DHS, 1g TSCD, 50/P	Vegetables, fruits, mushrooms, sugars and vegetable oil
		380-00152	SHIMSEN QuEChERS Extraction Salts II , 6g MgSO ₄ , 1.5g NaOAc, 50/P	Grains, oil crops, nuts, tea and spices
	Ceramic Homogenizer	380-00171	Ceramic Homogenizer for 50 mL Centrifuge Tube, 100/P	--
Pesticides Analysis Kit for GB 23200.121 Method Kit Number: PRC-KIT-001-03	QuEChERS dSPE Tube	380-00195	SHIMSEN QuEChERS dSPE Tube I , 15mL, 30mg PSA, 900mg MgSO ₄ 50/P	Vegetables, fruits, mushrooms and sugars with low pigment content
		380-00196-01	SHIMSEN QuEChERS dSPE Tube II , 15mL, 30mg PSA, 15mg GCB, 900mg MgSO ₄ 50/P	Vegetables, fruits, mushrooms and sugars with high pigment content
		380-00197	SHIMSEN QuEChERS dSPE Tube III , 15mL, 400mg C18, 80mg PSA, 1200mg MgSO ₄ 50/P	Grains, oil crops and nuts
		380-00145	SHIMSEN QuEChERS dSPE Tube IV , 15mL, 400mg PSA, 400mg C18, 200mg GCB, 1200mg MgSO ₄ , 50/P	Tea and spices
		380-00197-02	SHIMSEN QuEChERS dSPE Tube V , 15mL, 300mg PSA, 300mg C18, 150mg GCB, 900mg MgSO ₄ , 50/P	Vegetable oil
	LC Column	227-30807-02	Shim-pack GIST C18-AQ HP, 1.9um, 2.1×100mm	--
	Standards	380-03635	SHIMSEN PESTICIDE MIX for GB 23200.121-2021, 20ppm	--

Method: GB 23200.121-2021 Determination of 72 Pesticides and Its Metabolites in Plant-Derived Foods (LC-MS/MS, SGLC-LCMS-054)

- Shim-pack GIST C18-AQ LC Column (1.9 μm , 50 \times 2.1 mm, PN: 227-30807-01)
- SHIMSEN QuEChERS Extraction Salt and dSPE Tube (PN: 380-00149, 380-00196-01)
- ShimNex Filter Holder (PN: 380-00341-05)
- SHIMSEN Arc Disc Hydrophilic PTFE, 13 mm, 0.22 μm (PN: 380-00341-05)

Sample Preparation (QuEChERS Method)



Analysis Condition

Instrument: Shimadzu Nexera XR + LCMS-8060

LC Column: Shim-pack GIST C18-AQ (1.9 μm , 50 \times 2.1 mm, PN: 227-30807-01)

UHPLC Condition

Flow Rate: 0.3 mL/min Column Temperature: 40 °C

Mobile Phase A: 2 mM Ammonium formate in water + 0.01% Formic acid

Mobile Phase B: 2 mM Ammonium formate in methanol + 0.01% Formic acid

Injection volume: 2 μL (Co-injection with 20 μL water)

Injection volume: 2 μL (Co-injection with 10 μL water)

Gradient Program

Time (Min)	0	1	2	3	4	8	9	9.1	10
A (%)	97	97	85	50	30	2	2	97	97
B (%)	3	3	15	50	70	98	98	3	3

MS Condition

Electron Ionization Mode: ESI \pm ; Scan Mode: MRM

Heating block temp.: 400°C; Interface temp.: 300 °C; DL temp.: 150 °C

Heating gas flow: 10.0 L/min; Drying gas flow: 10.0 L/min; Nebulizing gas flow: 3.0

L/min; Please check the MRM parameters in GB 23200.121-2021 method

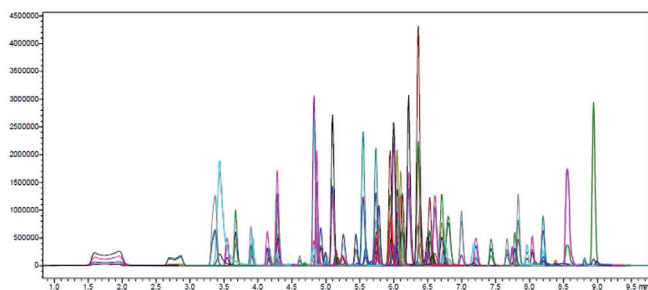


Fig1. MRM Chromatogram of Pesticides in Grape Matrix
(Concentration: 10 ng/mL, Co-Injection with 10 μL Water)

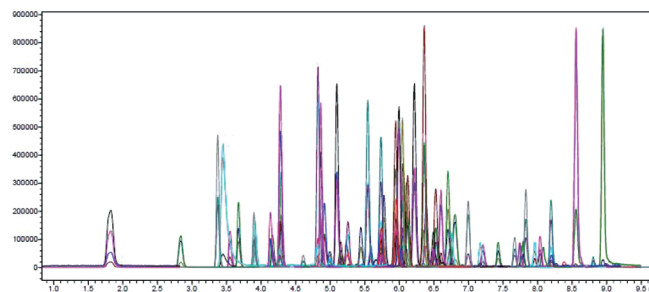


Fig2. MRM Chromatogram of Pesticides in Grape Matrix
(Concentration: 10 ng/mL, Dilute 5 Times by Water before Injection)

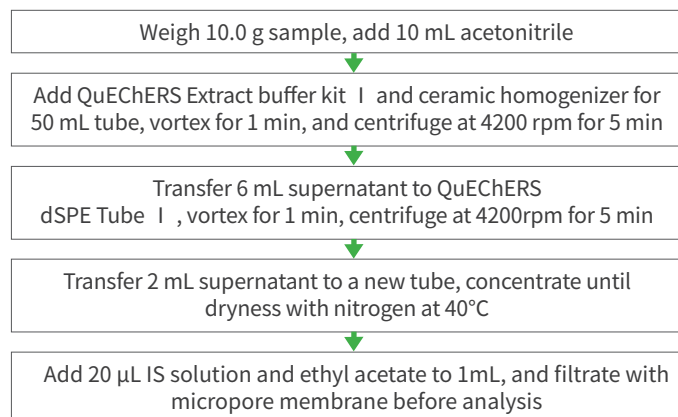
Method: GB 23200.113-2018

Determination of 208 Pesticides and Its Metabolites in Plant-Derived Foods (GC-MS/MS, SGLC-GCMS-004)

