INFORMATION & RESEARCH COLLECTED IN COLLABORATION WITH:

ACE® HPLC and UHPLC Columns | HALO®

macmod
SMARTER CHROMATOGRAPHY

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CANNABINOID

HERBICIDE

PESTICIDE

MYCOTOXIN

10 DIFFERENT CANNABINOIDS AND COMPOUNDS OF INTEREST

CONDITIONS

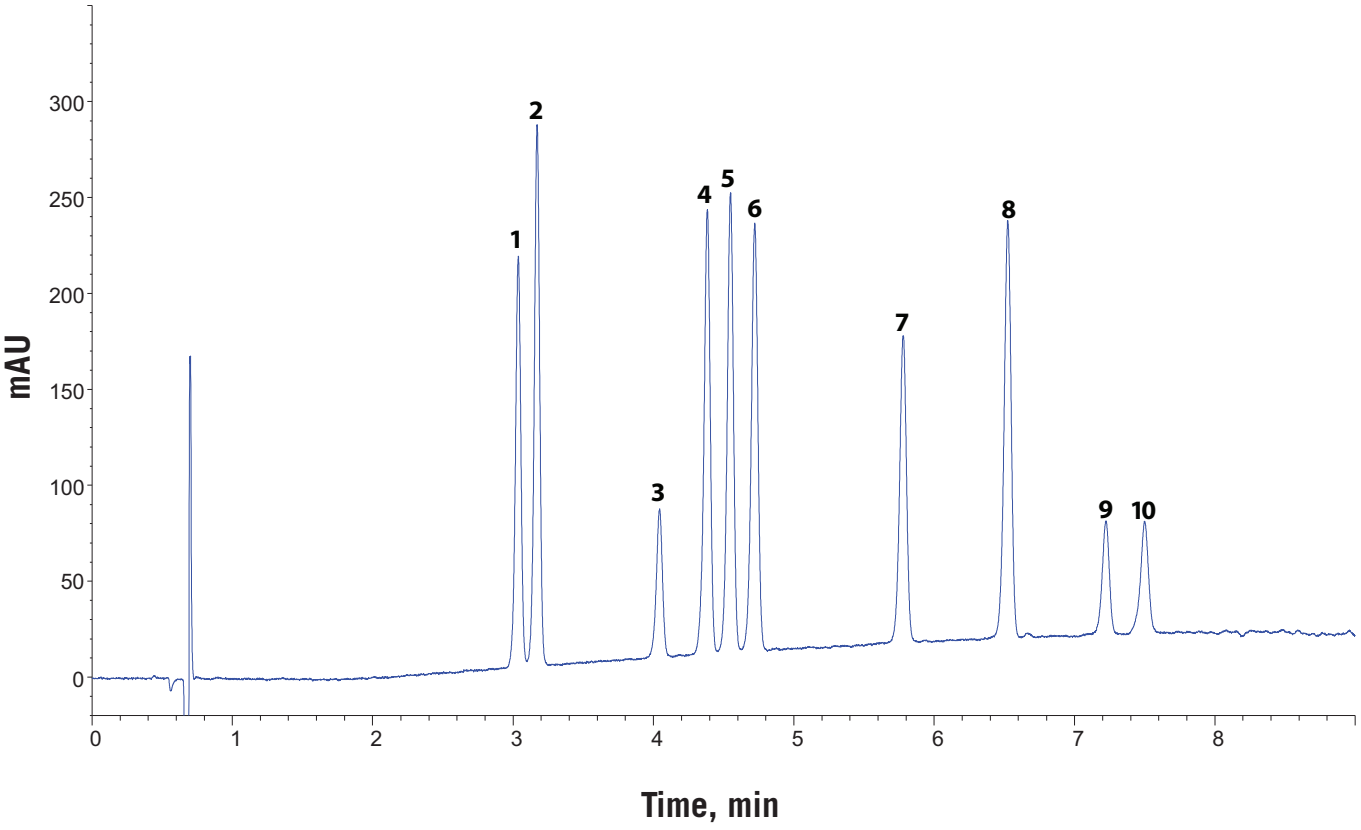
Column: ACE® Excel SuperC18, 2 µm
Dimensions: 100 x 3.0 mm
Part Number: EXL-1011-1003U
Mobile Phase: A: 0.075% formic acid in H_2O
B: 0.1% formic acid in MeCN

Time (min)	%B
0.00	70
1.0	70
10.0	100
12.0	100

Flow Rate: 0.6 mL/min
Injection: 5 µL
Temperature: 40 °C
Detection: UV, 210 nm

ANALYTES

1. (-)-11-Nor-9-carboxy-Δ^9-tetrahydrocannabinol (THC-COOH)
2. Cannabidivarin (CBDV)
3. Cannabidiolic acid (CBDA)
4. Cannabigerol (CBG)
5. Cannabidiol (CBD)
6. Tetrahydrocannabivarin (THCV)
7. Cannabinol (CBN)
8. (-)-trans-Δ^9-Tetrahydrocannabinol (THC)
9. Cannabichromene (CBC)
10. Δ^9-Tetrahydrocannabinolic acid A (THCA-A)



RAPID CANNABINOIDS ANALYSIS

CONDITIONS

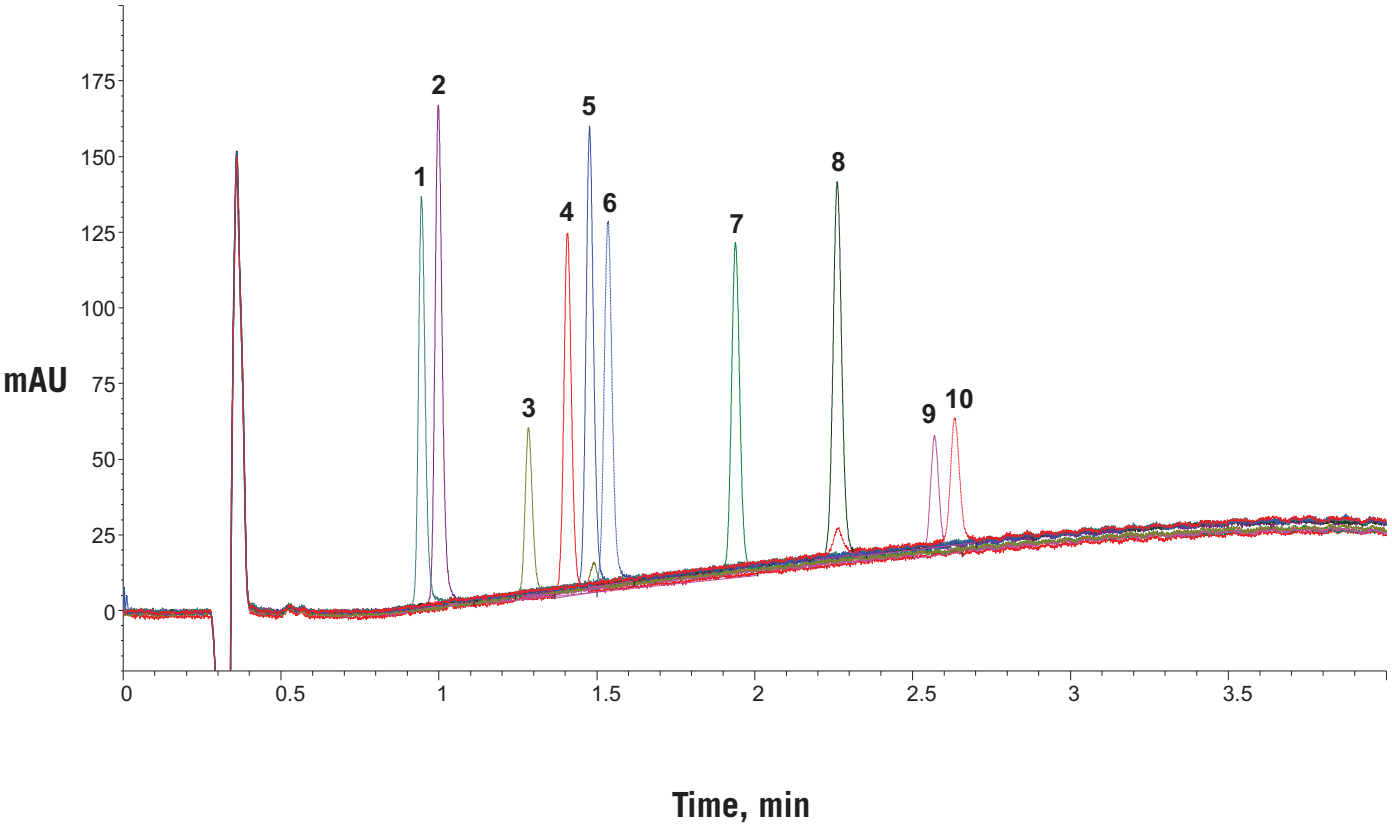
Column:	ACE UltraCore SuperC18, 2.5 µm
Dimensions:	50 x 3.0 mm
Part Number:	CORE-25A-0503U
Mobile Phase:	A: 0.075% formic acid in H_2O
	B: 0.1% formic acid in MeCN

Time (min)	%B
0.00	70
0.25	70
4.18	100
5.05	100

Flow Rate:	0.6 mL/min
Injection:	2 µL
Temperature:	40 ºC
Detection:	UV, 210 nm
Mass On Column:	20 ng per analyte

ANALYTES

1. (-)-11-Nor-9-carboxy-Δ^9-tetrahydrocannabinol (THC-COOH)
2. Cannabidivarin (CBDV)
3. Cannabidiolic acid (CBDA)
4. Cannabigerol (CBG)
5. Cannabidiol (CBD)
6. Tetrahydrocannabivarin (THCV)
7. Cannabinol (CBN)
8. (-)-trans-Δ^9-Tetrahydrocannabinol (THC)
9. Cannabichromene (CBC)
10. Δ^9-Tetrahydrocannabinolic acid A (THCA-A)



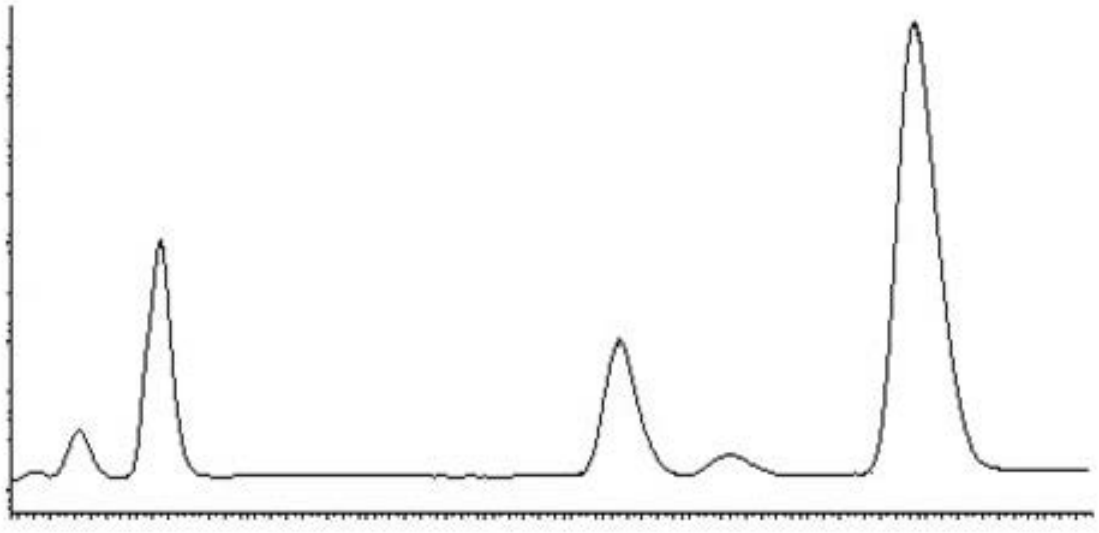
CANNABINOIDS AND DDT IN RAT PLASMA

CONDITIONS

Column:	ACE C18-PFP, 3 µm
Dimensions:	4.6 x 150 mm
Part Number:	ACE-1110-1546
Mobile Phase:	H_2O/MeCN (38:62 v/v)
Flow Rate:	1 mL/min
Injection:	30 µL
Temperature:	55 ºC
Detection:	UV, 220 nm

ANALYTES

1. Cannabidiol (CBD)
2. Δ^9-Tetrahydrocannabinol (THC)
3. 4,4-Dichlorodiphenyltrichloroethane (DDT)



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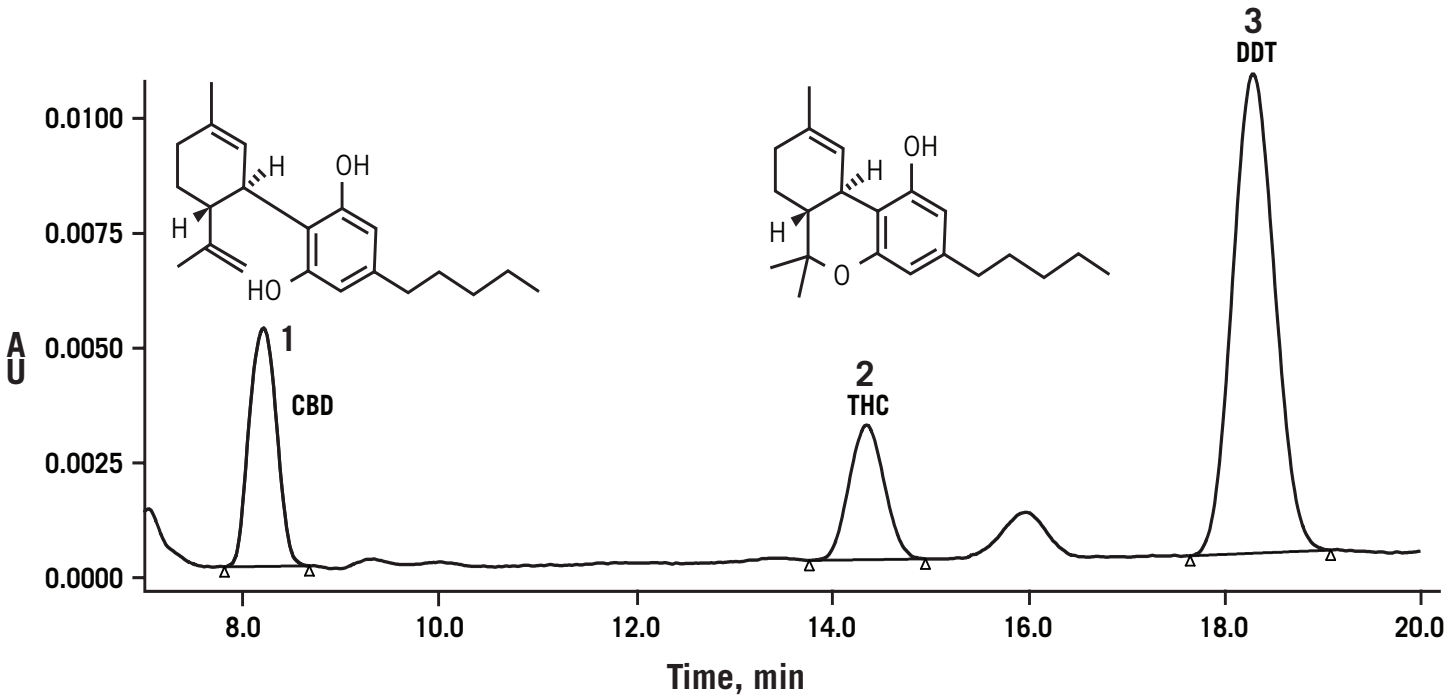
DEVELOPMENT AND VALIDATION OF HPLC-UV METHOD FOR THE DETECTION OF CBD AND THC IN RAT PLASMA

