



Embark on a Journey of Discovery
with Orochem's Cutting-Edge Solutions

Pesticides and Herbicides Analysis

With Orochem, Every Experiment Counts Towards Tomorrow's Breakthroughs

ISO 9001:2015



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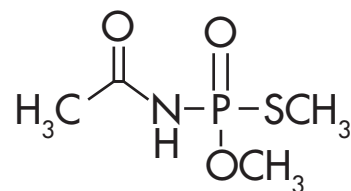
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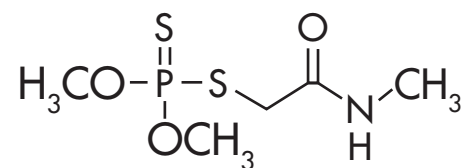
Plot # R 588/1, TTC Indl.
Area Rabale Navi Mumbai
400 705 India

CELERITY Deluxe SPE Cartridges

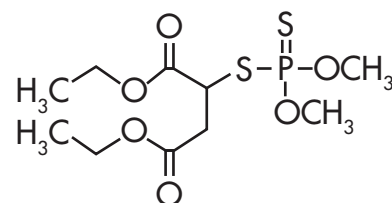
Compounds:



Acephate



Dimethoate



Malathion

SPE Extraction Method:

(Celerity Deluxe cartridge, 30mg/ 1cc, Catalog #SYCY6030-01)

Condition:

1 mL of methylene chloride, 1 mL of methanol, followed by 1 mL of water



Load:

1 mL of juice pretreated with 20 µL 4% H3PO4 and spiked with 5 ppm of each analyte



Wash:

1 mL of water



Elute:

1 mL of methylene chloride



Evaporate and Reconstitute:

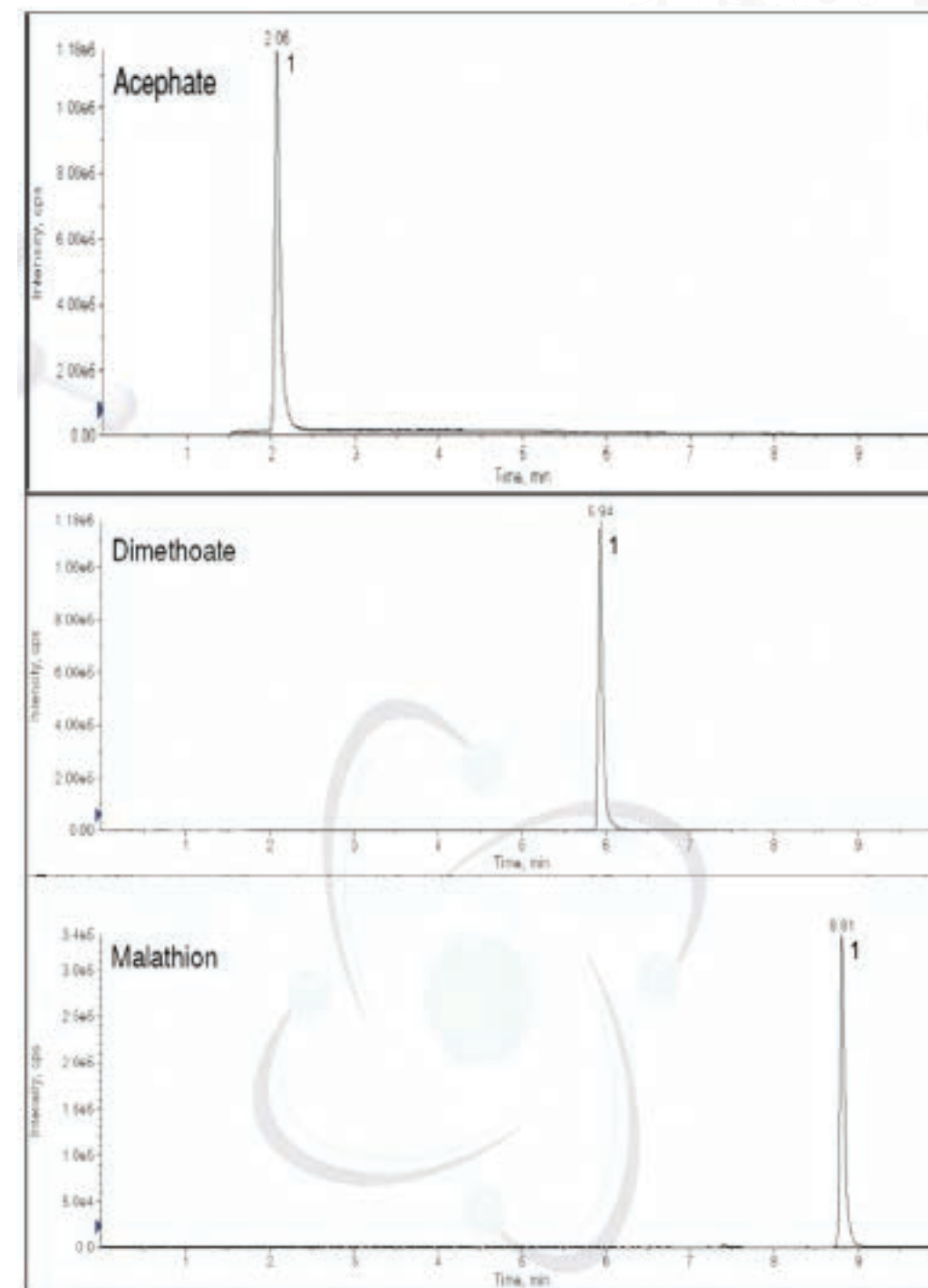
1 mL of methanol, then dilute 50 fold with water.