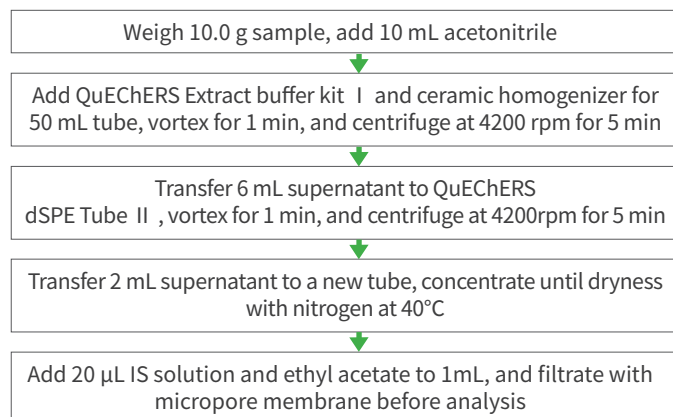
- SH-1701 GC Column (30m×0.25mm, 0.25 μm, PN: 221-75777-30)
- SHIMSEN Arc Disc Hydrophilic PTFE, 13 mm, 0.22 μm (PN: 380-00341)

Sample Preparation (QuEChERS Method)

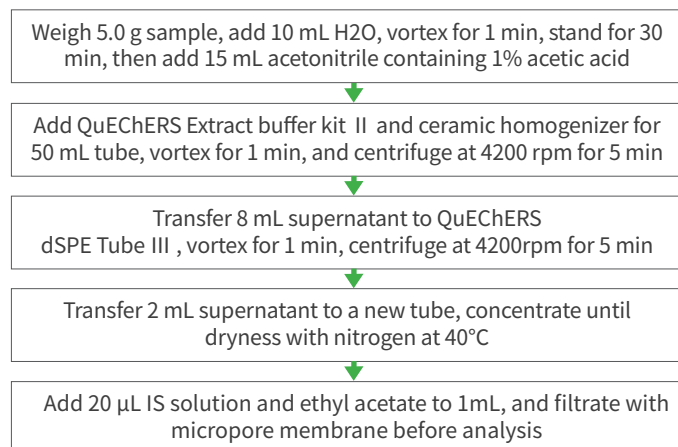
● Vegetables, fruits, mushrooms and sugars



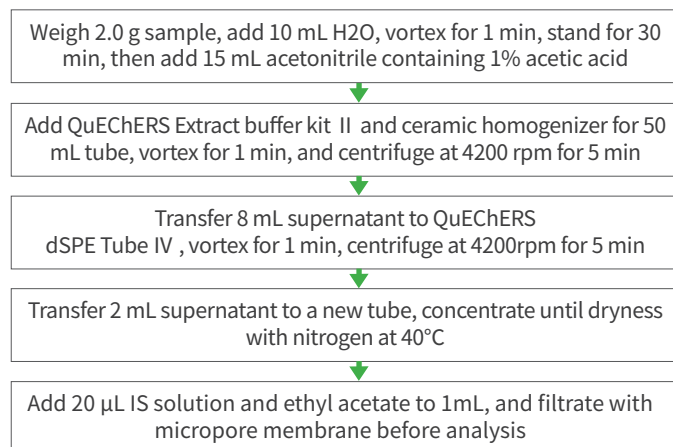
● Vegetables, fruits, mushrooms and sugars with high pigment content



● Grains, oil crops and nuts



● Tea and spices



Analysis Condition

Instrument: Shimadzu GCMS-TQ8040

GC Column: SH-1701 GC Column (30m×0.25mm, 0.25 μm, PN: 221-75777-30)

GC Condition

Column oven temp.: 40 °C (1 min), 40 °C/min to 120 °C (0 min), 5 °C/min to 240 °C (0 min), 12 °C/min to 300 °C (6 min);

Carrier gas: He; Flow rate: 1.0 mL/min; Injector temp.: 280 °C

Injection mode: Splitless; Injection volume: 1 μL;

MS Condition

Electron Ionization Mode: EI, 70 eV; Ion source temperature: 230 °C; Interface temperature: 280 °C; Solvent delay: 3 min; Scan Mode: MRM; Please check the MRM parameters in GB 23200.113-2018 method

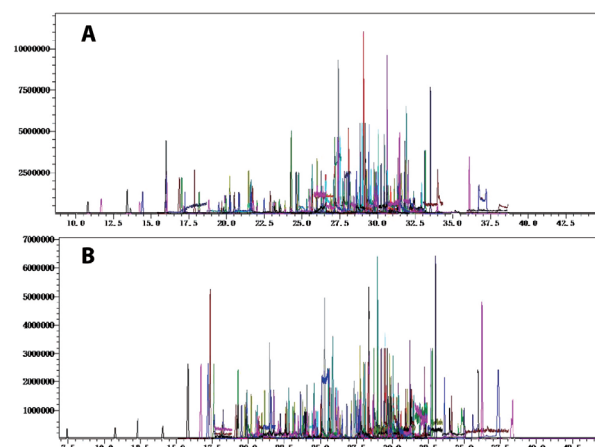


Fig. MRM Chromatogram of Pesticides Standard Mixture Solution A, Group A, 109 Pesticides standard mixture solution; B, Group B, 113 Pesticides standard mixture solution