CONDITIONS

Column:	ACE C18-PFP, 3 µm
Dimensions:	4.6 x 150 mm
Part Number:	ACE-1110-1546
Mobile Phase:	H_2O/MeCN (38:62 v/v)
Flow Rate:	1 mL/min
Injection:	30 µL
Temperature:	55 ºC
Detection:	UV, 220 nm

ANALYTES

1. Cannabidiol (CBD)
2. Δ^9-Tetrahydrocannabinol (THC)
3. 4,4-Dichlorodiphenyltrichloroethane (DDT)



PHYTOESTROGENS FROM HOP EXTRACT BY LC-MS/MS

CONDITIONS

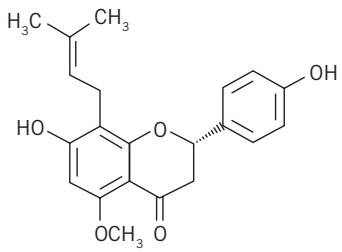
Column: ACE C18-AR, 3 µm
Dimensions: 4.6 x 150 mm
Part Number: ACE-119-1546
Mobile Phase: A: 1% formic acid in MeCN
B: 1% formic acid in MeOH
C: 1% formic acid in H_2O
D: MeOH

Flow Rate: 0.6 mL/min
Detection: TSQ-Quantum triple quad ESI
Spray voltage: -4500 V
Precursor ion: 355.4 $[M+H]^+$
MRM transition ions: 179 and 299
Collision energy: 28 and 16 V

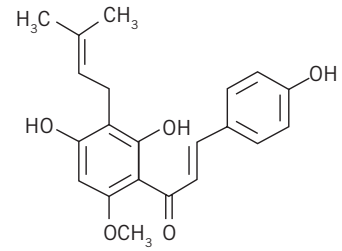
Time (min)	%A	%B	%C	%D
0	56	0	44	0
8	51	5	44	0
10	51	5	44	0
17	95	5	0	0
22	95	0	0	5

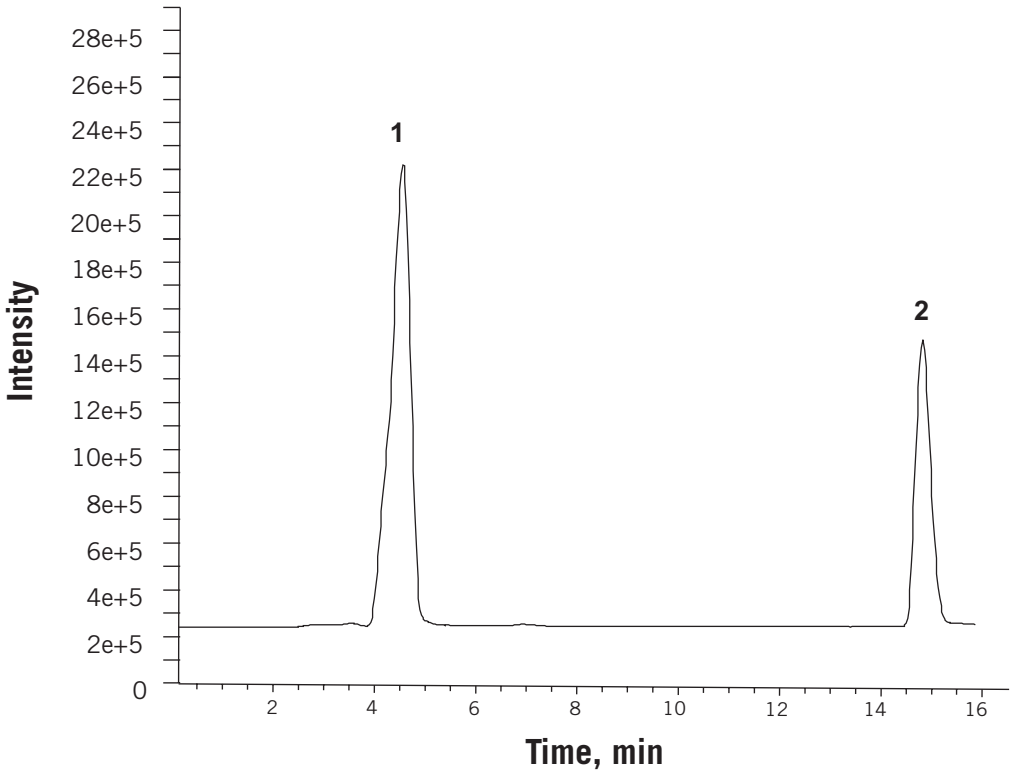
ANALYTES

1. Isoxanthohumol LOQ 0.07 µg/mL



2. Xanthohumol LOQ 0.01 µg/mL





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SYNTHETIC CANNABINOIDS BY LC-MS/MS

CONDITIONS

Column:	ACE Excel C18-AR, 3 µm
Dimensions:	3.0 x 100 mm
Part Number:	EXL-119-1003U
Mobile Phase:	A: 15 mM ammonium formate pH 4.0 in H_2O
	B: 0.1% formic acid in MeCN

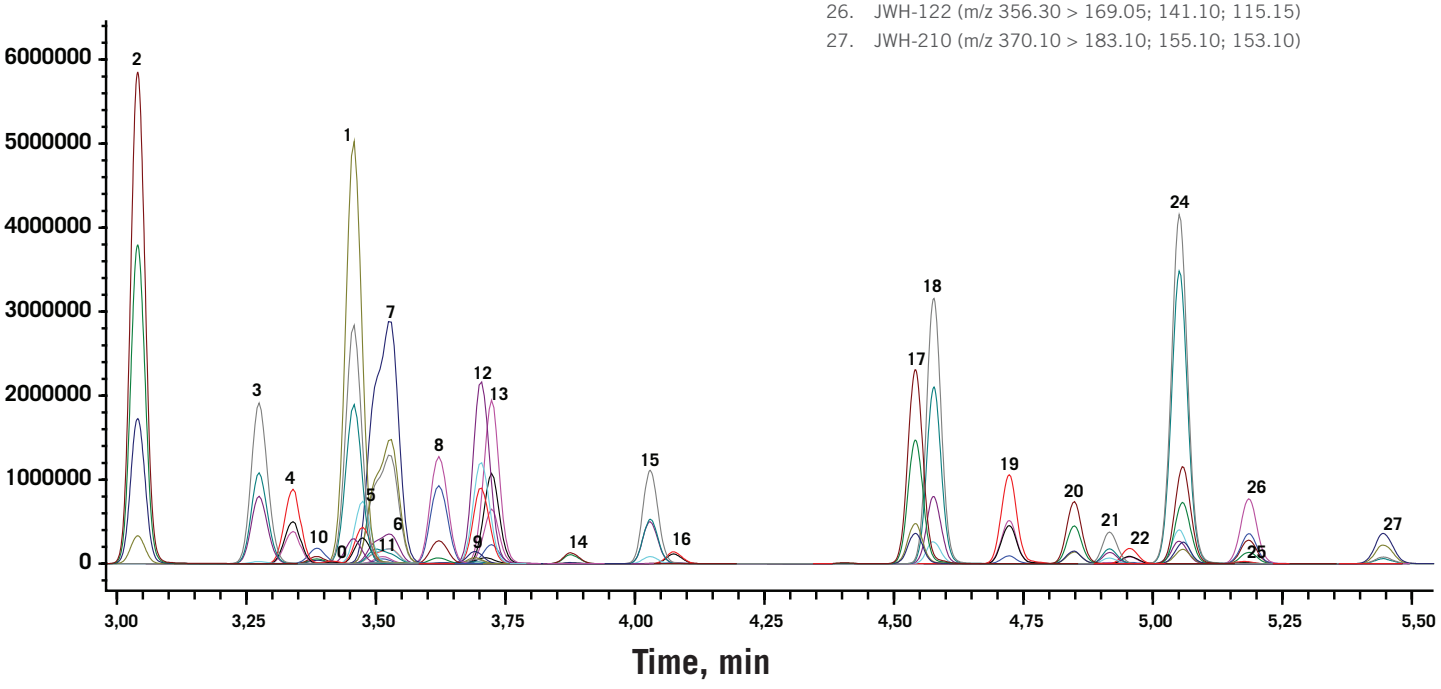
Gradient:

Time (min)	%B
0.00	40
3.74	90
8.00	90
8.50	40

Flow Rate:	0.5 mL/min
Injection:	10 µL
Temperature:	40 °C
Detection:	Shimadzu LCMS 8040 MS
	Positive ion ESI

ANALYTES

1. JWH-018 N-5-OH-pentyl-d5 (m/z 362.90 > 155.05; 127.00; 128.05)
2. JWH-250 N-5-OH-pentyl (m/z 352.20 > 121.15; 91.10; 186.05)
3. JWH-073 N-4-OH-butyl (m/z 344.20 > 155.00; 127.10; 54.95)
4. JWH-018 N-pentanoic (m/z 372.20 > 155.05; 127.10)
5. JWH-018 N-5-OH-pentyl (m/z 357.80 > 155.05; 127.05)
6. AM2201 N-4-OH-pentyl (m/z 376.40 > 155.00; 127.00; 144.00)
7. AM2201 5/6-OH-indole (m/z 375.90 > 155.05; 127.05; 248.10)
8. JWH-081 N-5-OH-pentyl (m/z 388.20 > 185.05; 157.05; 114.15)
9. MAM2201 N-4-OH-pentyl (m/z 389.60 > 169.00; 141.05; 115.15)
10. AB-CHMINACA (m/z 356.70 > 241.05; 312.20; 340.15)
11. UR-144 N-pentanoic (m/z 341.60 > 125.10; 55.05; 57.10)
12. JWH-019 N-6-OH-hexyl (m/z 371.80 > 155.05; 127.00; 144.00)
13. JWH-122 N-5-OH-pentyl (m/z 372.20 > 169.05; 141.05; 115.15)
14. AKB48 N-pentanoic (m/z 395.60 > 135.00; 93.10; 79.05)
15. JWH-018 5-OH-indole (m/z 358.20 > 155.00; 127.05; 230.05)
16. AKB48 N-5-OH-pentyl (m/z 381.60 > 135.10; 93.10; 79.05)
17. JWH-210 5-OH-indole (m/z 386.10 > 183.05; 153.10; 155.05)
18. PB-22 (m/z 358.80 > 214.05; 144.05; 116.00)
19. JWH-073 (m/z 328.20 > 127.10; 155.05; 200.10)
20. EAM2201 (m/z 387.70 > 183.10; 232.10; 155.10)
21. JWH-122 N-4-pentenyl (m/z 353.70 > 169.05; 141.10; 115.10)
22. JWH-018 (m/z 341.70 > 155.00; 127.05; 214.10)
23. JWH-081 (m/z 372.10 > 185.05; 157.15; 127.10)
24. AKB48F (m/z 384.30 > 135.15; 107.10; 93.10)
25. THJ-018 (m/z 342.60 > 215.10; 145.05; 90.00)
26. JWH-122 (m/z 356.30 > 169.05; 141.10; 115.15)
27. JWH-210 (m/z 370.10 > 183.10; 155.10; 153.10)



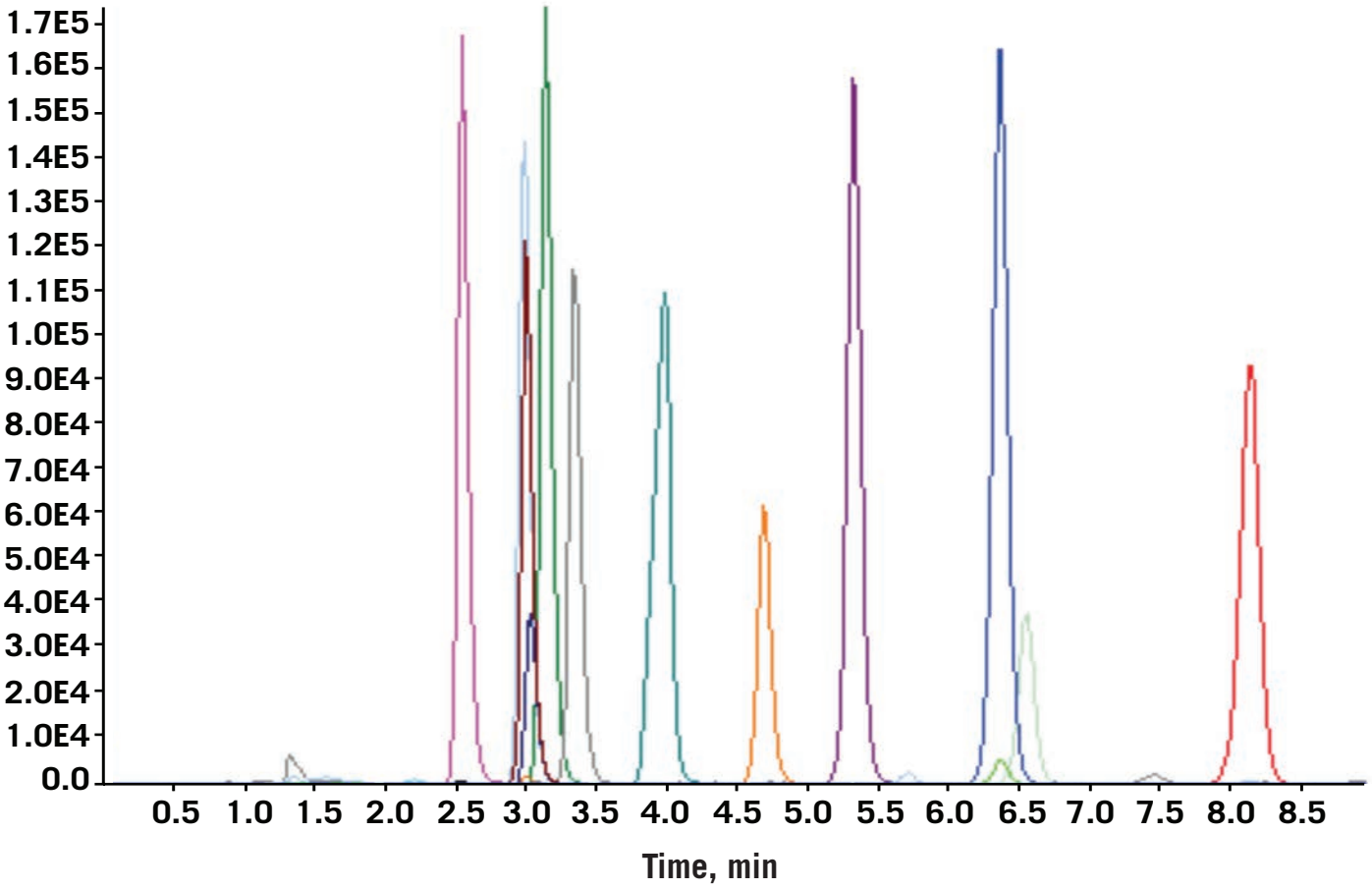
SYNTHETIC CANNABINOIDS – SPICE

CONDITIONS

Column:	ACE Excel C18-AR, 2 µm
Dimensions:	2.1 x 100 mm
Part Number:	EXL-109-1002U
Mobile Phase:	0.1% formic acid in MeOH/H2O (85:15 v/v)
Flow Rate:	0.3 mL/min
Temperature:	Ambient
Detection:	Applied Biosystems/MDS Sciex 4000 Q-Trap Positive mode Turbo Ionspray

ANALYTES

1. JWH-250 N-(5-hydroxypentyl)
2. JWH-073 N-(3-hydroxybutyl)
3. UR-144 5-Hydroxy-pentyl
4. UR-144 Pentanoic Acid
5. d5-JWH-018 N-(4-hydroxypentyl)
6. JWH-018 N-(4-hydroxypentyl)
7. JWH-018 5-pentanoic acid
8. JWH-200
9. XLR-11
10. JWH-250
11. JWH-073
12. UR-144 5-Chloro-pentyl
13. UR-144
14. JWH-018



GRADIENT SEPARATION OF 14 CANNABINOIDS ON HALO C18

A HALO C18 column is used to separate a mixture of fourteen cannabinoids, showing fast results and high resolution within critical pairs. Cannabinoids are a class of chemical compounds primarily found in the marijuana plant. Many of these compounds have been found to provide medicinal benefits such as reduction in pain and inflammation.