HPLC Method

Column:	Orochem Reliasil C18 HPLC Column 4.6x50 mm, 3 µm.
Part number:	R3BI-101
Mobile phase:	Acetonitrile in water, gradient from 10% at 2 min to 80% at 8 min; run time, 10 min.
Flow rate:	0.5 mL/min
Injection volume:	20 µL
Retention times:	Acephate - 2.06 min Dimethoate - 5.94 min Malathion - 8.81 min

MS/MS Conditions

Mass Spectrometer:	API3000
Ion Source:	Turbo IonSpray
Polarity:	Positive
Scan Mode:	MRM:
Acephate -	Primary, Q1: 184.0, Q3: 142.8; Secondary, Q1: 184.0, Q3: 124.8
Dimethoate -	Primary, Q1: 230.0, Q3: 199.0; Secondary, Q1: 230.0, Q3: 171.0
Malathion -	Primary, Q1: 331.2, Q3: 285.0; Secondary, Q1: 331.2, Q3: 127.0
IS:	5000
Temp:	500
DP:	20
CAD:	12
CE:	12
CXP:	15

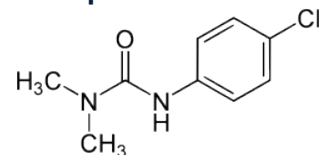


Results:

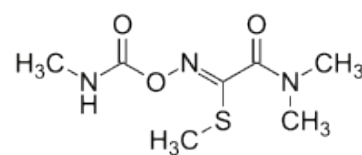
	Recovery%	CV%
Acephate	86.4	0.6
Dimethoate	102.4	1.7
Malathion	80.3	5.0

QuEChERS Tubes

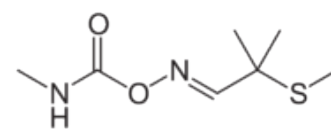
Compounds:



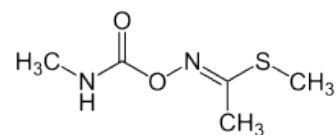
Monuron



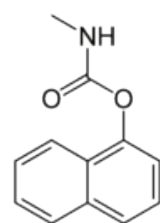
Oxamyl



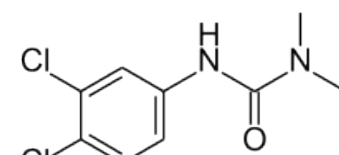
Aldicarb



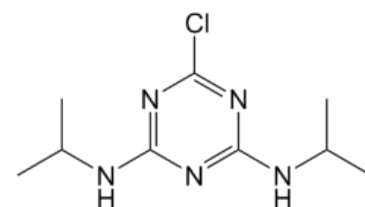
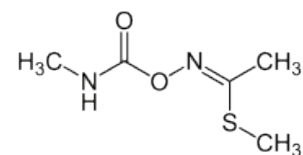
Methomyl



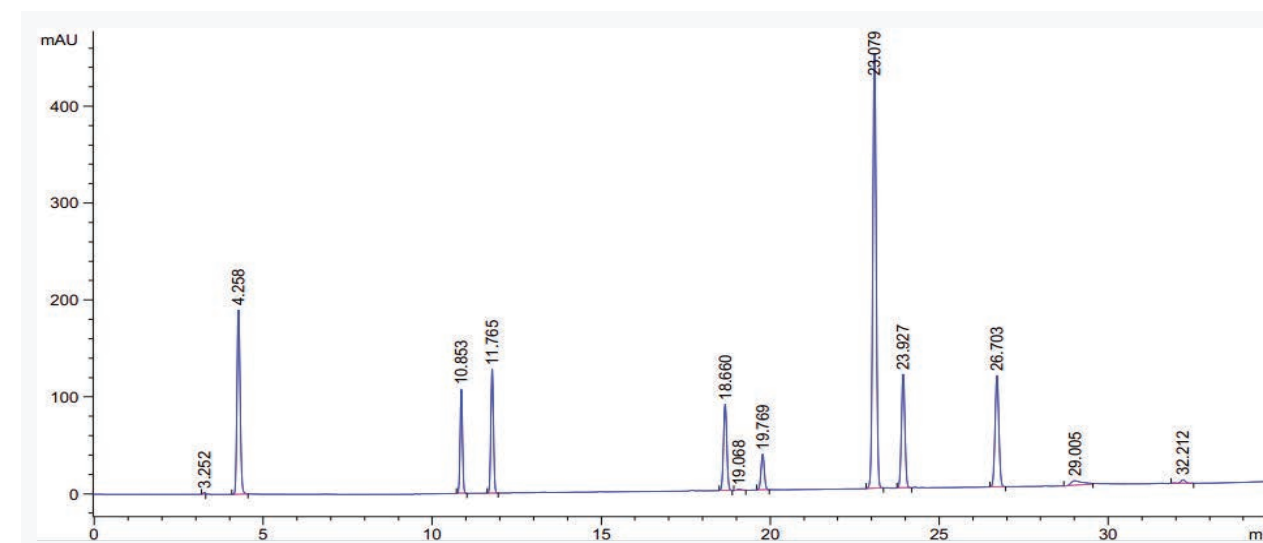
Carbaryl



Diuron



Propazine



QuEChERS Extraction Method:

Pre-treatment:

Mix 1 g of tea leaves with 3 mL of acetonitrile with 1% acetic acid. Vortex for about 5 minutes, then centrifuge it.



Add 1 mL of supernatant to each QuEChERS-green tube. Vortex for 1 min and centrifuge it. Collect supernatant.



Add 1 mL of a 1:4 methanol:DCM slution (v/v) to the QuEChERS-green tube. Vortex for 1 min and centrifuge it. Collect supernatant



Repeat last step. Combined all the supernatants in a glass tube , and evaporate it under nitrogen at 50C.