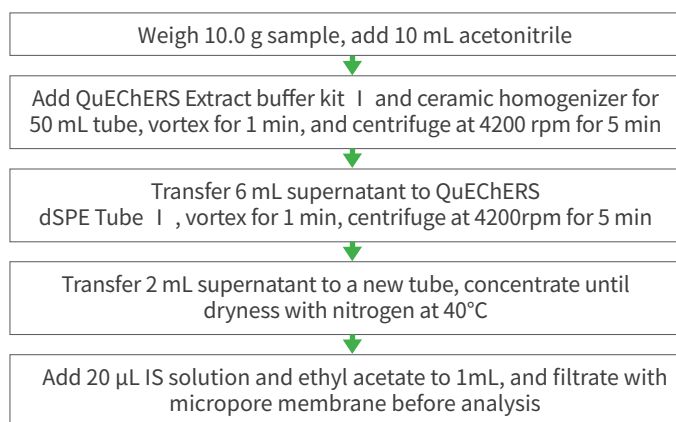
Method: GB 23200.113-2018

Determination of 208 Pesticides and Its Metabolites in Plant-Derived Foods (GC-MS/MS)

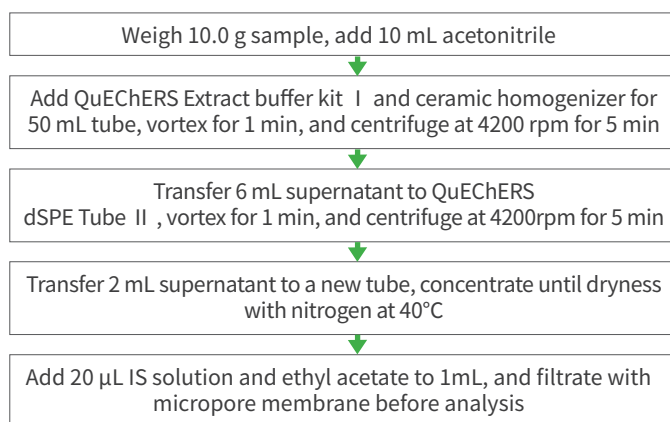
- SH-I-5Sil MS GC Column (30m×0.25mm, 0.25 μm, PN: 221-75954-30)
- SHIMSEN Arc Disc Hydrophilic PTFE, 13 mm, 0.22 μm (PN: 380-00341)

Sample Preparation (QuEChERS Method)

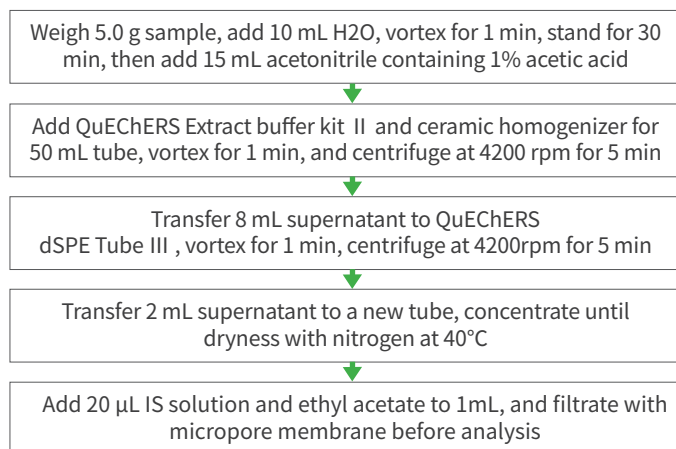
● Vegetables, fruits, mushrooms and sugars



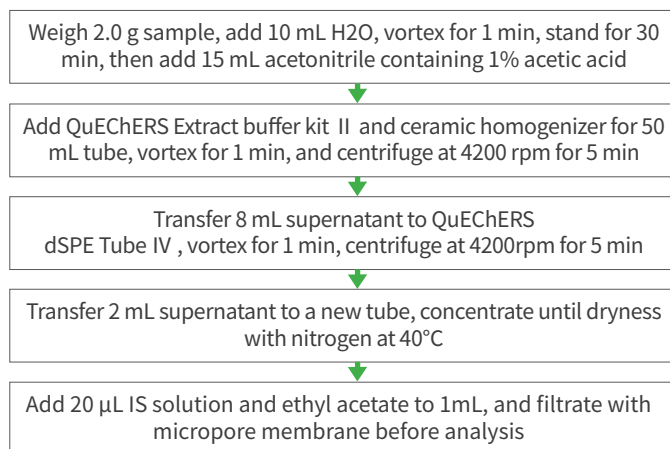
● Vegetables, fruits, mushrooms and sugars with high pigment content



● Grains, oil crops and nuts



● Tea and spices



Analysis Condition

Instrument: Shimadzu GCMS-TQ8040

GC Column: SH-I-5Sil MS GC Column (30m×0.25mm, 0.25 μm, PN: 221-75954-30)

GC Condition

Column oven temp.: 50 °C (1 min), 25 °C/min to 125 °C (0 min), 10 °C/min to 300 °C (15 min);

Carrier gas: He; Flow rate: 1.69 mL/min; Injector temp.: 250 °C

Injection mode: Splitless; Injection volume: 1 μL;

MS Condition

Electron Ionization Mode: EI, 70 eV; Ion source temperature: 200 °C; Interface temperature: 250 °C; Scan Mode: MRM; Please check the MRM parameters in GB 23200.113-2018 method

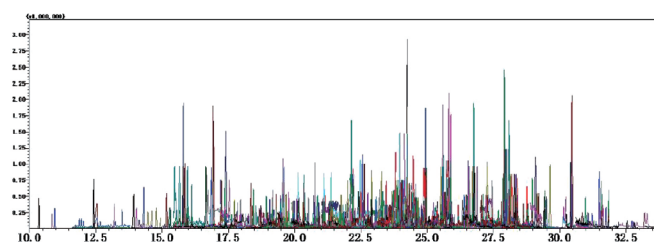


Fig. Total Ion Chromatogram of 208 Pesticides in Pumpkin Matrix (Concentration: 50 μg/mL)

Related Application

Application Serial Number	Application Theme
SOP-20-004	Standard Operation Procedure: Analysis of 208 Residual Pesticides and Metabolites in Plant-Derived Food by GC-MS/MS System
SGLC-GCMS-001	Determination of Multi-Pesticides and Metabolites in Plant-Derived Food
SGLC-GCMS-002	Analysis of Multi-Pesticides and Metabolites in Plant-Derived Food Using SHIMSEN QuEChERS and SH-I-5MS GC Column
SGLC-GCMS-004	Analysis of 208 Residual Pesticides and Metabolites in Plant-Derived Food