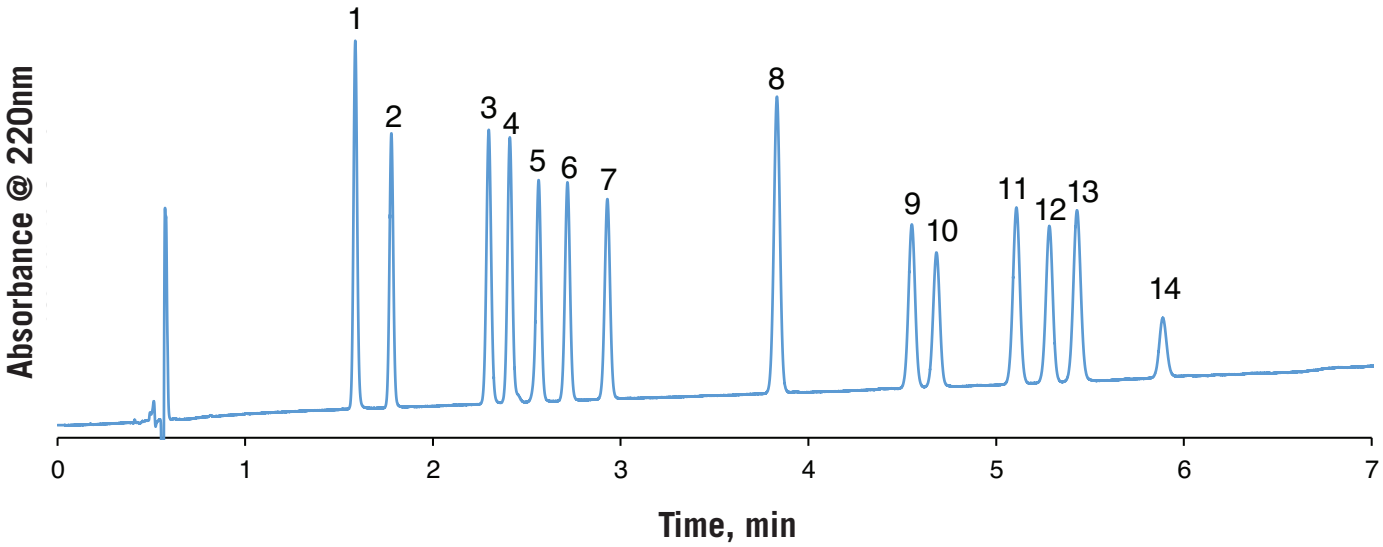
CONDITIONS

Column:	HALO 90 Å C18, 3.0 x 150 mm, 2.7 µm
Part Number:	92813-702
Mobile Phase:	A= Water/ 0.1% formic acid
	B= Acetonitrile/ 0.085% formic acid
Gradient:	70-88%B in 6 min
Flow Rate:	1.0 mL/min
Initial Pressure:	350 bar
Temperature:	30 °C
Detection:	UV 220 nm, PDA
Injection Volume:	0.6 µL
Dwell Volume:	0.471 mL
Sample Solvent:	75/25 methanol/ water
Response Time:	0.025 sec
Data Rate:	100 Hz
LC System:	Shimadzu Nexera X2
Flow Cell:	1 µL

PEAK IDENTITIES

1. Cannabidivarinic acid (CBDVA)
2. Cannabidvarin (CBDV)
3. Cannabidiolic acid (CBDA)
4. Cannabigerolic acid (CBGA)
5. Cannabigerol (CBG)
6. Cannabidiol (CBD)
7. Tetrahydrocannabivarin (THCV)
8. Cannabinol (CBN)
9. delta-9- Tetrahydrocannabinol (Δ9-THC)
10. delta-8-Tetrahydrocannabinol (Δ8-THC)
11. Cannabicyclol (CBL)
12. Cannabichromene (CBC)
13. delta-9-Tetrahydrocannabinolic acid A (THCA)
14. Cannabichromenic acid (CBCA)

Structures on page 10



ISOCRATIC SEPARATION OF 14 CANNABINOIDS ON HALO C18

A HALO C18 column is used to separate a mixture of fourteen cannabinoids, showing fast results and high resolution within critical pairs. Cannabinoids are a class of chemical compounds primarily found in the marijuana plant. Many of these compounds have been found to provide medicinal benefits such as reduction in pain and inflammation.

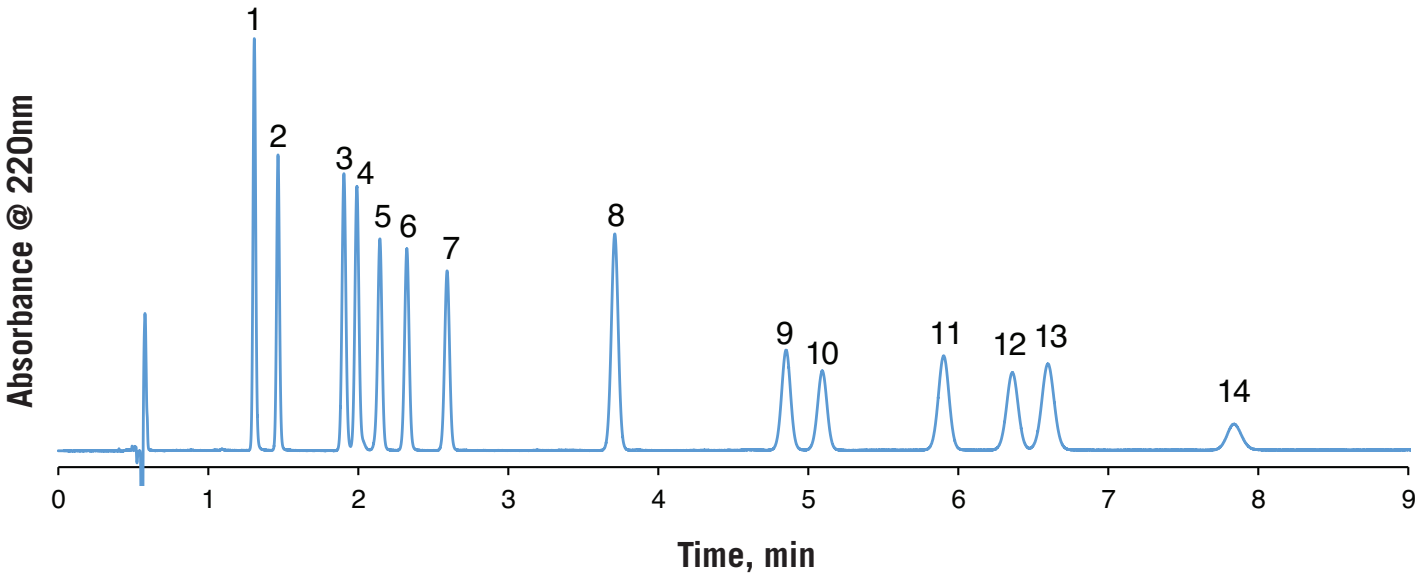
CONDITIONS

Column:	HALO 90 Å C18, 3.0 x 150 mm, 2.7 µm
Part Number:	92813-702
Mobile Phase:	A= Water/ 0.1% formic acid
	B= Acetonitrile/ 0.085% formic acid
Isocratic:	75%B
Flow Rate:	1.0 mL/min
Initial Pressure:	350 bar
Temperature:	30 °C
Detection:	UV 220 nm, PDA
Injection Volume:	0.6 µL
Dwell Volume:	0.471 mL
Sample Solvent:	75/25 methanol/ water
Response Time:	0.025 sec
Data Rate:	100 Hz
LC System:	Shimadzu Nexera X2
Flow Cell:	1 µL

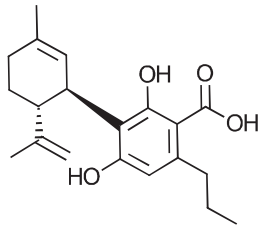
PEAK IDENTITIES

1. Cannabidivarinic acid (CBDVA)
2. Cannabidvarin (CBDV)
3. Cannabidiolic acid (CBDA)
4. Cannabigerolic acid (CBGA)
5. Cannabigerol (CBG)
6. Cannabidiol (CBD)
7. Tetrahydrocannabivarin (THCV)
8. Cannabinol (CBN)
9. delta-9- Tetrahydrocannabinol (Δ9-THC)
10. delta-8-Tetrahydrocannabinol (Δ8-THC)
11. Cannabicyclol (CBL)
12. Cannabichromene (CBC)
13. delta-9-Tetrahydrocannabinolic acid A (THCA)
14. Cannabichromenic acid (CBCA)

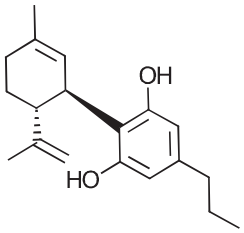
Structures on page 10



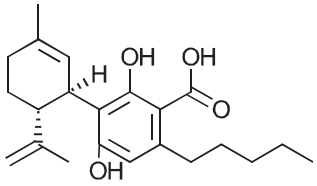
1. CBDVA



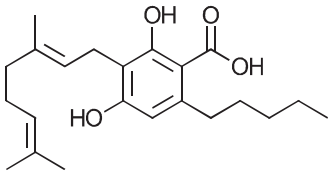
2. CBDV



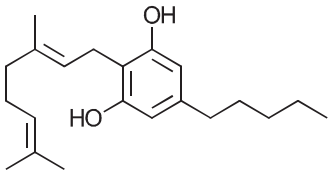
3. CBDA



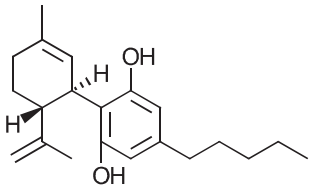
4. CBGA



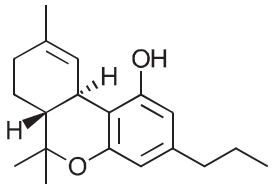
5. CBG



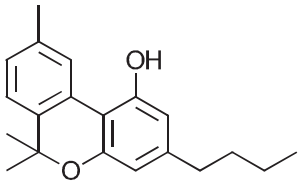
6. CBD



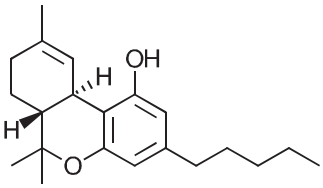
7. THCV



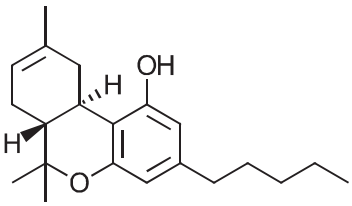
8. CBN



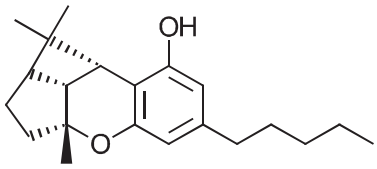
9. Δ9-THC



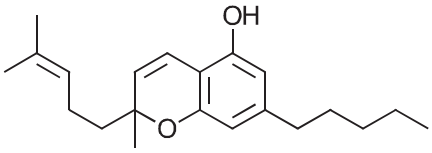
10. Δ8-THC



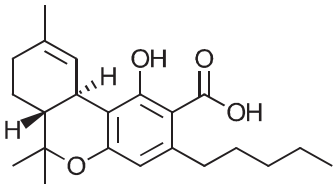
11. CBL



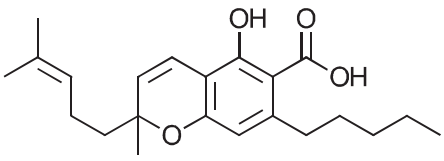
12. CBC



13. THCA



14. CBCA

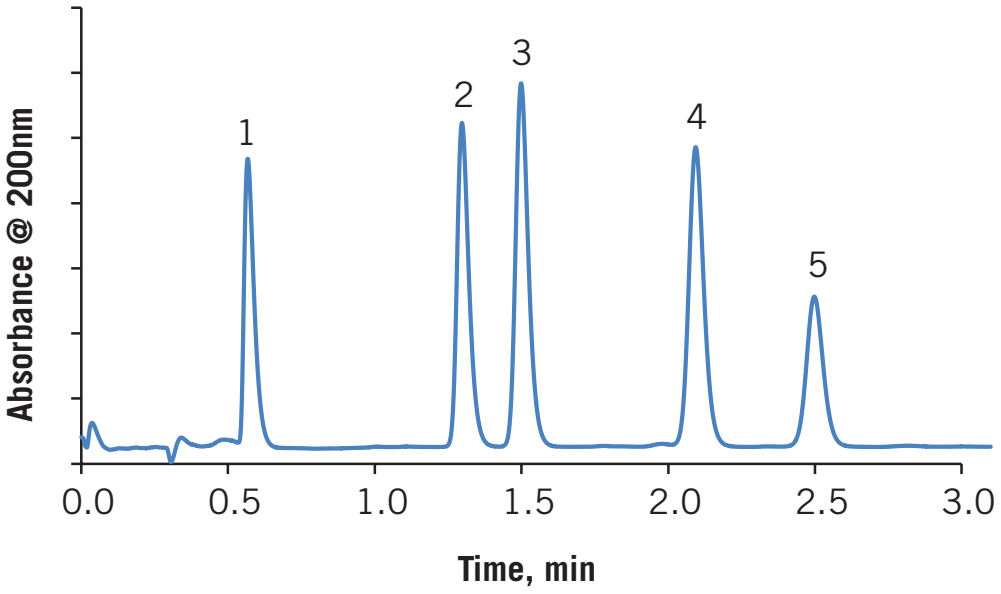


ISOCRATIC SEPARATION OF SYNTHETIC CANNABINOIDS ON HALO C18 (1)

Synthetic cannabinoids are man-made compounds that act like the chemicals found in the marijuana plant. The five compounds in this mixture are illegal and represent only a small number of the variations that exist. Just as one compound is made illegal, another variation will be made to take its place. This represents a growing challenge for law enforcement agencies. Using a HALO C18 column gives a fast, efficient separation of these illegal drugs with ample resolution for the next generation of illegal species.