Reconstitute:

30% acetonitrile with water

HPLC Mwthod:	
Column:	Orochem Prestige C18 HPLC Column 4.6x 250 mm, 5 µm.
Part number:	
Mobile phase:	A: water B: acetonitrile
Gradient:	Initial 5% B for 2 min, then gradient to 20% B at 5 min, to 75% B at 30 min, to 95% B at 35 min, and hold 5 min.
Flow rate:	1.0 mL/min
Injection volume:	20 µL
UV wavelength:	220 nm

Break-down and Conditions

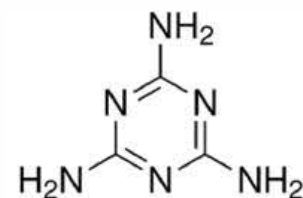
Pesticides	Retention Time
Acrylamide	4.258 min
Oxamyl	10.853 min
Methomyl	11.765 min
Aldicarb	18.660 min
Monuron	19.769 min
Carbaryl	23.079 min
Diuron	23.927 min
Propazine	26.703 min

Pesticides	Recovery %	CV %
Oxamyl	94.5	1.8
Methomyl	86.5	4.7
Aldicarb	63.5	5.8
Monuron	65.8	3.6
Carbaryl	53.0	4.9
Diuron	41.3	7.0
Propazine	79.5	1.6



Agility SCX SPE Cartridges

Compound: Melamine



SPE EXTRACTION METHOD:

(SCX extraction cartridge)
(catalog # SYSCX 200, 200 mg/3mL)

Pretreat milk:
0.5mL milk (10 µg/mL of melamine)
mixed with 0.5mL of acetonitrile.
Centrifuge, add 3 mL of 0.1% formic acid to supernatant.

Condition:
3mL of methanol, followed by 3mL of 0.1% formic acid

Load:
pretreated milk supernatant.

Wash:
3mL of 0.1% formic acid, and 3mL of methanol

Elute:
3 mL of 5% NH₄OH in methanol

Evaporate and Reconstitute:
1 mL of 20% methanol, then dilute 10 fold with 20% methanol.

HPLC METHOD:

Column: Orochem Reliasil C8 HPLC column
4.6x50 mm, 5µm.

Part number: R3BI-102
Mobile phase: 50% methanol, 50%water,
0.05% formic acid

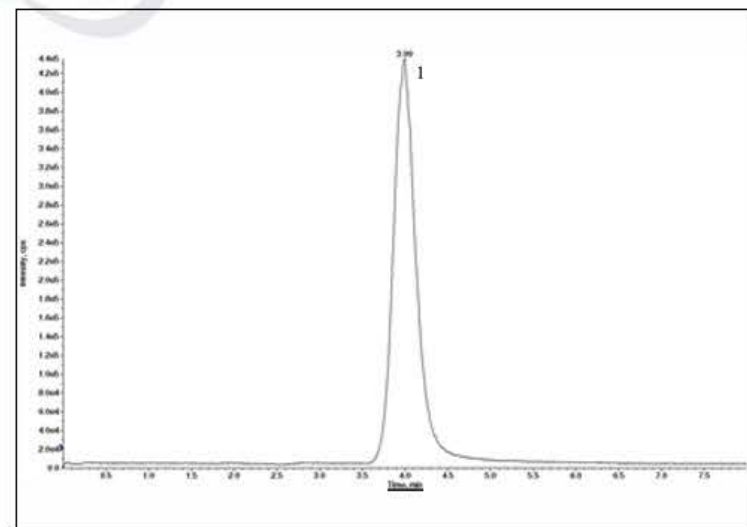
Flow rate: 0.5 mL/min
Injection volume: 20µL
Retention time: 3.99 min

MS/MS CONDITIONS:

Mass spectrometer: API3000
Ion source: Turbo IonSpray
Polarity: Positive
Scan mode: MRM: primary,
Q1: 126.9, Q3: 85;
secondary,
Q1: 126.9, Q3: 110.1