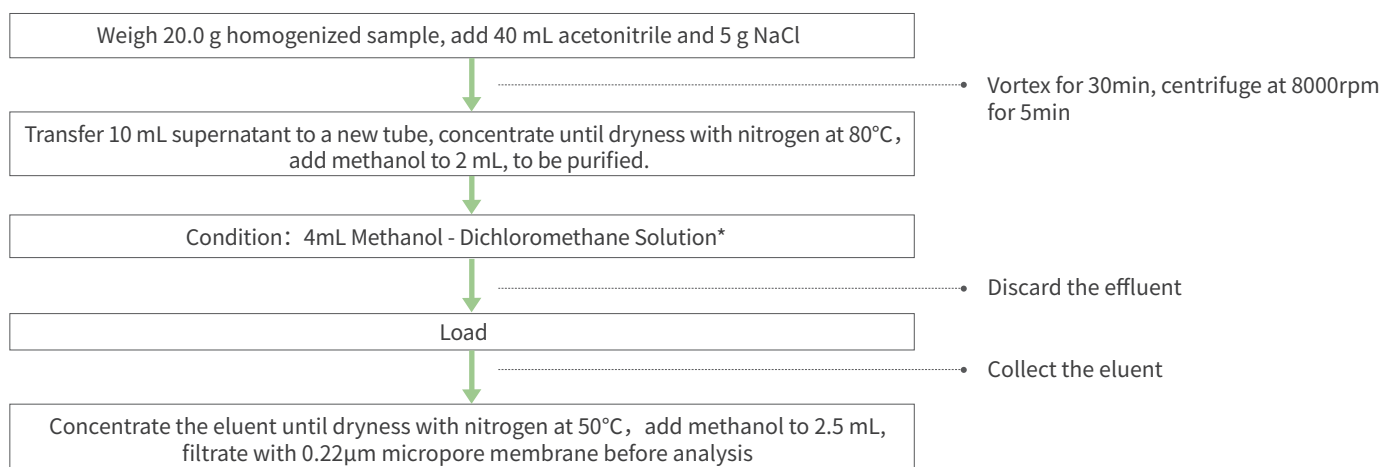
Related Product Kit

Kit Number and Description	Type	Product Number	Product Description	Sample Matrix Application
QuEChERS Extraction Kit for Pesticides Analysis in Plant-Derived Food Kit Number: PRC-KIT-001-01	QuEChERS Extraction Salt	380-00149	SHIMSEN QuEChERS Extraction Salts I , 4g MgSO ₄ , 1g NaCl, 0.5g DHS, 1g TSCD, 50/P	Vegetables, fruits, mushrooms and sugars
		380-00152	SHIMSEN QuEChERS Extraction Salts II , 6g MgSO ₄ , 1.5g NaOAc, 50/P	Grains, oil crops, nuts, tea and spices
	Ceramic Homogenizer	380-00171	Ceramic Homogenizer for 50 mL Centrifuge Tube, 100/P	--
Pesticides Analysis Kit for GB 23200.113 Method Kit Number: PRC-KIT-001-02	QuEChERS dSPE Tube	380-00123	SHIMSEN QuEChERS dSPE Tube I , 15mL, 150mg PSA, 900mg MgSO ₄ 50/P	Vegetables, fruits, mushrooms and sugars with low pigment content
		380-00124	SHIMSEN QuEChERS dSPE Tube II , 15mL, 150mg PSA, 15mg GCB, 8850mg MgSO ₄ 50/P	Vegetables, fruits, mushrooms and sugars with high pigment content
		380-00129	SHIMSEN QuEChERS dSPE Tube III , 15mL, 400mg C18, 400mg PSA, 1200mg MgSO ₄ 50/P	Grains, oil crops and nuts
		380-00145	SHIMSEN QuEChERS dSPE Tube IV , 15mL, 400mg PSA, 400mg C18, 200mg GCB, 1200mg MgSO ₄ , 50/P	Tea and spices
	GC Column	221-75777-30	SH-1701, 30 m × 0.25 mm × 0.25 μm	--
	Standards	380-03388	SHIMSEN PESTICIDE MIX for GB 23200.113-2018, 50ppm	--
Accessory	GC Column	221-75954-30	SH-I-5Sil MS, 30 m × 0.25 mm × 0.25 μm	Method Optimization
	Liner, Ultra Inert	RT-23336	Splitless Single Taper Splitless Single Taper w/Wool 5-pk	--
	CONNECTER	221-38102-91	PRESS-TIGHT CONNECTER 5/PKT	--
	Guard Column	221-38102-91	SH-I Guard Column, 5m × 0.25mm	--

Method: GB 23200.112-2018 Determination of 9 Carbamate Pesticides and Metabolites Residues in Mushroom (HPLC, LC-281 & SOP-021-038)

- ShimNex HE C8 LC Column (5 μ m, 4.6 \times 250 mm, PN: 380-01241-09)
- SHIMSEN Styra NH2 SPE Cartridge, 500 mg / 6 mL (PN: 380-00861-02)
- SHIMSEN Arc Disc Hydrophilic PTFE, 13 mm, 0.22 μ m (PN: 380-00341)

Sample Preparation (SPE Method)



Analysis Condition

Instrument: Shimadzu Essentia Carbamate Pesticides Analysis System

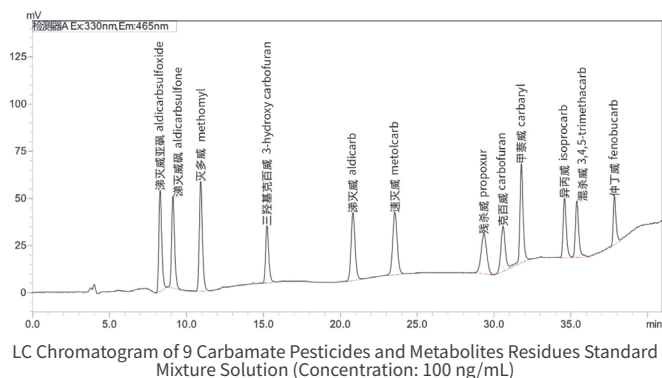
LC Column: ShimNex HE C8 (5 μ m, 4.6 \times 250 mm, PN: 380-01241-09)