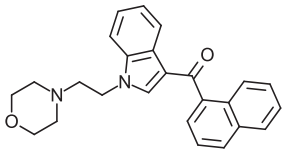
CONDITIONS

Column:	HALO 90 Å C18, 2.1 x 100 mm, 2.7 µm
Part Number:	92812-602
Mobile Phase:	Isocratic: 25/75 A/B A: 5 mM ammonium formate, pH unadjusted B: 95/5 acetonitrile/water with 5 mM ammonium formate
Flow Rate:	0.6 mL/min
Pressure:	247 bar
Temperature:	30 °C
Injection Volume:	0.5 µL
Sample Solvent:	50/50 water/acetonitrile
Detection:	UV 200 nm, VWD
Data Rate:	50 Hz
Flow Cell:	2.5 µL semi-micro
LC System:	Shimadzu Prominence UFLC XR

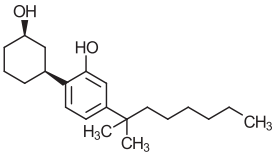


ANALYTES

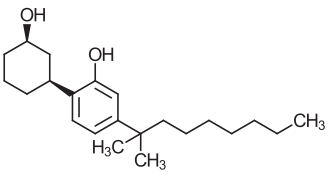
1. JWH-200



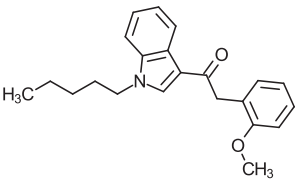
2. (±)-CP 47, 497



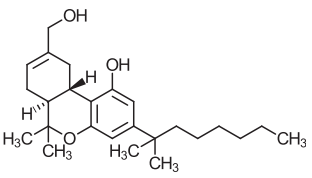
3. (±)-CP 47, 497 C8 Homologue



4. JWH-250



5. HU-211

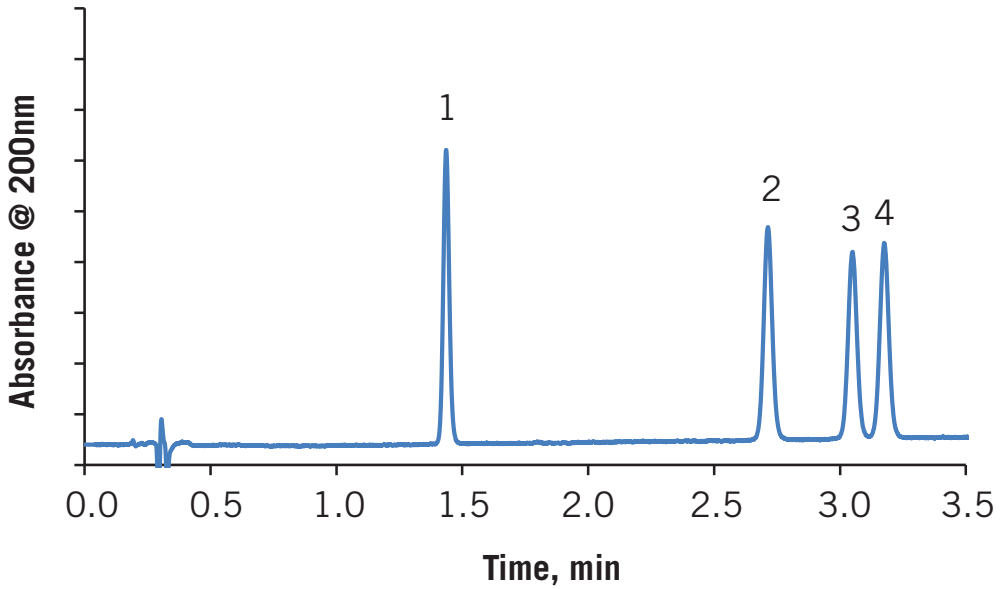


ISOCRATIC SEPARATION OF SYNTHETIC CANNABINOIDS ON HALO C18 (2)

Synthetic cannabinoids are man-made compounds that act like the chemicals found in the marijuana plant. The four compounds in this mixture represent only a small number of the variations that exist. Just as one compound is made illegal, another variation will be synthesized to take its place. This represents a growing challenge for law enforcement agencies. Using a HALO C18 column gives a fast, efficient separation of these cannabinoids with ample resolution for the next generation of illegal species.

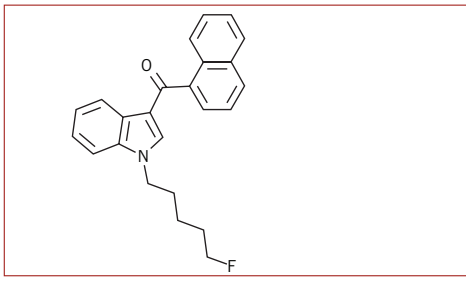
CONDITIONS

Column:	HALO 90 Å C18, 2.1 x 100 mm, 2.7 µm
Part Number:	92812-602
Mobile Phase:	Isocratic: 25/75 A/B A: 5 mM ammonium formate B: 95/5 acetonitrile/water with 5 mM ammonium formate
Flow Rate:	0.6 mL/min
Pressure:	279 bar
Temperature:	30 °C
Injection Volume:	0.5 µL
Sample Solvent:	50/50 water/acetonitrile
Detection:	UV 200 nm, VWD
Data Rate:	100 Hz
Flow Cell:	1 µL
LC System:	Shimadzu Nexera X2

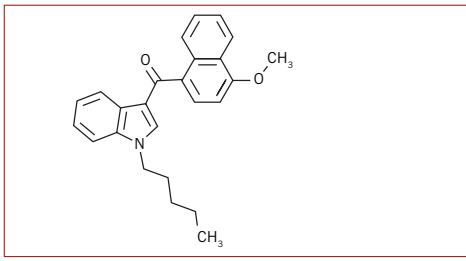


ANALYTES

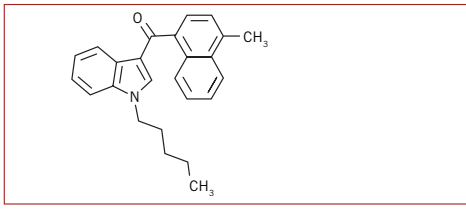
1. AM2201 (359.44 g/mol)



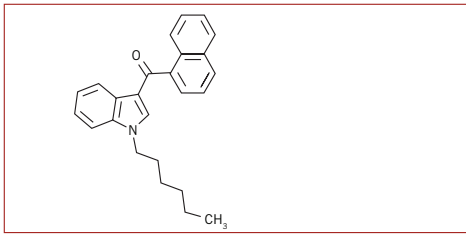
2. JWH-081 (371.47 g/mol)



3. JWH-122 (355.47 g/mol)



4. JWH-019 (355.47 g/mol)



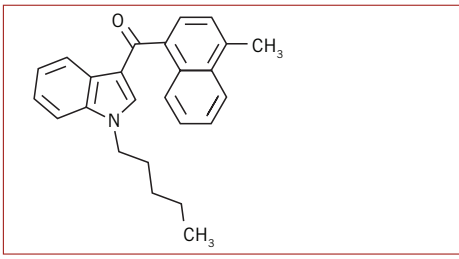
DETERMINATION OF SYNTHETIC CANNABINOID HOMOLOGUES ON HALO C18

Synthetic cannabinoids can be very similar in their chemical structure. In fact, many of these cannabinoids are analogs or isomers of each other and can be difficult to distinguish. Two homologues in this particular sample were fraction collected and then identified using an orbital ion trap MS system. The Orbitrap allows us to see signature fragmentations of a particular compound, allowing positive identification of each isomer.

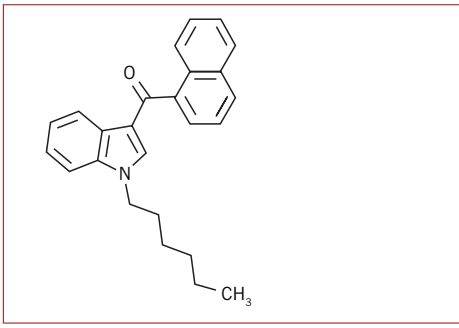
CONDITIONS

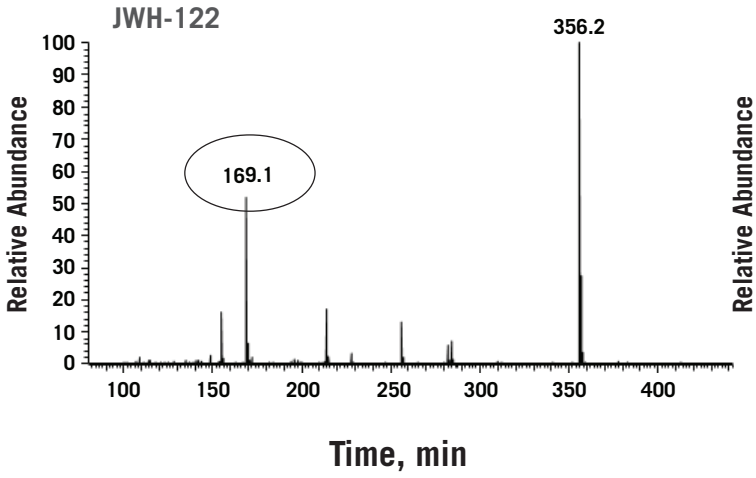
Column:	HALO C18, 2.1 x 100 mm, 2.7 µm
MS System:	Thermo Fisher Orbitrap VelosPro ETD
Scan Time:	6 µscans/250 ms max inject time
Scan Range:	50-2000 m/z
MS Parameters:	Positive ion mode, ESI at +4.0 kV, 225 °C capillary

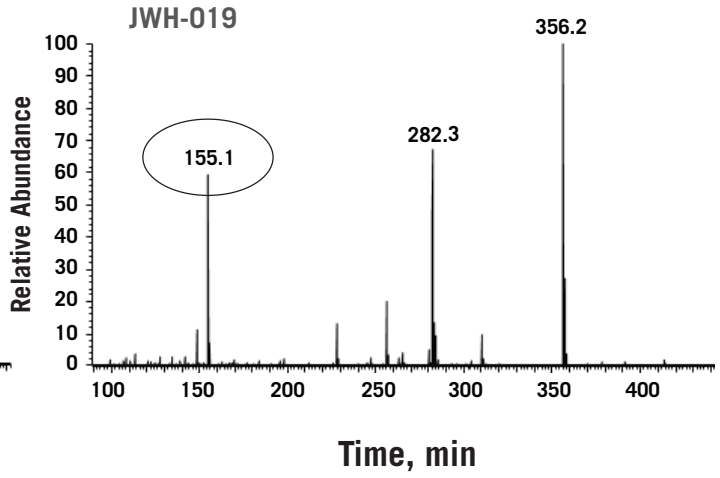
JWH-122 (m/z=356.47)



JWH-019 (m/z=356.47)





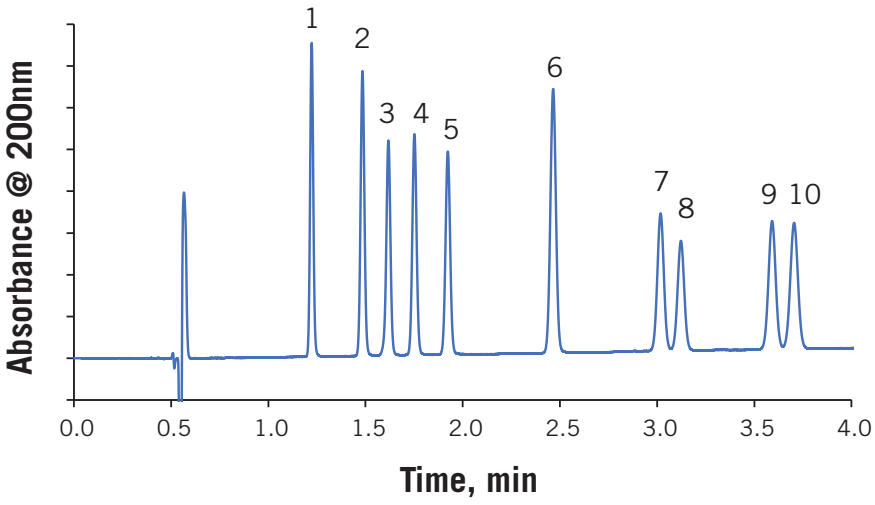


SEPARATION OF CANNABINOIDS ON HALO C18

A HALO C18 column is used to separate a mixture of 10 cannabinoids, showing fast results and high resolution between critical pairs. Cannabinoids are a class of chemical compounds primarily found in the marijuana plant. Many of these compounds have been found to provide medicinal benefits such as reduction in pain and inflammation.

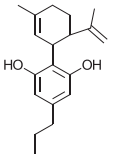
CONDITIONS

Column:	HALO 90 Å C18, 4.6 x 100 mm, 2.7 µm
Part Number:	92814-602
Mobile Phase:	A: Water/0.1% formic acid
	B: Acetonitrile/0.085% formic acid
Gradient:	77-85%B in 4 min
Flow Rate:	1.5 mL/min
Initial Pressure:	197 bar
Temperature:	38 °C
Detection:	UV 220 nm, PDA
Injection Volume:	1.3 µL
Dwell Volume:	0.471 mL
Sample Solvent:	75/25 methanol/water
Response Time:	0.025 sec.
Data Rate:	100 Hz
LC System:	Shimadzu Nexera X2
Flow Cell:	1 µL

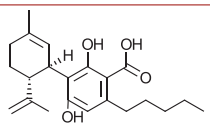


ANALYTES

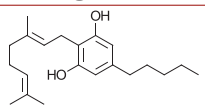
1. Cannabidivarin (CBDV)



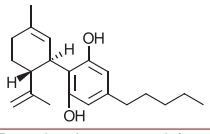
2. Cannabidiolic acid (CBDA)



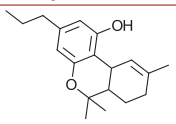
3. Cannabigerol (CBG)



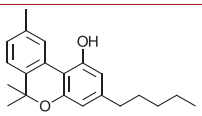
4. Cannabidiol (CBD)



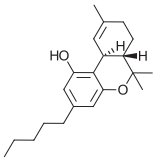
5. Tetrahydrocannabivarin (THCV)



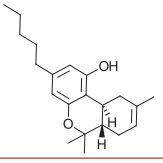
6. Cannabinol (CBN)



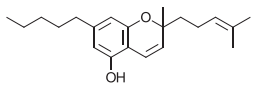
7. delta-9-Tetrahydrocannabinol (Δ9-THC)



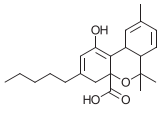
8. delta-8-Tetrahydrocannabinol (Δ8-THC)



9. Cannabichromene (CBC)



10. delta-9-Tetrahydrocannabinolic acid A (THCA)