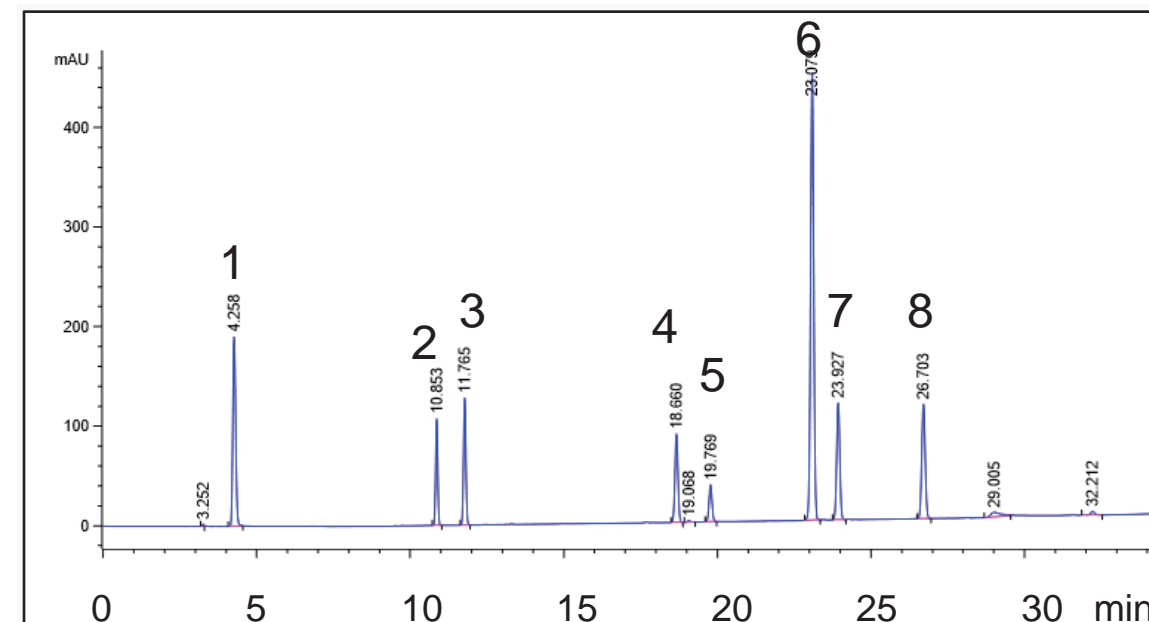
IS: 4000
Temp. 550
DP: 25
CAD: 12
CE: 30
CXP: 10

RECOVERY(CV%)
85% (2.6%); n=6



Pesticides Separated on Prestige C18, 5 µm
Use: Pesticides, insecticides, and herbicides on fruit and vegetable crops

Application



Break-down and Conditions

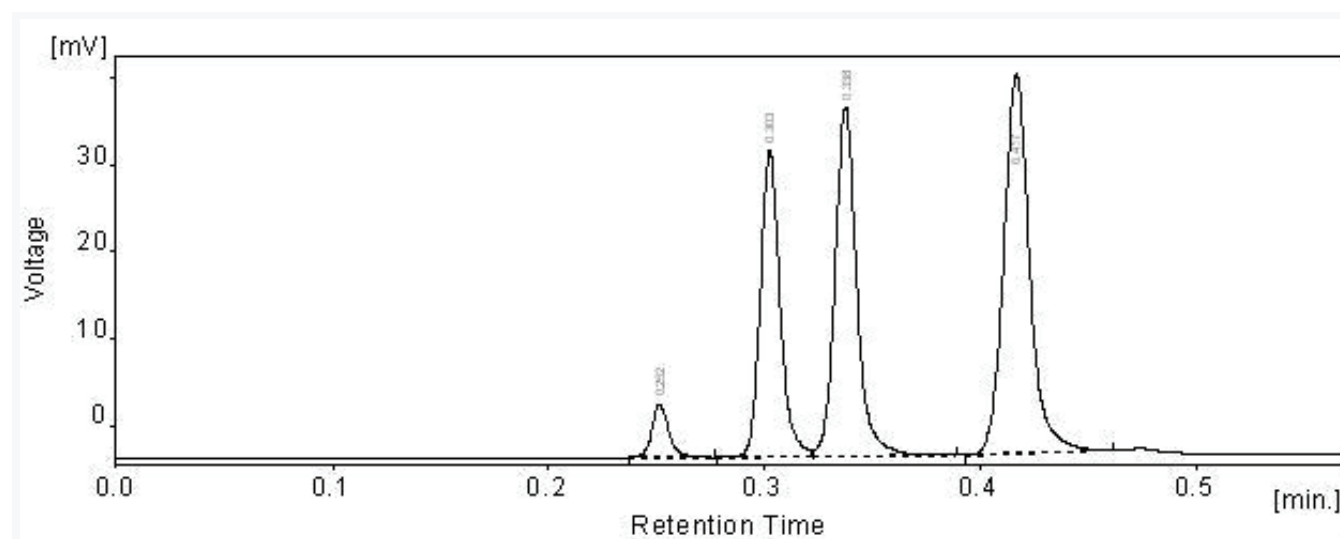
HPLC	Agilent 1100
Column	Prestige C18, 5 µm
Column Size	4.6 mm ID x 250 mm long
Temperature	25 °C
Detection	UV at 220 nm
Injection	20 µL
Mobile Phase	A: Water B: Acetonitrile
Flow Rate	1.0 mL/min