HPLC Condition

Column Temperature: 30 $^{\circ}$ C ; Hydrolysis temperature: 100 $^{\circ}$ C ;
Derivatization Reagent 1: OPA Solution** ; Derivatization Reagent 2:
0.05 mol/L NaOH Solution ; Derivatization Reagent 1 Flow Rate: 0.3
mL/min ; Derivatization Reagent 2 Flow Rate: 0.3 mL/min ;
Detector: Excitation Wavelength 330 nm ; Emission Wavelength 465
nm ;

Flow Rate: 1.0 mL/min ; Injection volume: 10 μ L

Mobile Phase A: Water ; Mobile Phase B: Methanol



Gradient Program

Time (Min)	0	4	6	24	24.1	29	33	35	35.1	37	37.1	60
A (%)	85	75	60	60	40	40	20	20	0	0	85	85
B (%)	15	25	40	40	60	60	80	80	100	100	15	15

*Methanol - Dichloromethane Solution (1: 99 by Vol.):

Add 10 mL methanol to 990 mL dichloromethane and mix.

**OPA Solution (Derivatization Reagent 1):

Weigh 50 mg o-phthalaldehyde, CAS NO.: 643-79-8, dissolve in 5 mL methanol, mix as part A; weigh 1 g 2-dimethylaminoethanethiol hydrochloride, CAS NO.: 13242-44-9, dissolve in 5 mL sodium tetraborate decahydrate solution (CAS NO.: 1303-96-4, concentration: 4 g/L), mix as part B;

Mix part A, part B and 490 mL sodium tetraborate decahydrate solution (CAS NO.: 1303-96-4, concentration: 4 g/L).

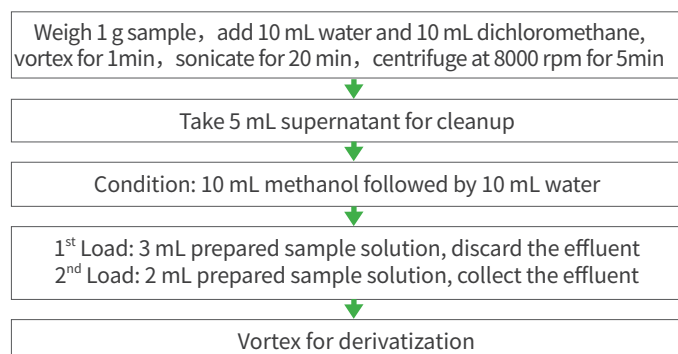
Method: SN/T 1923-2007

Determination of glyphosate and its metabolite AMPA in tea and rice by derivatization method (LC-MS/MS, SGLC-LCMS-035)

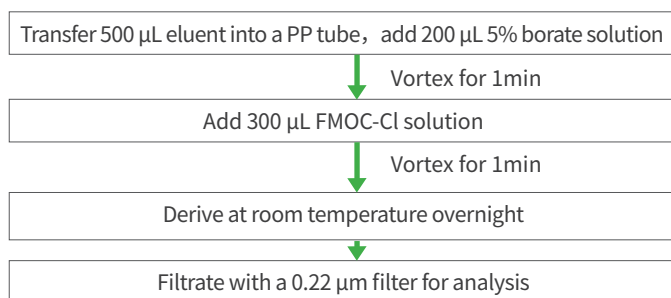
- Shim-pack GISS-HP C18 (Metal free, 150×2.1 mm, 3 μm, PN: 227-30924-03)
- SHIMSEN Styra MCX, 500 mg/12 mL(PN: 380-00853-03)
- SHIMSEN Arc Disc Hydrophilic PTFE, 13 mm, 0.22 μm(PN: 380-00341)

Sample Preparation (SPE Method)

● Extraction & Cleanup



● Derivatization



- ★ Load the sample for two times to ensure the accurate concentration
- ★ Vortex thoroughly after adding the 5% borate solution to ensure better derivation
- ★ Recommend to use polypropylene tubes and vials to ensure the recovery rate

Analysis Condition

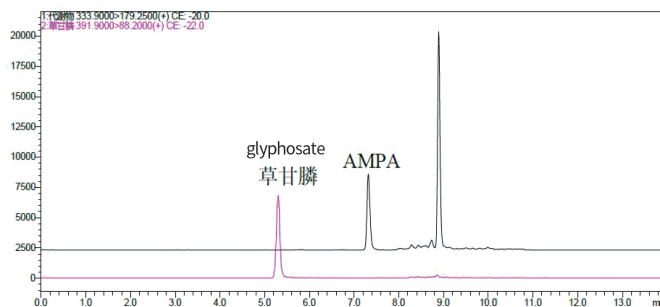
Instrument: LC-30AD + LCMS-8050
LC Column: Shim-pack GISS-HP C18[Metal free] (150×2.1 mm, 3 μm, PN: 227-30924-03)
UHPLC conditions
 Flow Rate: 0.3 mL/min; Column Temperature: 40 °C ; Injection Volume: 5 μL;
 Mobile Phase A: 5 mmol/L ammonium acetate in water;
 Mobile Phase B: Acetonitrile;

MS Condition

Electron Ionization Mode: ESI + ; Scan Mode: MRM;
 Heating block temp.: 400°C ; Interface temp.: 300 °C ; DL temp.: 250 °C ; Collision Gas: Ar;
 Heating gas flow: N₂, 10.0 L/min; Drying gas flow: N₂, 10.0 L/min;
 Nebulizing gas flow: N₂, 3.0 L/min;