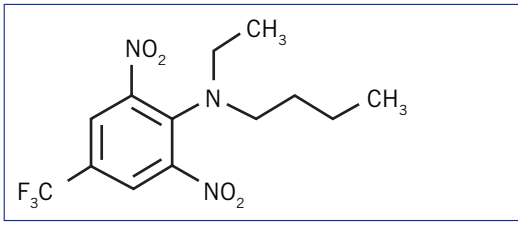
HERBICIDE – BENFLURALIN

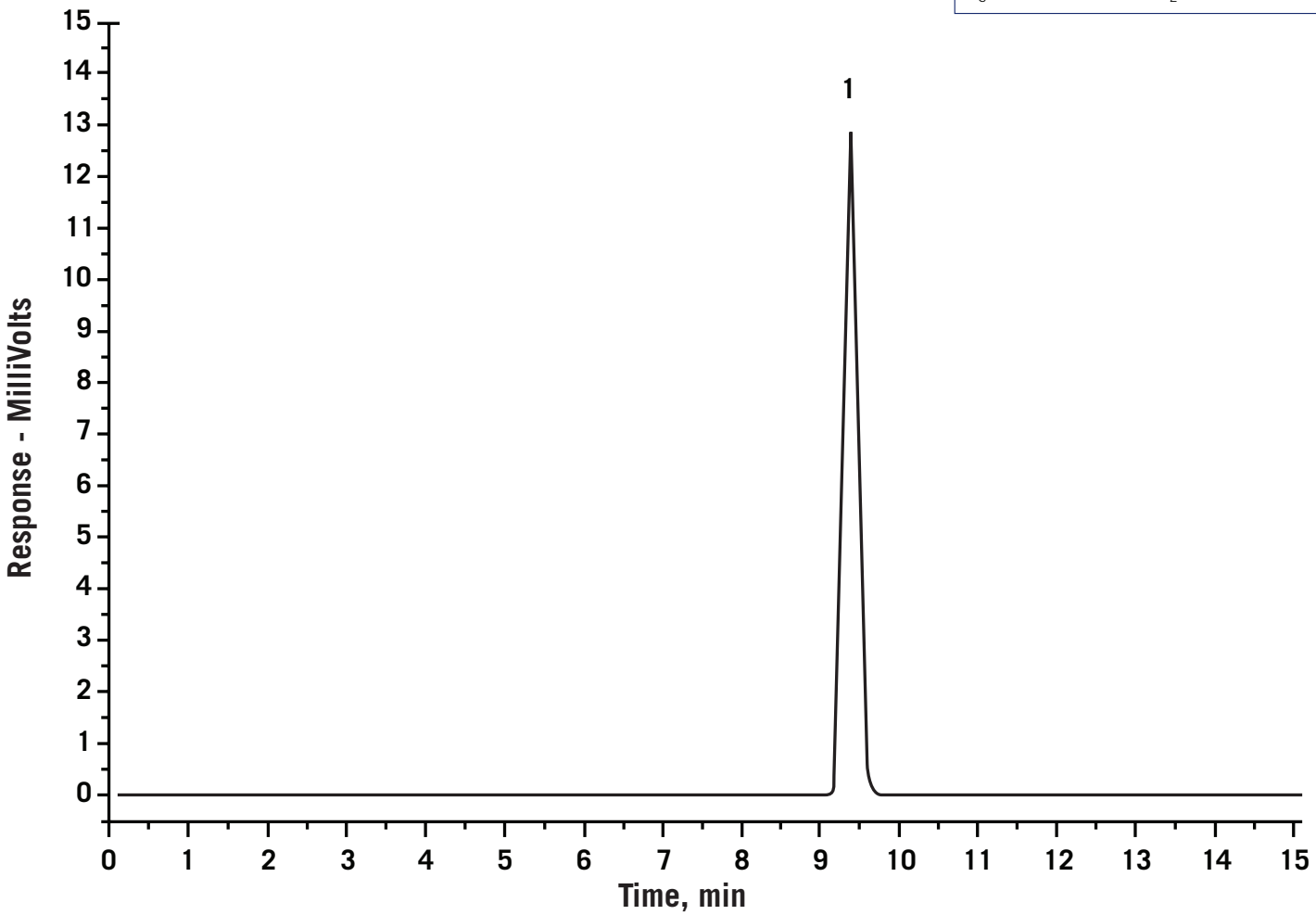
CONDITIONS

Column:	ACE C18, 5 µm	Flow Rate:	1 mL/min
Dimensions:	250 x 4.6 mm	Temperature:	Ambient
Part Number:	ACE-121-2546	Detection:	UV, 254 nm
Mobile Phase:	H_2O/MeOH (15:85 v/v)		

ANALYTE

1. Benfluralin





GLYPHOSATE AND RELATED COMPOUNDS AS FMOC DERIVATIVES (GRADIENT)

CONDITIONS

Column: ACE Excel SuperC18, 3 µm
Dimensions: 2.1 x 150 mm
Part Number: EXL-1111-1502U
Mobile Phase: A: H_2O
B: MeOH
C: 200 mM ammonium formate pH 3.0

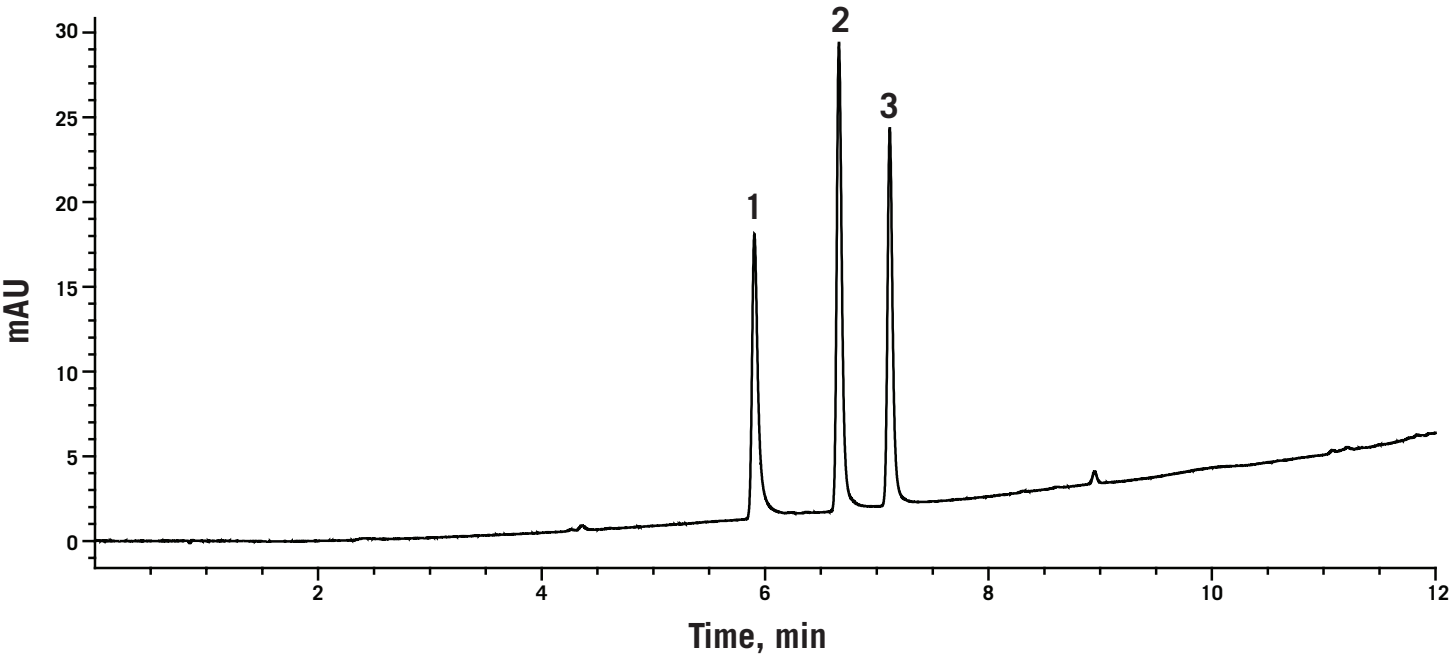
Gradient:

Time (min)	%A	%B	%C
0	62.5	35.0	2.5
10	2.5	95.0	2.5
11	2.5	95.0	2.5
12	62.5	35.0	2.5
22	62.5	35.0	2.5

Flow Rate: 0.4 mL/min
Injection: 0.1 µL
Temperature: 60 °C
Detection: UV, 254 nm
Sample: Standards derivatized with FMOC-Cl

ANALYTES

1. Glyphosate
2. Aminomethylphosphonic acid (AMPA)
3. Glufosinate



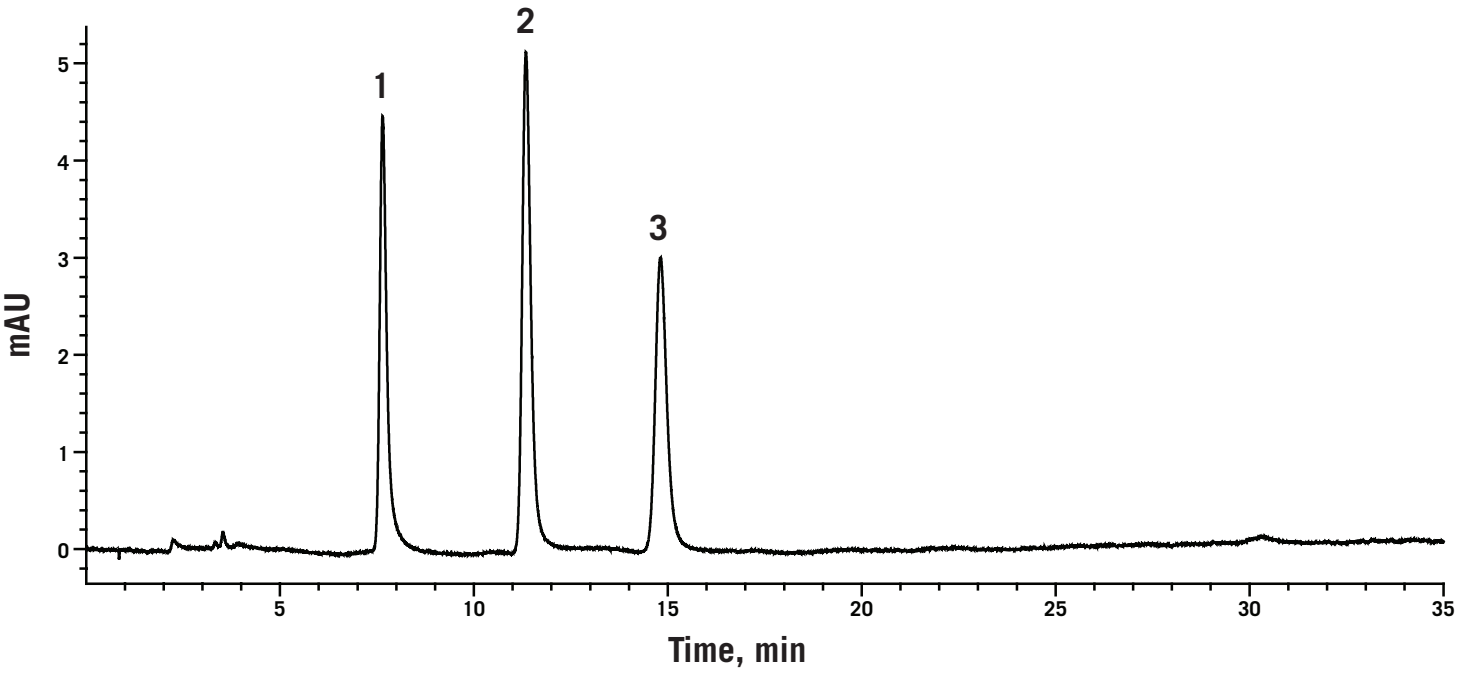
GLYPHOSATE AND RELATED COMPOUNDS AS FMOC DERIVATIVES (ISOCRATIC)

CONDITIONS

Column:	ACE Excel SuperC18, 3 µm
Dimensions:	2.1 x 150 mm
Part Number:	EXL-1111-1502U
Mobile Phase:	5.0 mM ammonium formate pH 3.0 in H_2O/MeOH (55:45 v/v)
Flow Rate:	0.4 mL/min
Injection:	0.1 µL
Temperature:	25 ºC
Detection:	UV, 254 nm
Sample:	Standards Derivatized with FMOC-Cl

ANALYTES

1. Glyphosate
2. Aminomethylphosphonic acid (AMPA)
3. Glufosinate



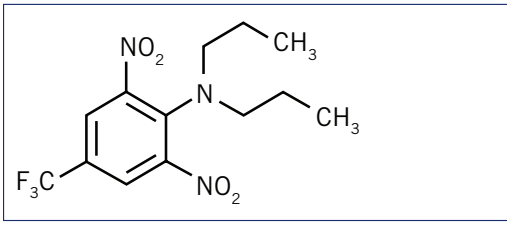
HERBICIDE – TRIFLURALIN

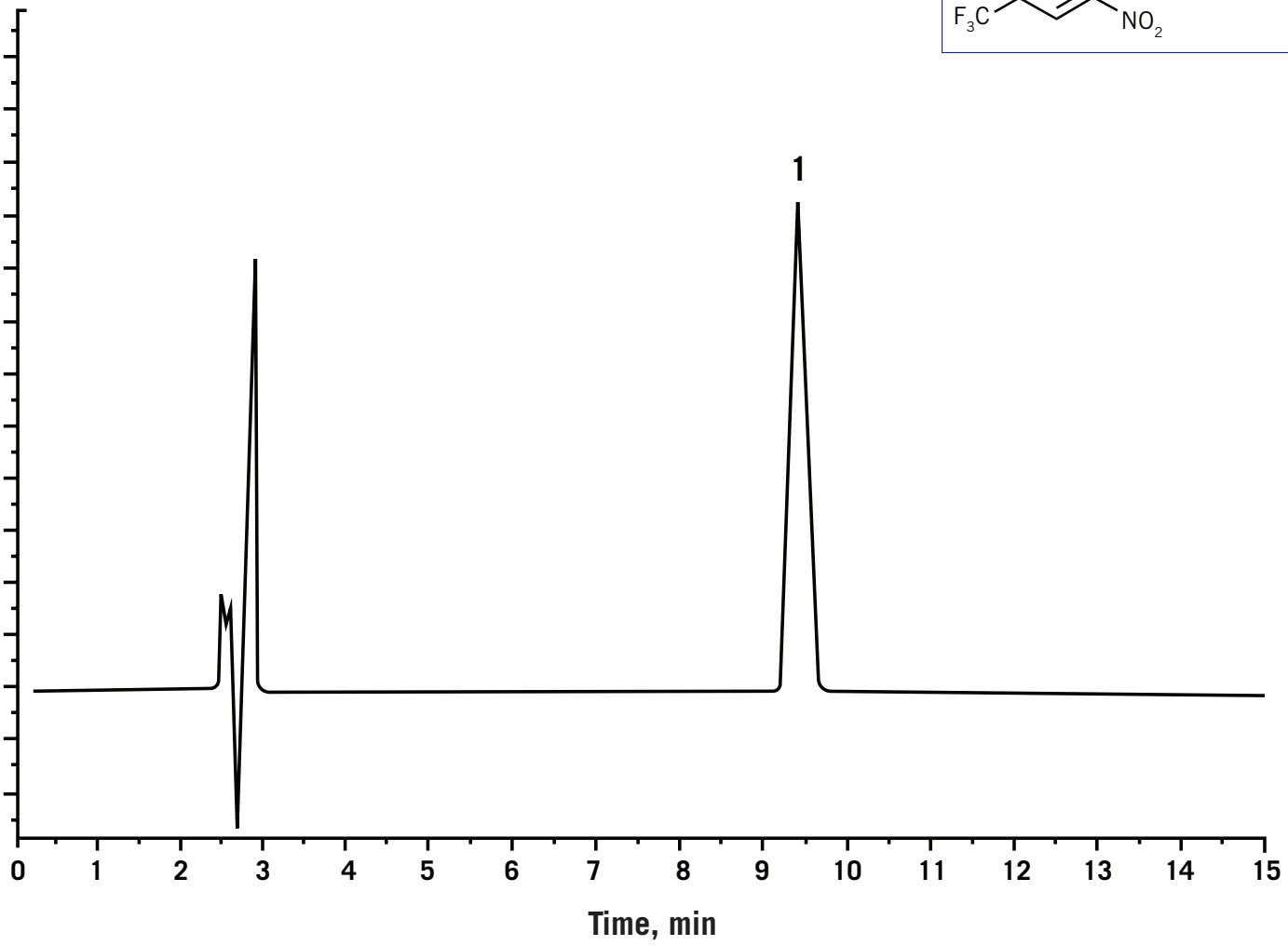
CONDITIONS

Column:	ACE C18, 5 µm
Dimensions:	250 x 4.6 mm
Part Number:	ACE-121-2546
Mobile Phase:	H_2O/MeOH (15:85 v/v)
Flow Rate:	1 mL/min
Temperature:	Ambient
Detection:	UV, 254 nm