1	Acrylamide	5	Monuron
2	Oxamyl	6	Carbaryl
3	Methomyl	7	Diuron
4	Aldicarb	8	Propazine

Gradient	Time	A B	
		A	B
	0.00	95	5
	2.00	95	5
	5.00	80	20
	30.0	25	75
	35.0	5	95

Separation of Phthalates Gazelle Si, 1.7 μm

Application



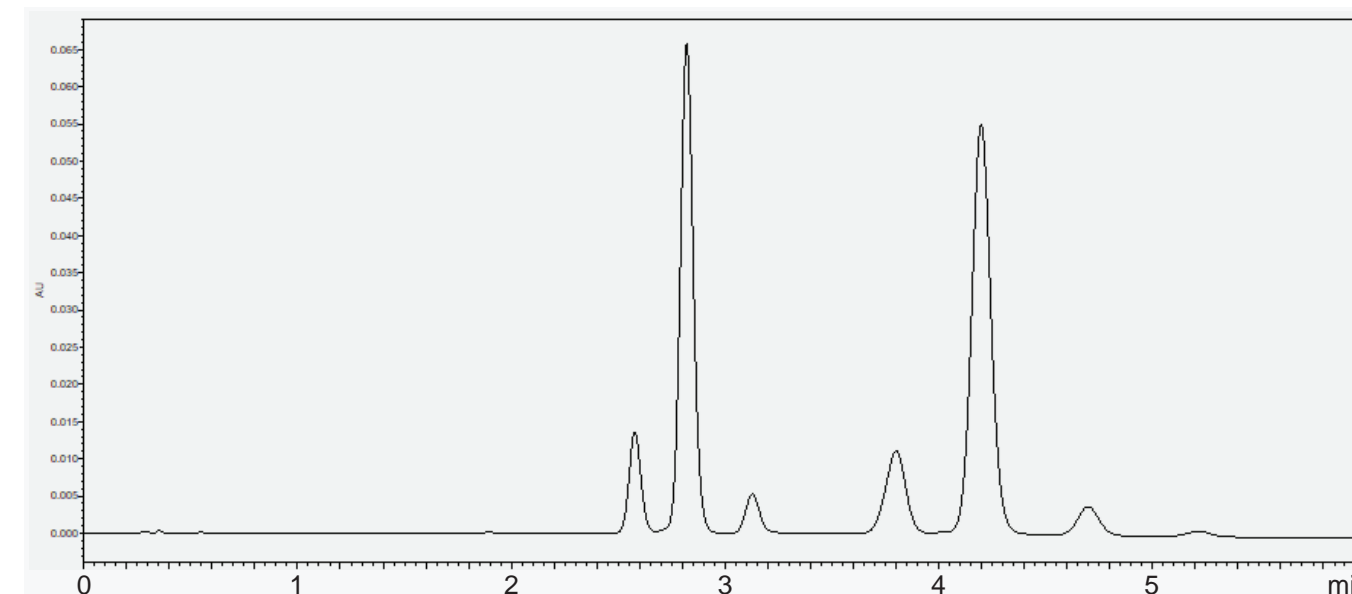
Break-down and Conditions

Column	Gazelle Si, 1.7 μm
Column Size	3.0 mm ID x 50 mm long
Temperature	27 °C
Detection	UV at 254 nm
Mobile Phase	97/3 heptane/2-propanol
Flow Rate	1.2 mL/min
System Backpressure	220 psi

Naphthalene, R1	0.252 (15 sec)
Dipropyl phthalate, R2	0.303 (18 sec)
Diethyl phthalate, R3	0.338 (20 sec)
Dimethyl phthalate, R4	0.417 (25 sec)