Gradient Program

Time (Min)	0	6	7.01	9	9.01	14
A (%)	92	65	5	5	92	92
B (%)	8	35	95	95	8	8



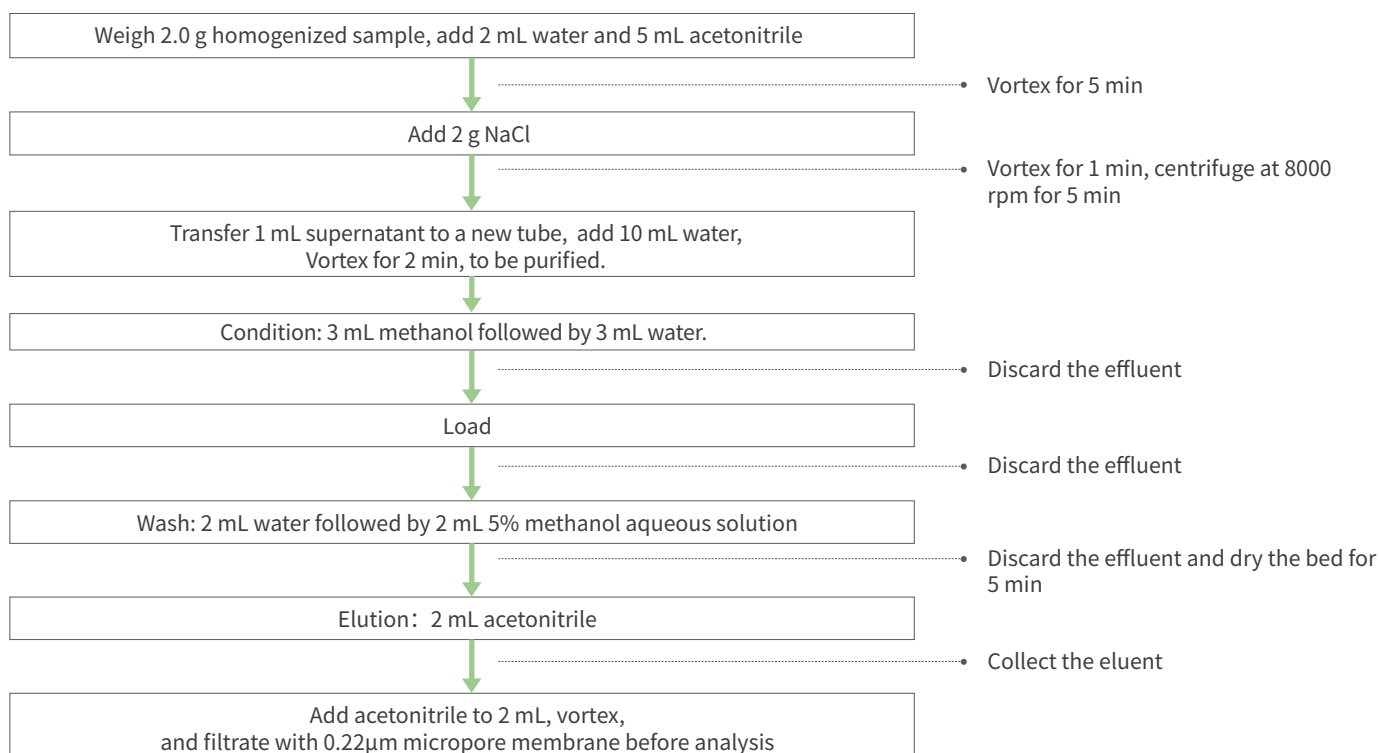
LC Chromatogram of 9 Carbamate Pesticides and Metabolites Residues Standard Mixture Solution (Concentration: 100 ng/mL)

Compound	Precursor Ion(m/z)	Product Ion(m/z)	Q1 Pre Bias	CE	Q3 Pre Bias
Glyphosate	391.9	179.2	-15	-22	-15
	391.9	88.0*	-14	-22	-30
Aminomethylphosphonic Acid, AMPA	333.9	179.2*	-16	-20	-16
	333.9	112.3	-10	-14	-18

Method: GB 23200.115-2018 Determination of Fipronil and Metabolites Residues in Egg (LC-MS/MS, SGLC-LCMS-020)

- Shim-pack GIST C18 LC Column (50 × 2.1 mm, 1.9 μ m, PN: 227-30001-02)
- SHIMSEN Styra HLB, 60 mg / 3 mL (PN: 380-00855-03)
- SHIMSEN Arc Disc Hydrophilic PTFE, 13 mm, 0.22 μ m (PN: 380-00341)

Sample Preparation (SPE Method)



Analysis Condition

Instrument: Shimadzu LC-30 AD + LCMS-8050
LC Column: Shim-pack GIST C18(50mm x 2.1mm, 1.9 μ m, PN: 227-30001-02)
HPLC Condition
 Column Temperature: 40 °C ; Flow Rate: 0.4 mL/min; Injection volume: 0.2 μ L
 Mobile Phase A: 1 mM Ammonium Acetate Aqueous Solution;
 Mobile Phase B: Methanol

MS Condition

Electron Ionization Mode: ESI $-$; Heating block temp.: 400°C ;
 Interface temp.: 300 °C ; DL temp.: 250 °C ; Collision Gas: Ar;
 Heating gas flow: N₂ , 10.0 L/min; Drying gas flow: N₂ , 10.0 L/min;
 Nebulizing gas flow: N₂ , 3.0 L/min;
 Scan Mode: MRM; Please check the MRM parameters in GB 23200.115-2018 method.