ANALYTE

1. Trifluralin





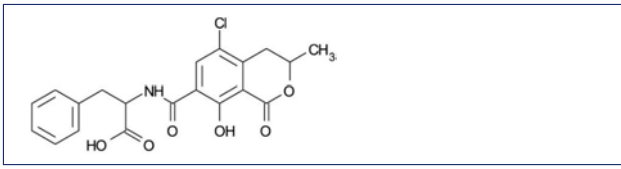
OCHRATOXIN A

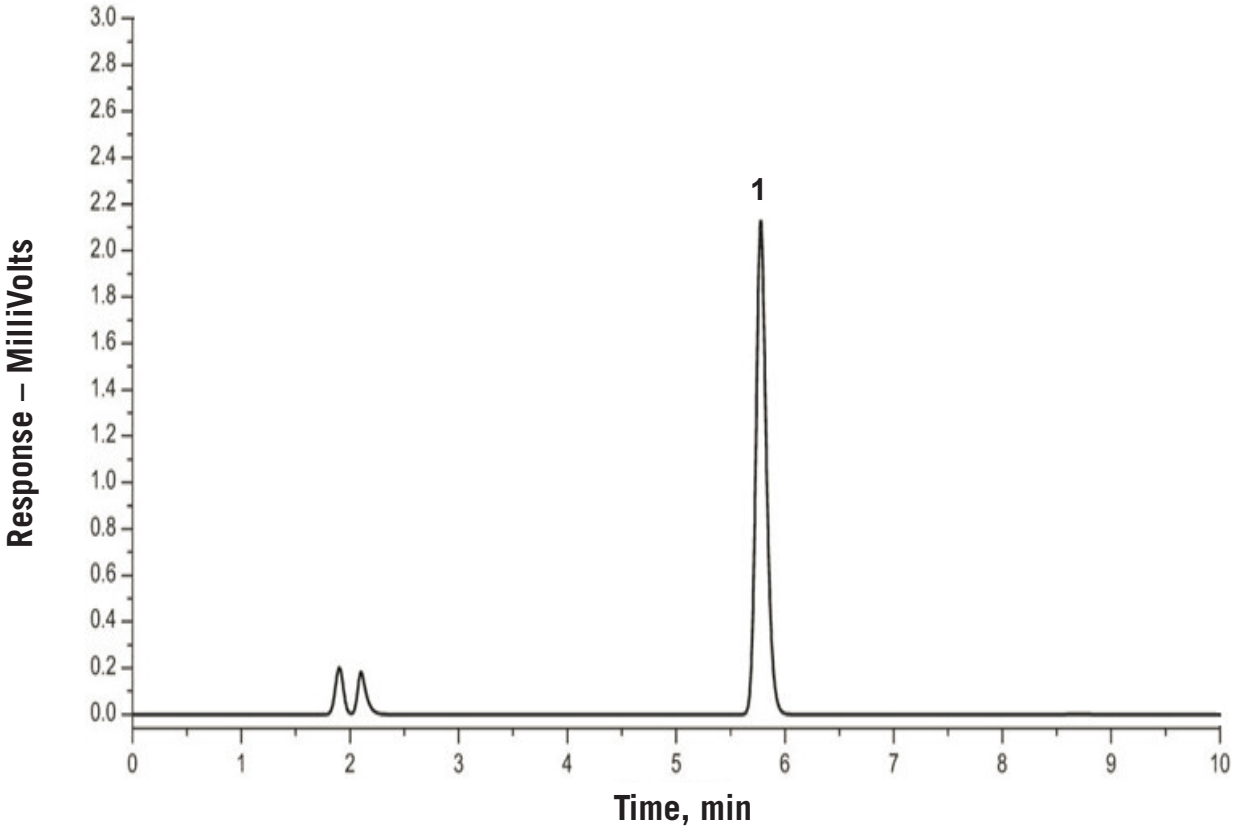
CONDITIONS

Column:	ACE C18, 5 µm
Dimensions:	150 x 4.6 mm
Part Number:	ACE-121-1546
Mobile Phase:	MeCN/H_2O/Acetic acid (51:47:2 v/v)
Flow Rate:	1 mL/min
Temperature:	Ambient
Detection:	Fluorescence – λ_{ex} 333 nm, λ_{em} 443 nm

ANALYTE

1. Ochratoxin A





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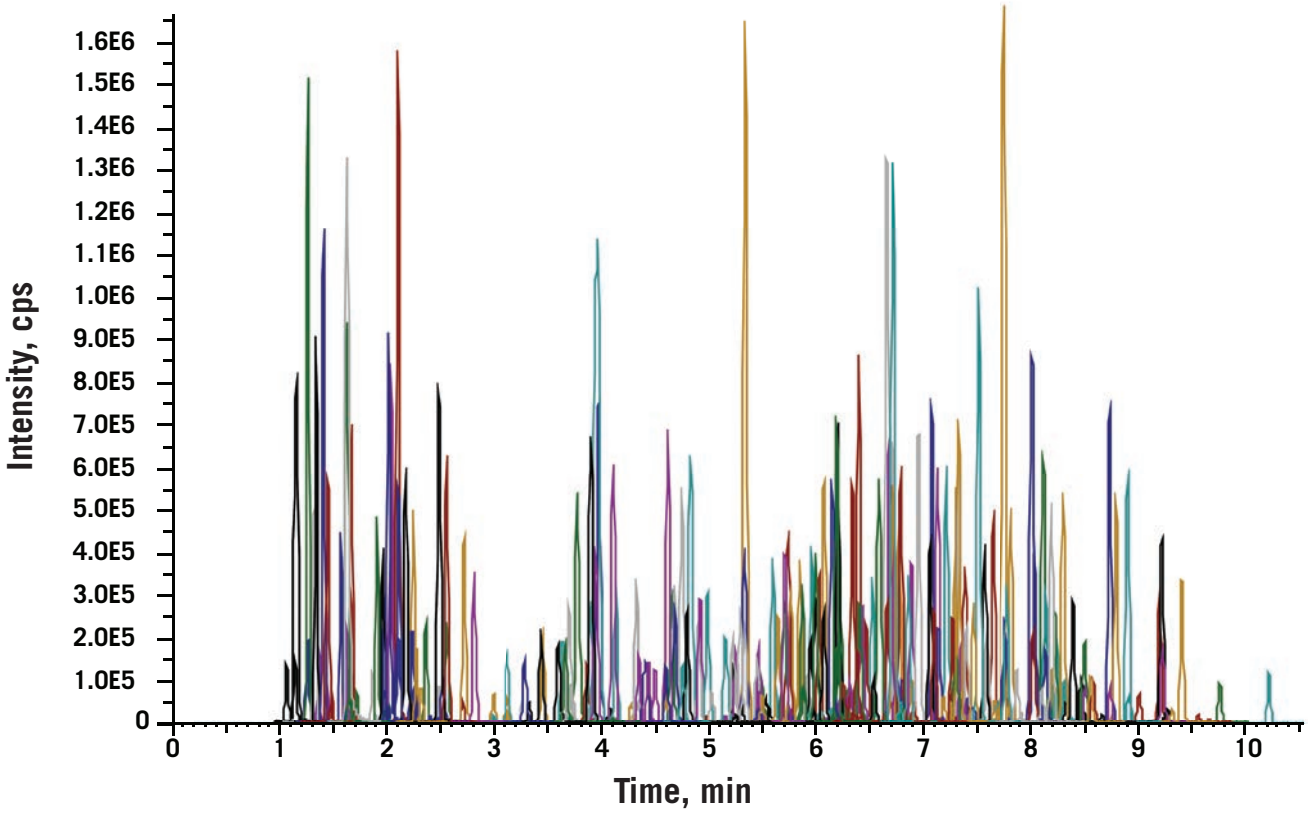
250 PESTICIDES

CONDITIONS

Column:	ACE Excel C18, 2 µm
Dimensions:	2.1 x 100 mm
Part Number:	EXL-101-1002U
Mobile Phase:	A: 10mM ammonium formate + 0.05% formic acid in H_2O
	B: 10mM ammonium formate + 0.05% formic acid in MeOH
Gradient:	

Time (min)	%B
0.00	2
0.25	30
10.00	100
12.00	100
12.50	2
14.50	2

Flow Rate:	0.5 mL
Temperature:	50 ºC
Detection:	TSQ Quantiva triple quad MS
	Positive mode HESI
	Spray Voltage: 3500 V
	Ion Transfer Tube Temperature: 350 ºC
	Vaporizer Temperature: 300 ºC



250 Pesticide Screen by LC-MS/MS

Application #AN3060

Analyte	R_t (mins)	Adduct	Precusor Ion *m/z*	Quant Ion *m/z*	Conf Ion *m/z*
3-OH Carbofuran	2.25	$[M+H]^+$	238.1	181.2	163.1
5-OH Thiabendazole	1.66	$[M+H]^+$	218.0	147.2	191.1
Abamectin	9.45	$[M+NH_4]^+$	890.5	305.3	567.5
Acephate	1.26	$[M+H]^+$	184.0	143.1	125.1
Acetamiprid	2.24	$[M+H]^+$	223.1	126.1	90.1
Aldicarb	2.95	$[M+NH_4]^+$	208.1	116.1	89.0
Aldicarb sulfone	1.44	$[M+NH_4]^+$	240.1	148.0	86.0
Aldicarb sulfoxide	1.37	$[M+NH_4]^+$	224.1	132.0	89.1
Allethrin	8.33	$[M+H]^+$	303.2	135.1	123.1
Ametoctradin	7.64	$[M+H]^+$	276.2	149.1	176.2
Atrazine	4.64	$[M+H]^+$	216.1	174.0	104.0
Azinphos ethyl	6.30	$[M+H]^+$	346.0	132.1	223.0
Azinphos methyl	5.14	$[M+H]^+$	318.0	132.0	124.9
Azinphos methyl OA	2.98	$[M+H]^+$	302.0	132.2	160.0
Azoxystrobin	5.59	$[M+H]^+$	404.1	372.1	344.1
Bendiocarb	3.72	$[M+H]^+$	224.1	167.1	109.1
Benoxacor	5.23	$[M+H]^+$	260.1	134.1	120.1
Bifenazate	6.27	$[M+H]^+$	301.1	198.0	170.1
Bitertanol	7.41	$[M+H]^+$	338.2	269.3	99.1
Boscalid	5.85	$[M+H]^+$	343.0	307.0	140.0
Bupirimate	6.68	$[M+H]^+$	317.2	210.2	237.3
Buprofezin	8.24	$[M+H]^+$	306.1	201.1	106.1
Cadusafos	7.58	$[M+H]^+$	271.1	159.0	131.0
Carbaryl	4.07	$[M+NH_4]^+$	219.1	145.1	127.0
Carbendazim	2.10	$[M+H]^+$	192.1	160.1	132.1
Carbofuran	3.77	$[M+H]^+$	222.1	165.2	123.2
Carboxin	3.97	$[M+H]^+$	236.1	143.0	93.0
Carfentrazone ethyl	6.88	$[M+H]^+$	412.0	346.1	366.0
Chlorantraniliprole	5.24	$[M+H]^+$	484.0	286.0	194.0
Chlorfenvinphos	7.21	$[M+H]^+$	359.0	170.0	99.1
Chlorimuron ethyl	5.73	$[M+H]^+$	415.1	186.0	83.0
Chlorpyrifos	8.47	$[M+H]^+$	349.9	198.0	97.0
Chlorpyrifos OA	6.65	$[M+H]^+$	334.0	278.0	197.9
Clethodim	7.71	$[M+H]^+$	360.3	164.1	136.1
Clofentezine	7.38	$[M+H]^+$	303.0	138.1	102.0
Cloransulam methyl	4.13	$[M+H]^+$	430.0	398.1	370.0
Clothianidin	1.99	$[M+H]^+$	250.0	169.1	132.0
Coumaphos	7.07	$[M+H]^+$	363.0	227.1	307.1
Crotoxyphos	5.86	$[M+NH_4]^+$	332.1	127.1	193.1
Crufomate	6.77	$[M+H]^+$	292.1	236.1	108.1
Cyantraniliprole	4.33	$[M+2+H]^+$	475.0	286.0	444.1
Cyazofamid	6.52	$[M+H]^+$	325.1	108.1	261.2
Cyflufenamid	7.42	$[M+H]^+$	413.1	295.1	203.0
Cymoxanil	2.48	$[M+H]^+$	199.1	128.1	111.1
Cyphenothrin	9.27	$[M+NH_4]^+$	393.2	151.2	123.2