Isocratic Separation of Pyrethrins on Gazelle Biphenyl, 1.7 μm Use: Pesticides

Application



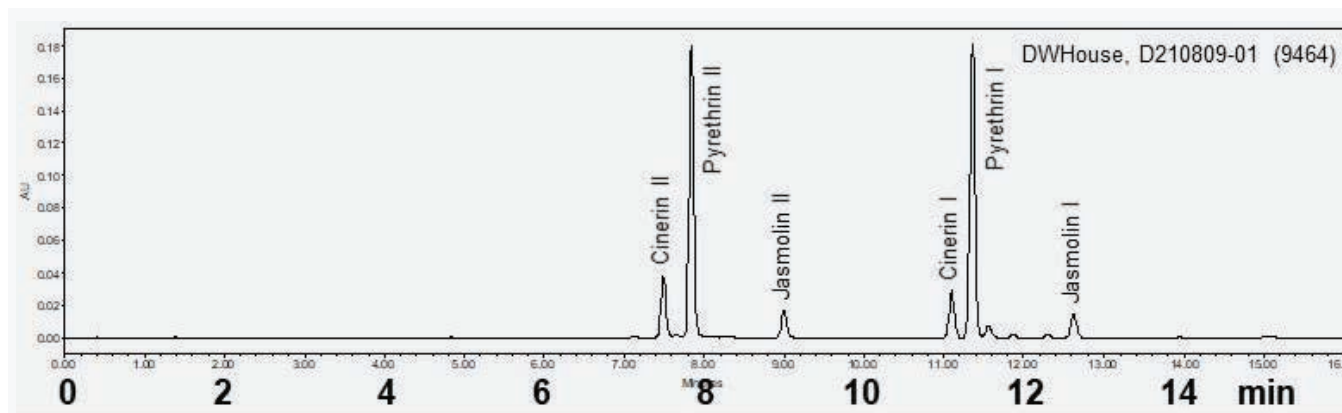
Break-down and Conditions

HPLC	Waters UPLC H-Class
Column	Gazelle Biphenyl, 1.7 μm
Column Size	2.1 mm ID x 50 mm long
Temperature	30 °C
Detection	UV at 230 nm
Injection	0.2 μL
Mobile Phase	A: 60 acetonitrile B: 40 water
Flow Rate	0.2 mL/min
System Backpressure	2210 psi

Cinerin II, R1	2.58 min
Pyrethrin II, R2	2.82 min
Jasmolin II, R3	3.13 min
Cinerin I, R4	3.80 min
Pyrethrin I, R5	4.20 min
Jasmolin I, R6	4.70 min

Separation of the Six Pyrethrin Isomers on Orosil C18 HC, 1.7 µm
Use: Class of organic insecticides.