Gradient Program

Time (Min)	0	1.5	2.5	2.51	4
A (%)	25	5	5	25	25
B (%)	75	95	95	75	75

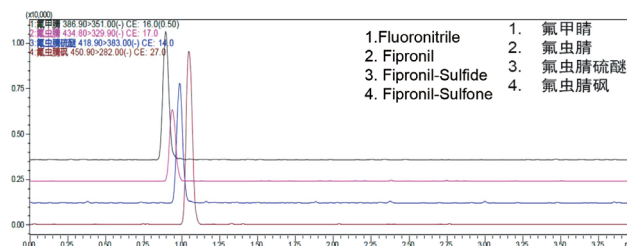
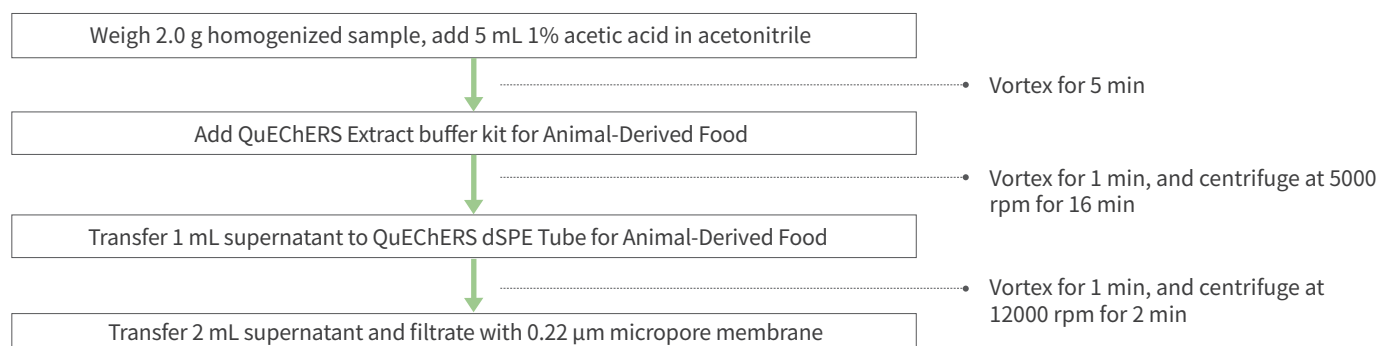


Fig. MRM Chromatogram of Fipronil and Metabolites Standard Mixture Solution (Concentration: 1 ng/mL)

Method: GB 23200.115-2018 Determination of Fipronil and Metabolites Residues in Egg (LC-MS/MS, SGLC-LCMS-019)

- Shim-pack GIST C18 LC Column (50 × 2.1 mm, 1.9 μ m, PN: 227-30001-02)
- SHIMSEN QuEChERS for Animal-Derived Food (380-00112, 380-00155)
- SHIMSEN Arc Disc Hydrophilic PTFE, 13 mm, 0.22 μ m(PN: 380-00341)

Sample Preparation (QuEChERS Method)



Analysis Condition

Instrument: Shimadzu LC-30 AD + LCMS-8050
LC Column: Shim-pack GIST C18(50mm x 2.1mm, 1.9 μ m, PN: 227-30001-02)
HPLC Condition
 Column Temperature: 40 °C ; Flow Rate: 0.4 mL/min; Injection volume: 0.2 μ L
 Mobile Phase A: 1 mM Ammonium Acetate Aqueous Solution;
 Mobile Phase B: Methanol

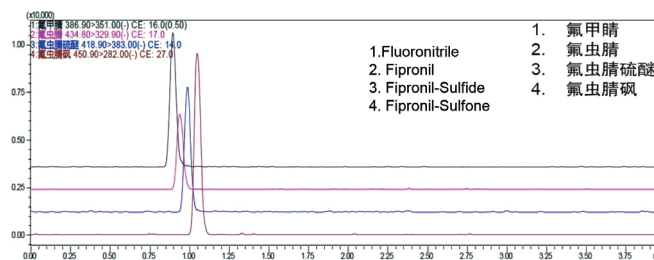


Fig. MRM Chromatogram of Fipronil and Metabolites Standard Mixture Solution (Concentration: 1 ng/mL)

Gradient Program

Time (Min)	0	1.5	2.5	2.51	4
A (%)	25	5	5	25	25
B (%)	75	95	95	75	75

MS Condition

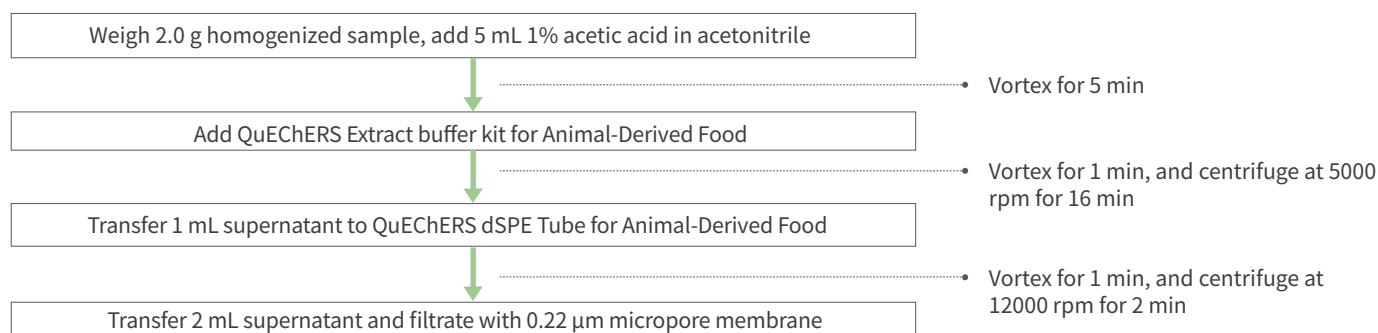
Electron Ionization Mode: ESI $-$; Heating block temp.: 400°C ; Interface temp.: 300 °C ; DL temp.: 250 °C ; Collision Gas: Ar; Heating gas flow: N₂, 10.0 L/min; Drying gas flow: N₂, 10.0 L/min; Nebulizing gas flow: N₂, 3.0 L/min;
 Scan Mode: MRM; Please check the MRM parameters in the table below.

Compound	Precursor Ion(m/z)	Product Ion(m/z)	Q1 Pre Bias	CE	Q3 Pre Bias
Fipronil-desulfinyl	386.9	351.0	19	16	17
	386.9	282.0	19	31	19
Fipronil	434.8	329.0	21	17	16
	434.8	249.9	21	28	17
Fipronil-sulfide	418.9	383.0	21	14	18
	418.9	261.8	21	28	17
Fipronil-sulfone	450.9	282.0	22	27	13
	450.9	415.0	22	17	20

Method: GB 23200.115-2018 Determination of Fipronil and Metabolites in Egg by SHIMSEN QuEChERS and GC-MS/MS (GCMSMS-119)

- SH-I-5Sil MS GC Column (30 m × 0.25 mm, 0.25 μ m, PN: 221-75954-30)
- SHIMSEN QuEChERS for Animal-Derived Food (380-00112, 380-00155)
- SHIMSEN Arc Disc Hydrophilic PTFE, 13 mm, 0.22 μ m(PN: 380-00341)

Sample Preparation (QuEChERS Method)