Analyte	R_t (mins)	Adduct	Precusor Ion *m/z*	Quant Ion *m/z*	Conf Ion *m/z*
Cyprosulfamide	3.30	$[M+H]^+$	375.1	135.1	254.1
Cyromazine	1.15	$[M+H]^+$	167.1	125.2	68.2
DEF	9.20	$[M+H]^+$	315.1	169.0	113.0
Demeton-S sulfone	2.55	$[M+H]^+$	291.1	235.1	263.1
Dialifos	7.46	$[M+H]^+$	394.0	208.1	181.0
Diazinon	7.12	$[M+H]^+$	305.1	169.1	153.2
Diazinon OA	5.32	$[M+H]^+$	289.1	153.2	233.1
Dichlormid	3.85	$[M+H]^+$	208.0	140.0	81.2
Dichlorvos	3.63	$[M+H]^+$	221.0	109.1	127.0
Dicrotophos	1.87	$[M+H]^+$	238.1	112.2	193.1
Diethofencarb	5.53	$[M+H]^+$	268.2	124.1	180.2
Diflubenzuron	6.66	$[M+H]^+$	311.0	158.0	141.0
Dimethenamid	5.70	$[M+H]^+$	276.1	244.1	168.2
Dimethoate	2.23	$[M+H]^+$	230.1	199.0	125.0
Dimethomorph	5.76, 6.07	$[M+H]^+$	388.1	301.0	165.1
Dinotefuran	1.36	$[M+H]^+$	203.1	129.1	114.2
Dioxacarb	2.26	$[M+H]^+$	224.1	123.1	167.1
Dioxathion	8.10	$[M-C_4H_{10}O_2PS_2]^+$	271.1	97.0	125.0
Disulfoton sulfone	4.59	$[M+H]^+$	307.0	261.1	125.0
Disulfoton sulfoxide	4.49	$[M+H]^+$	291.0	185.1	213.1
Diuron	4.82	$[M+H]^+$	233.0	72.1	160.0
DMST	3.90	$[M+H]^+$	215.1	106.1	151.0
Dodine	7.56	$[M+H]^+$	228.3	186.3	60.1
Emamectin	8.57	$[M+H]^+$	886.5	158.1	126.1
Ethiofencarb	4.27	$[M+H]^+$	226.1	107.1	169.1
Ethiofencarb sulfone	1.90	$[M+NH_4]^+$	275.1	107.1	201.1
Ethiofencarb sulfoxide	1.98	$[M+H]^+$	242.1	107.1	185.0
Ethion	8.31	$[M+H]^+$	385.0	199.1	143.0
Ethion monoxon	6.73	$[M+H]^+$	369.0	199.0	143.0
Ethiprole	5.77	$[M+NH_4]^+$	413.9	351.0	255.0
Ethofumesate	5.55	$[M+H]^+$	287.1	121.1	241.1
Ethoprop	6.46	$[M+H]^+$	243.1	173.0	131.0
Etofenprox	9.75	$[M+NH_4]^+$	394.2	177.2	107.1
Etoxazole	8.73	$[M+H]^+$	360.2	141.0	304.2
Famoxadone	7.24	$[M+NH_4]^+$	392.2	331.1	238.0
Fenamidone	5.76	$[M+H]^+$	312.1	236.1	92.2
Fenamiphos	6.71	$[M+H]^+$	304.1	217.1	202.0
Fenamiphos sulfone	4.10	$[M+H]^+$	336.1	266.1	188.1
Fenamiphos sulfoxide	3.96	$[M+H]^+$	320.1	233.1	171.1
Fenazaquin	9.21	$[M+H]^+$	307.2	161.2	57.2
Fenhexamid	6.39	$[M+H]^+$	302.1	178.0	97.2
Fenobucarb	5.49	$[M+H]^+$	208.1	95.0	152.0
Fenoxaprop ethyl	8.04	$[M+H]^+$	362.1	288.1	91.1
Fenoxycarb	6.80	$[M+H]^+$	302.1	88.1	116.1
Fenpropimorph	6.42	$[M+H]^+$	304.3	147.2	119.1

250 Pesticide Screen by LC-MS/MS

Application #AN3060

Analyte	R_t (mins)	Adduct	Precusor Ion *m/z*	Quant Ion *m/z*	Conf Ion *m/z*
Fenpyroximate	8.90	$[M+H]^+$	422.2	366.1	214.2
Fensulfothion	4.89	$[M+H]^+$	309.0	235.0	281.1
Fenuron	2.17	$[M+H]^+$	165.1	72.1	77.1
Flonicamid	1.66	$[M+H]^+$	230.1	203.0	98.0
Fluazifop-p-butyl	8.12	$[M+H]^+$	384.1	282.2	328.2
Fludioxonil	5.76	$[M+NH_4]^+$	266.1	158.1	131.0
Flufenoxuron	8.79	$[M+H]^+$	489.0	158.1	141.1
Flufenpyr ethyl	6.72	$[M+H]^+$	409.1	335.0	307.0
Flumetsulam	2.03	$[M+H]^+$	326.1	129.1	109.0
Flumiclorac pentyl	8.13	$[M+NH_4]^+$	441.1	308.1	354.1
Fluometuron	4.31	$[M+H]^+$	233.1	72.2	46.3
Fluopicolide	6.00	$[M+H]^+$	383.0	173.0	145.0
Fluopyram	6.33	$[M+H]^+$	397.1	173.0	208.0
Fluoxastrobin	6.40	$[M+H]^+$	459.1	427.2	188.1
Fluridone	5.32	$[M+H]^+$	330.1	309.1	290.0
Flusilazole	6.77	$[M+H]^+$	316.1	247.2	165.1
Fluthiacet methyl	6.88	$[M+H]^+$	404.0	344.0	273.9
Flutolanil	5.95	$[M+H]^+$	324.1	262.0	282.0
Flutriafol	4.74	$[M+H]^+$	302.1	70.1	123.1
Fluxapyroxad	6.02	$[M+H]^+$	382.1	342.1	314.1
Forchlorfenuron	4.78	$[M+H]^+$	248.1	129.1	93.1
Formetanate HCl	1.26	$[M+H]^+$	222.0	165.1	120.0
Fosthiazate	4.40	$[M+H]^+$	284.1	104.1	228.1
Hexaconazole	7.29	$[M+H]^+$	314.1	158.9	70.0
Hexythiazox	8.51	$[M+H]^+$	353.1	228.0	168.0
Imazalil	5.14	$[M+H]^+$	297.1	159.1	255.1
Imazosulfuron	5.28	$[M+H]^+$	413.0	153.0	156.1
Imidacloprid	1.96	$[M+H]^+$	256.1	209.1	175.0
Imiprothrin	6.34	$[M+H]^+$	319.2	151.1	123.1
Indaziflam	6.58	$[M+H]^+$	302.2	158.1	145.1
Indoxacarb	7.75	$[M+H]^+$	528.1	249.0	150.1
Ipconazole	7.81	$[M+H]^+$	334.2	70.1	125.0
Iprovalicarb	6.31	$[M+H]^+$	321.2	119.1	186.2
Isofenphos	7.39	$[M+H]^+$	346.1	217.0	245.1
Isoprocarb	4.67	$[M+H]^+$	194.1	95.1	152.2
Isoproturon	4.79	$[M+H]^+$	207.2	72.2	165.2
Kresoxim methyl	6.90	$[M+H]^+$	314.1	267.2	222.1
Lactofen	8.22	$[M+NH_4]^+$	479.1	344.1	223.0
Lenacil	4.67	$[M+H]^+$	235.1	153.1	136.1
Leptophos OA	7.75	$[M+2+H]^+$	396.9	155.1	364.9
Linuron	5.46	$[M+H]^+$	249.0	182.1	160.1
Malathion	5.92	$[M+H]^+$	331.0	127.1	285.1
Malathion OA	3.89	$[M+H]^+$	315.1	127.1	99.0
Mandipropamid	5.94	$[M+H]^+$	412.1	328.2	356.2
Mefenpyr diethyl	7.26	$[M+H]^+$	373.1	327.1	160.0
Mepanipyrim	6.21	$[M+H]^+$	224.1	106.2	77.1
Mesotrione	2.01	$[M+H]^+$	340.1	228.1	104.1
Metaflumizone	8.30	$[M+H]^+$	507.1	178.0	287.1
Metalaxyl	4.91	$[M+H]^+$	280.1	220.1	192.1
Metaldehyde	2.02	$[M+NH_4]^+$	194.1	62.2	45.3
Metconazole	7.32	$[M+H]^+$	320.2	70.1	125.0
Methamidophos	1.16	$[M+H]^+$	142.0	94.2	125.1
Methidathion	4.97	$[M+NH_4]^+$	320.0	145.1	85.1
Methiocarb	5.64	$[M+H]^+$	226.1	169.2	121.1
Methiocarb sulfone	2.35	$[M+NH_4]^+$	275.0	122.1	201.1
Methiocarb sulfoxide	2.10	$[M+H]^+$	242.1	185.1	122.1
Methomyl	1.61	$[M+H]^+$	163.1	106.1	88.1
Methoxyfenozide	6.04	$[M+H]^+$	369.2	149.1	313.1
Metolcarb	3.28	$[M+H]^+$	166.1	109.1	94.1
Metribuzin	3.59	$[M+H]^+$	215.1	187.1	131.1
Mevinphos	2.70	$[M+NH_4]^+$	242.1	193.1	127.1
Monocrotophos	1.71	$[M+H]^+$	224.1	193.0	127.0
Monolinuron	4.16	$[M+H]^+$	215.1	126.1	148.1
Myclobutanil	6.15	$[M+H]^+$	289.1	125.0	70.1
Nicosulfuron	3.45	$[M+H]^+$	411.1	182.0	213.0
Norflurazon	4.98	$[M+H]^+$	304.0	160.0	140.0
Norflurazon desmethyl	4.43	$[M+H]^+$	290.0	179.0	140.0
Omethoate	1.33	$[M+H]^+$	214.0	183.0	125.0
Oxamyl	1.48	$[M+NH_4]^+$	237.1	72.0	90.0
Oxamyl oxime	1.34	$[M+H]^+$	163.1	72.1	90.1
Oxydemeton methyl	1.57	$[M+H]^+$	247.0	169.1	109.1
Oxydemeton methyl sulfone	1.62	$[M+H]^+$	263.0	169.0	109.0
Parathion methyl OA	3.10	$[M+H]^+$	248.0	202.0	109.1
Parathion OA	4.61	$[M+H]^+$	276.1	220.1	248.1
Pencycuron	7.50	$[M+H]^+$	329.1	125.1	89.1
Penflufen	6.95	$[M+H]^+$	318.2	234.1	141.0
Penthiopyrad	7.05	$[M+H]^+$	360.1	177.1	276.1
Phenothrin	9.56	$[M+H]^+$	351.2	183.1	168.0
Phenthoate	6.81	$[M+H]^+$	321.0	247.1	79.1
Phorate OA	5.10	$[M+H]^+$	245.0	75.2	47.2
Phorate OA Sulfone	2.51	$[M+H]^+$	277.0	155.0	127.0
Phorate OA Sulfoxide	2.31	$[M+H]^+$	261.0	153.0	81.0
Phorate Sulfone	4.61	$[M+H]^+$	293.0	114.9	171.0
Phorate Sulfoxide	4.49	$[M+H]^+$	277.0	170.9	199.0
Phosalone	7.35	$[M+H]^+$	368.0	182.0	111.1
Phosmet	5.21	$[M+H]^+$	318.0	160.1	133.1
Phosmet OA	3.12	$[M+H]^+$	302.0	160.0	133.0
Phosphamidon	3.43	$[M+H]^+$	300.1	127.1	174.1
Phoxim	7.25	$[M+H]^+$	299.1	77.2	129.1
Picoxystrobin	6.79	$[M+H]^+$	368.1	145.0	115.0

250 Pesticide Screen by LC-MS/MS

Application #AN3060

Analyte	R_t (mins)	Adduct	Precusor Ion *m/z*	Quant Ion *m/z*	Conf Ion *m/z*
Pirimicarb	4.24	$[M+H]^+$	239.2	182.1	72.0
Pirimicarb Desmethyl	2.71	$[M+H]^+$	225.1	168.2	72.1
Pirimiphos Methyl	7.34	$[M+H]^+$	306.1	164.2	108.1
Prallethrin	7.69	$[M+H]^+$	301.2	133.0	151.2
Prochloraz	7.39	$[M+H]^+$	376.0	308.1	70.1
Profoxydim	7.71, 9.00	$[M+H]^+$	466.2	280.0	180.0
Promecarb	5.88	$[M+H]^+$	208.1	109.0	151.1
Propamocarb	1.41	$[M+H]^+$	189.1	102.0	144.0
Propaquizafop	8.21	$[M+H]^+$	444.1	299.2	371.2
Propargite	8.74	$[M+NH_4]^+$	368.2	231.2	175.1
Propetamphos	6.13	$[M+H]^+$	282.1	138.1	156.1
Propoxur(S)	3.69	$[M+H]^+$	210.1	168.2	111.1
Prosulfuron	5.29	$[M+H]^+$	420.1	167.1	141.1
Pymetrozine	1.44	$[M+H]^+$	218.1	105.1	78.1
Pyraclostrobin	7.30	$[M+H]^+$	388.1	163.1	194.1
Pyraflufen Ethyl	7.13	$[M+H]^+$	413.0	339.0	253.1
Pyrazophos	7.31	$[M+H]^+$	374.1	222.2	194.1
Pyridaben	9.22	$[M+H]^+$	365.1	309.0	147.1
Pyridalyl	10.21	$[M+2+H]^+$	492.0	110.9	164.0
Pyrimethanil	5.45	$[M+H]^+$	200.1	107.1	168.1
Pyriproxyfen	8.39	$[M+H]^+$	322.1	96.0	227.1
Quinalphos	6.78	$[M+H]^+$	299.1	163.1	147.1
Quinoxyfen	8.50	$[M+H]^+$	308.0	197.1	214.1
Quizalofop Ethyl	8.01	$[M+H]^+$	373.1	299.2	255.1
Resmethrin	9.40	$[M+H]^+$	339.2	128.1	171.1
Rimsulfuron	3.94	$[M+H]^+$	432.1	182.1	139.0
Rotenone	6.71	$[M+H]^+$	395.2	213.2	192.1
Saflufenacil	5.32	$[M+H]^+$	501.1	349.1	198.0
Sedaxane	6.20, 6.54	$[M+H]^+$	332.2	159.0	139.0
Sethoxydim	8.03	$[M+H]^+$	328.2	178.0	220.1
Simazine	3.66	$[M+H]^+$	202.1	104.1	132.1
Spinetoram	8.14	$[M+H]^+$	748.5	142.1	203.1
Spinosad A	7.69	$[M+H]^+$	732.5	142.1	98.0
Spinosad D	8.10	$[M+H]^+$	746.5	142.1	98.0
Spirodiclofen	8.91	$[M+H]^+$	411.1	313.1	71.1
Spiromesifen	8.66	$[M+NH_4]^+$	388.1	273.1	187.0
Spiromesifen Alcohol	5.01	$[M+H]^+$	273.2	187.1	179.1
Spirotetramat	6.38	$[M+H]^+$	374.2	302.3	216.2
Spiroxamine	5.95	$[M+H]^+$	298.3	144.2	100.2
Sulfoxaflor	2.39	$[M+NH_4]^+$	295.2	174.1	154.1
Sulprofos	8.56	$[M+H]^+$	323.0	219.1	139.1
TCMTB	5.48	$[M+H]^+$	239.0	180.0	136.0
Tebufenozide	6.78	$[M+H]^+$	353.2	133.0	104.8
Tebufenpyrad	8.19	$[M+H]^+$	334.2	117.1	145.1
Tebuthiuron	3.89	$[M+H]^+$	229.1	172.0	116.0
Tepraloxydim	4.10, 6.19	$[M+H]^+$	342.2	250.1	166.1
Terbufos Sulfone	5.46	$[M+H]^+$	321.0	115.0	143.0
Terbufos Sulfoxide	5.49	$[M+H]^+$	305.1	97.0	187.0
Terbuthylazine	5.71	$[M+H]^+$	230.1	174.1	104.1
Tetrachlorvinphos	6.86	$[M+2+H]^+$	366.9	127.1	206.0
Tetramethrin	7.91, 8.10	$[M+H]^+$	332.2	164.1	135.1
Thiabendazole	2.48	$[M+H]^+$	202.0	175.0	131.1
Thiacloprid	2.55	$[M+H]^+$	253.0	126.1	99.1
Thiamethoxam	1.65	$[M+H]^+$	292.0	211.1	181.1
Thifensulfuron Methyl	3.28	$[M+H]^+$	388.0	167.1	205.0
Thiobencarb	7.46	$[M+H]^+$	258.1	125.0	89.0
Thiodicarb	4.34	$[M+H]^+$	355.1	163.2	88.1
Thionazin	4.74	$[M+H]^+$	249.1	193.1	97.0
Topramezone	1.63	$[M+H]^+$	364.1	334.1	125.1
Triadimefon	6.07	$[M+H]^+$	294.1	197.0	225.0
Triadimenol	6.25	$[M+H]^+$	296.1	70.2	99.0
Triazophos	6.19	$[M+H]^+$	314.1	162.1	119.1
Tribenuron Methyl	4.59	$[M+H]^+$	396.1	155.1	181.1
Trichlorfon	2.26	$[M+H]^+$	256.9	109.0	221.0
Tricyclazole	2.80	$[M+H]^+$	190.0	163.1	136.1
Trifloxystrobin	7.78	$[M+H]^+$	409.1	186.2	206.2
Triflumizole	7.87	$[M+H]^+$	346.1	278.0	73.0
Triforine	5.23	$[M+2+H]^+$	434.9	213.0	98.2
Zoxamide	7.09	$[M+H]^+$	336.0	187.0	159.0