Application



Break-down and Conditions

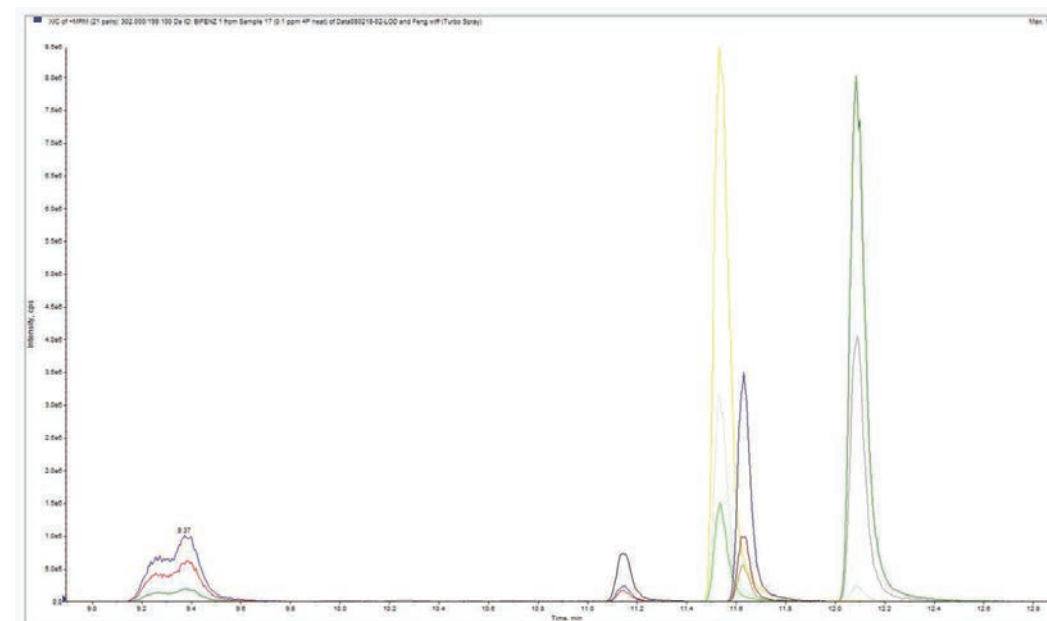
HPLC	Waters UPLC H-Class
Column	Orosil C18 HC, 1.7 µm
Column Size	2.1 mm ID x 100 mm long
Temperature	50 °C
Detection	UV at 230 nm
Injection	1.0 µL, 100 ug/mL ACN
Mobile Phase	A /B ACN/H2O
Flow Rate	0.4 mL/min
System Backpressure	6400 psi

Cinerin II, R1	7.49 min
Pyrethrin II, R2	7.84 min
Jasmolin II, R3	9.00 min
Cinerin I, R4	11.10 min
Pyrethrin I, R5	11.36 min
Jasmolin I, R6	12.63 min

Gradient	Time	ACN	H2O
	00.00	45	55
	14.00	80	20
	14.10	45	55
	17.00	45	55

Pesticides Analysis in Cannabis Oil by Gazelle C18 UHPLC Column, 1.7 µm

Application



Break-down and Conditions

HPLC	UHPLC Column
Column	Gazelle C18, 1.7 µm and Guard Column
Column Size	2.1 mm ID x 50 mm long
Guard Size	2.1 mm ID x 10 mm long
Mobile Phase Gradient	90/10 5 mM NH4AC with 0.1% FA/methanol

Bifenazate	9.72 min
Pyrethrin II	11.27 min
Spiromesifen	11.61 min
Pyrethrin I	11.70 min
D9THC	12.02 min
Bifenthrin	12.20 min

Experiments and Results

Experiments of OroQuest-Hemp QuEChERS procedures with/without acid

QuEChERS	Bifenazate	Spiromesifen	Pyrethrin I	Pyrethrin II	Bifenthrin
Non- Acidified	61.2%	48.9%	75.5%	61.0%	57.5%
Acidified	85.4%	102.9%	91.0%	87.5%	90.0%