Analysis Condition

Instrument: GCMS-TQ8050

GC Column: SH-I-5Sil MS (30 m × 0.25 mm, 0.25 μ m, PN: 221-75954-30)

GC conditions

Column oven temp.: 50 $^{\circ}$ C (1 min), 25 $^{\circ}$ C/min to 125 $^{\circ}$ C (0 min), 10 $^{\circ}$ C/min to 300 $^{\circ}$ C (0.5 min);

Carrier gas: He, 47.2 cm/sec (constant linear velocity mode);

Injector temp.: 250 $^{\circ}$ C; Injection mode: Splitless (1 min); Injection volume: 1 μ L;

High pressure injection: 250 kPa

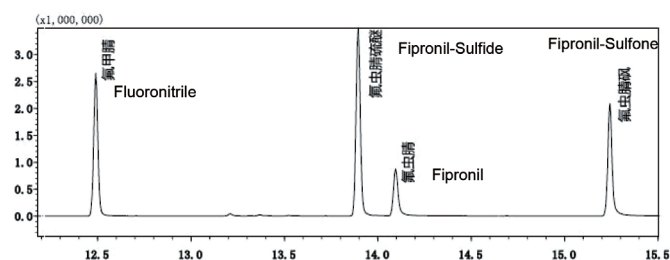


Fig. MRM Chromatogram of Fipronil and Metabolites Standard Mixture Solution (Concentration: 100 ng/mL)

MS Condition

Ion source temperature: 200 $^{\circ}$ C; Interface temperature: 250 $^{\circ}$ C

Scan Mode: MRM; Please check the MRM parameters in GB

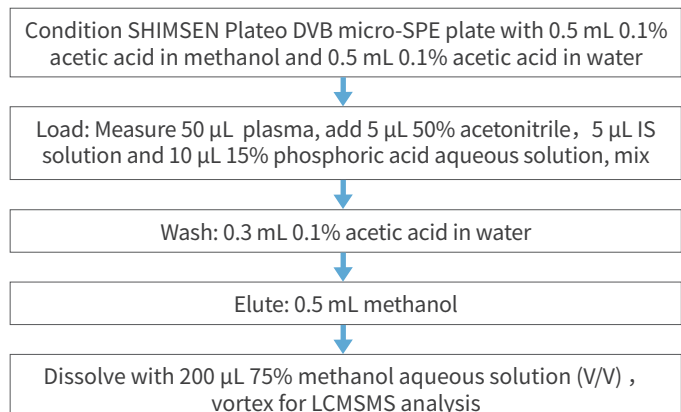
23200.113-2018 method

Compound	Ret. Time	Quantitative Ions (m/z)	CE(V)	Qualitative ions 1 (m/z)	CE(V)	Qualitative ions 2 (m/z)	CE(V)
Fipronil-desulfinyl	12.475	387.95>332.90	18	333.00>231.00	27	333.00>281.00	15
Fipronil-sulfide	13.855	350.95>255.00	18	419.95>350.90	15	419.95>254.90	33
Fipronil	14.080	366.90>212.90	30	368.90>214.90	30	366.90>254.90	22
Fipronil-sulfone	15.210	382.95>255.00	24	382.95>213.00	36	382.95>241.00	12

Determination of enalapril and Enalaprilat in plasma

- Shim-pack scepter C18-120(50mm x 2.1mm, 1.9 μ m, PN: 227-31012-03)
- SHIMSEN Plateo DVB micro-SPE plate, 2mg-700 μ L/well, 1/pkg (P/N: 380-00841-31)

Samle preparation procedure



Conditions

Equipment: Shimadzu LC-30AD + LCMS-8060

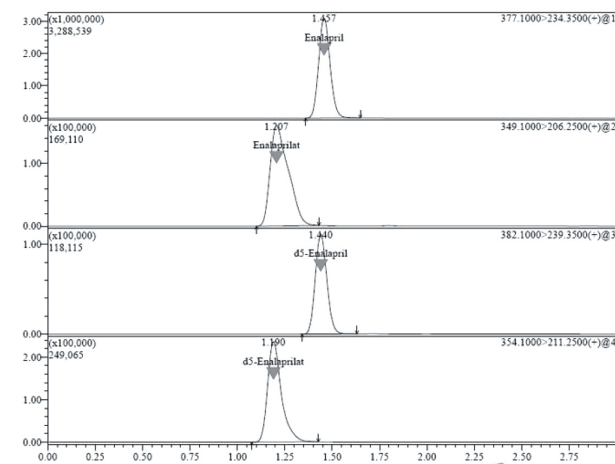
Column: Shim-pack scepter C18-120(50mm x 2.1mm, 1.9 μ m, PN: 227-31012-03)

Column temperature: 35 $^{\circ}$ C Flow rate: 0.4 mL/min Injection volume: 5 μ L

Mobile phase: A: 80% methanol aqueous solution (0.5% formic acid)
B: Water (0.5% formic acid)

Gradient:

Time(Min)	Modulee	Commande	Value (%)
0.01	Pumps	B.Conc	37.5
1.00	Pumps	B.Conc	100
2.00	Pumps	B.Conc	100
2.10	Pumps	B.Conc	37.5
3.00	Controller	Stop	--



MRM chromatogram of mixed standard solution of enalapril and enalaprilat





Shimadzu (Shanghai) Global Laboratory Consumables Co.,Ltd.

www.sglc.shimadzu.com.cn

www.shimadzumall.com

Contact: contact@sglc.shimadzu.com.cn

The content of this publication shall not be reproduced, altered or sold for any commercial purpose without the written approval of Shimadzu.

See <http://www.shimadzu.com/about/trademarks/index.html> for details.

Third party trademarks and trade names may be used in this publication to refer to either the entities or their products/services, whether or not they are used with trademark symbol "TM" or "®" .

Shimadzu disclaims any proprietary interest in trademarks and trade names other than its own.

The information contained herein is provided to you "as is" without warranty of any kind including without limitation warranties as to its accuracy or completeness. Shimadzu does not assume any responsibility or liability for any damage, whether direct or indirect, relating to the use of this publication. This publication is based upon the information available to Shimadzu on or before the date of publication, and subject to change without notice.