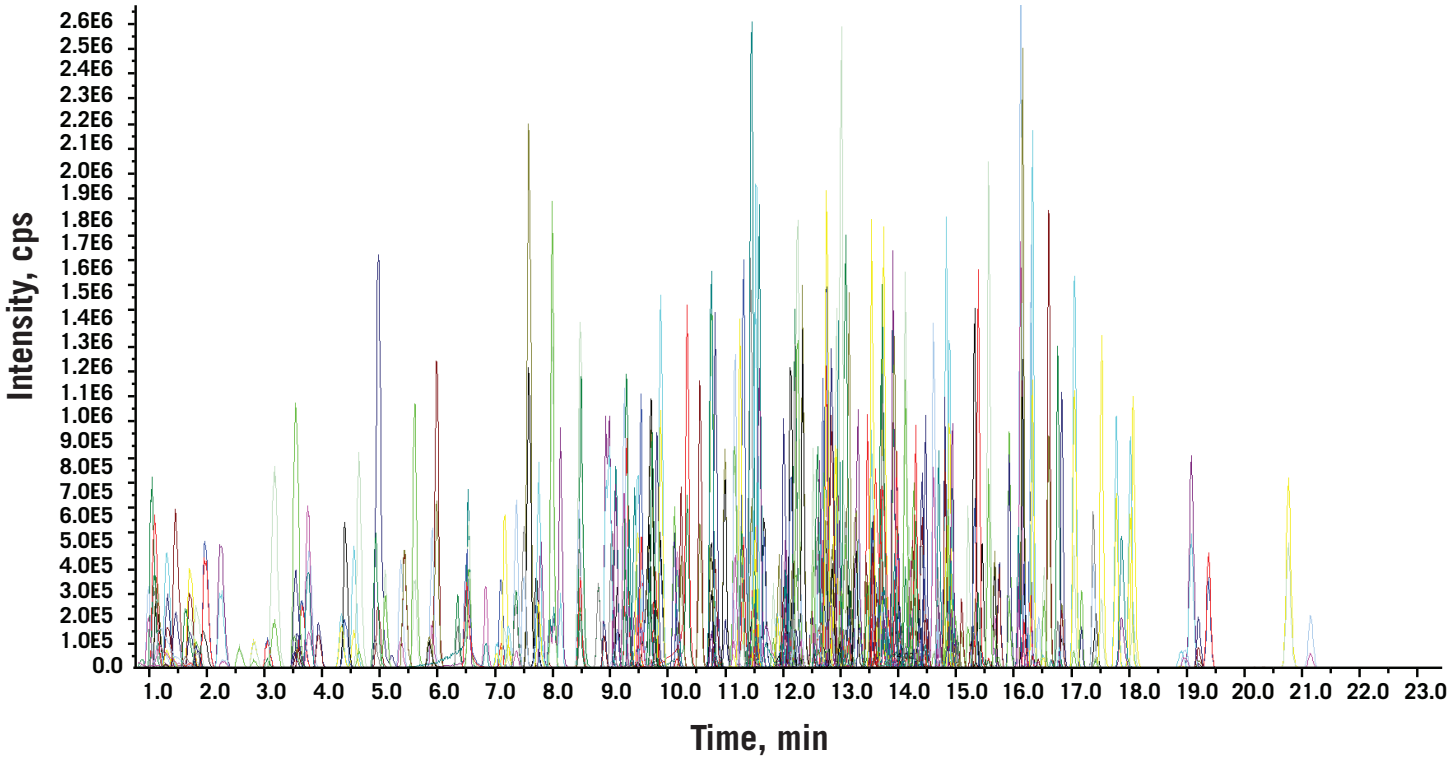
300 PESTICIDES

CONDITIONS

Column:	ACE UltraCore SuperC18, 2.5 µm
Dimensions:	2.1 x 100 mm
Part Number:	CORE-25A-1002U
Mobile Phase:	A: 5 mM ammonium formate in H_2O/MeOH (9:1 v/v)
Gradient:	B: 5 mM ammonium formate in H_2O/MeOH (1:9 v/v)

Time (min)	%B
0.0	30
0.5	30
15.0	100
22.0	100
22.1	30
27.0	30

Flow Rate:	0.3 mL/min
Injection:	6 µL
Temperature:	24 ºC
Detection:	AB SCIEX 4000 QTRAP TurbolonSpray ESI positive mode Capillary Voltage: 5000 V Heater Gas Temperature: 450 ºC
Sample:	Sample prepared using QuEChERs methodology Method validated using cucumber matrix spiked at 0.01 mg/kg. 265 analytes successfully validated (Analytes in black)



300 Pesticide Screen by LC-MS/MS

Application #AN3120

Analyte	Retention Time (mins)	MRM transitions *(m/z)*
3-Hydroxycarbofuran	3.5	238.1→ 163.1, 238.1→ 181.1
Acephate	1.0	184.1→ 142.9, 184.1→ 124.8
Acetamiprid	3.6	223.2→ 126.1, 225.2→ 128.1
Aclonifen	13.9	265.0→ 248.0, 267.0→ 250.0
Alachlor	12.9	270.2→ 238.2, 270.2→ 162.1
Aldicarb	5.4	208.0→ 89.0, 208.0→ 116.0
Aldicarb sulfone	1.2	240.0→ 86.0, 223.0→ 148.0
Aldicarb sulfoxide	1.1	207.0→ 132.0, 207.2→ 88.9
Ametryn	11.1	228.2→ 186.1, 228.2→ 68.0
Aminopyralid	0.8	207.0→ 160.9, 207.0→ 133.9
Amitrole	0.8	85.1→ 58.1, 85.1→ 57.1
Atrazine	9.3	216.2→ 174.0, 218.1→ 176.1
Atrazine-desethyl	4.4	188.2→ 146.0, 190.1→ 148.0
Atrazine-desisopropyl	2.4	174.1→ 104.1, 174.1→ 132.1
Avermectin B1a	18.2	876.5→ 553.0, 876.5→ 291.0
Avermectin B1b	19.1	890.5→ 305.0, 890.5→ 567.0
Azamethiphos	6.9	325.0→ 183.0, 325.0→ 138.9
Azinphos-ethyl	13.0	346.0→ 132.1, 346.0→ 160.1
Azinphos-methyl	10.9	318.1→ 132.1, 318.1→ 260.8
Aziprotryne	11.8	226.0→ 156.0, 226.0→ 125.0
Azoxystrobin	11.4	404.2→ 372.3, 404.2→ 344.1
Benalaxyl	14.0	326.2→ 148.1, 326.2→ 294.1
Benfuracarb	15.7	411.2→ 252.1, 411.2→ 195.1
Benthiavalicarb-isopropyl	12.0	382.3→ 116.0, 382.3→ 197.0
Bifenazate	12.5	301.2→ 198.1, 301.2→ 170.2
Bifenox	14.9	359.0→ 342.0, 359.0→ 310.0
Bifenthrin	21.0	440.0→ 181.1, 440.0→ 166.1
Bitertanol	14.6	338.2→ 269.0, 338.2→ 99.1
Bixafen	13.6	414.0→ 393.9, 416.1→ 395.9
Boscalid	11.7	343.1→ 306.8, 343.1→ 139.9
Bromfenvinfos-ethyl	14.3	405.0→ 155.0, 403.0→ 155.0
Bromuconazole A	12.2	378.0→ 159.1, 378.0→ 161.0
Bromuconazole B	13.5	378.1→ 159.1, 378.1→ 161.0
Bupirimate	13.5	317.2→ 166.2, 317.2→ 107.9
Buprofezin	16.1	306.3→ 201.1, 306.3→ 116.1
Cadusafos	14.8	271.1→ 158.9, 271.1→ 214.9
Carbaryl	8.3	202.2→ 145.1, 202.2→ 127.1
Carbendazim	4.7	192.2→ 160.1, 192.0→ 132.0
Carbofuran	7.4	222.2→ 165.1, 222.2→ 122.9
Carbosulfan	19.3	381.2→ 160.1, 381.2→ 118.1
Carboxin	8.3	236.1→ 143.1, 236.1→ 87.0
Carfentrazone-ethyl	13.8	412.2→ 345.9, 412.2→ 383.9
Chlorantraniliprole	10.7	484.0→ 452.9, 484.0→ 285.9
Chlorbromuron	11.7	295.1→ 205.9, 293.1→ 182.0
Chlorfenvinfos A	14.3	359.0→ 155.0, 358.9→ 99.0
Chloridazon	3.7	222.1→ 104.0, 222.1→ 77.1
Chlorpyrifos	16.8	349.9→ 198.1, 349.9→ 115.0

Analyte	Retention Time (mins)	MRM transitions *(m/z)*
Chlorpyrifos-methyl	15.2	322.0→ 124.9, 324.0→ 125.1
Chlortoluron	9.1	213.2→ 72.0, 215.1→ 72.1
Cinidon-ethyl	16.3	394.0→ 348.0, 394.0→ 366.0
Clethodim A	12.8	360.1→ 164.1, 360.1→ 268.1
Clethodim B	10.2	360.1→ 164.1, 360.1→ 268.1
Clofentezine	15.1	303.1→ 137.9, 305.1→ 102.0
Clomazone	10.7	240.1→ 124.9, 242.2→ 127.1
Cloquintocet-mexyl	16.1	336.2→ 238.0, 336.2→ 192.1
Clothianidin	2.9	250.1→ 169.0, 250.1→ 132.0
Coumaphos	14.3	363.0→ 227.0, 363.0→ 211.1
Cyanazine	6.7	241.1→ 214.1, 243.1→ 216.1
Cyazofamid	13.2	325.2→ 107.9, 327.2→ 107.9
Cycloate	14.9	216.2→ 83.1, 216.2→ 154.1
Cycloxydim A	13.1	326.3→ 280.0, 326.3→ 180.0
Cycloxydim B	8.4	326.3→ 280.0, 326.3→ 180.0
Cymoxanil	4.2	199.2→ 128.0, 199.2→ 111.1
Cyproconazole A	12.5	292.0→ 70.0, 292.0→ 125.0
Cyproconazole B	12.0	292.0→ 70.0, 292.0→ 125.0
Cyprodinil A	14.1	226.2→ 93.0, 226.2→ 77.0
Demeton-S-methyl	7.7	231.1→ 88.8, 231.1→ 61.0
Demeton-S-methyl sulfone	1.6	263.0→ 168.9, 263.0→ 120.8
Desmedipham	10.6	318.1→ 182.1, 318.1→ 136.0
Desmethyl-pirimicarb	5.8	225.2→ 72.0, 225.2→ 168.1
Diafenthiuron	17.4	385.2→ 329.2, 385.2→ 278.2
Diazinon	14.2	305.1→ 169.1, 305.1→ 97.0
Dichlofluanid	12.8	333.0→ 223.9, 333.0→ 122.9
Diclobutrazol A	13.7	328.0→ 70.0, 330.0→ 70.0
Dicrotofos	2.1	238.1→ 112.1, 238.1→ 193.1
Diethofencarb	11.1	268.1→ 226.1, 268.1→ 124.0
Difenoconazole	14.8	406.1→ 251.1, 408.2→ 253.1
Diflubenzuron	13.5	311.0→ 158.2, 311.0→ 141.1
Diflufenican	15.4	395.0→ 266.0, 395.0→ 246.0
Dimethachlor	10.2	256.2→ 224.0, 256.2→ 148.1
Dimethenamid	11.3	276.1→ 244.0, 278.1→ 246.0
Dimethoate	3.6	230.1→ 198.8, 230.1→124.9
Dimethomorph	11.7	388.1→ 301.0, 388.1→ 165.1
Dimoxystrobin	13.7	327.1→ 205.0, 327.1→ 116.0
Diniconazole	14.8	326.0→ 70.0, 328.0→ 70.0
Disulfoton	15.0	275.1→ 89.0, 275.1→ 61.0
Disulfoton sulfone	9.6	307.1→ 153.0, 307.1→ 171.0
Disulfoton sulfoxide	9.2	291.1→ 212.9, 291.1→ 185.0
Ditalimfos	13.1	300.1→ 148.0, 300.1→ 130.0
Diuron	10.0	233.1→ 71.9, 235.1→ 72.0
DMST	8.0	215.2→ 106.0, 215.2→ 78.9
Dodine	13.6	228.3→ 57.0, 228.3→ 60.1
Epoxiconazole	12.9	330.1→ 120.9, 330.1→ 75.2
Ethion	16.5	385.0→ 199.0, 385.0→ 143.0

300 Pesticide Screen by LC-MS/MS

Application #AN3120

Analyte	Retention Time (mins)	MRM transitions *(m/z)*
Ethirimol	9.7	210.3→ 140.1, 210.3→ 98.0
Ethofumesate	11.3	287.1→ 121.0, 287.1→ 259.0
Ethoprofos	12.7	243.0→ 131.0, 243.0→ 97.0
Ethoxyquin A	12.9	218.2→ 148.0, 218.2→ 174.1
Ethoxyquin B	10.7	218.2→ 148.0, 218.2→ 174.1
Etofenprox	20.6	394.0→ 177.0, 394.0→ 359.0
Etrimfos	14.2	293.1→ 125.0, 293.1→ 265.1
Famoxadone NH4+	14.4	392.0→ 331.0, 392.0→ 238.0
Fenamidone	11.5	312.1→ 92.1, 312.1→ 236.1
Fenamifos	13.4	304.0→ 217.0, 304.0→ 202.0
Fenamifos sulfone	8.4	336.0→ 308.0, 336.0→ 266.0
Fenamifos sulfoxide	7.9	320.0→ 171.0, 320.0→ 233.0
Fenarimol	12.7	331.2→ 268.0, 331.2→ 139.0
Fenazaquin	18.0	307.1→ 161.1, 307.1→ 147.0
Fenbuconazole	13.2	337.0→ 124.9, 337.0→ 70.0
Fenbutatin oxide	22.9	519.3→ 463.3, 519.3→ 197.0
Fenhexamid	12.6	302.2→ 96.9, 304.2→ 97.0
Fenoxycarb	13.6	302.2→ 87.9, 302.2→ 116.0
Fenpropathrin	17.3	367.0→ 125.0, 350.0→ 125.0
Fenpropidin	10.8	274.0→ 147.0, 274.0→ 117.0
Fenpropimorph	18.7	304.0→ 147.0, 304.0→ 117.0
Fenpyroximate	17.4	422.2→ 366.1, 422.2→ 135.1
Fensulfothion	10.0	309.1→ 280.8, 309.1→ 252.9
Fensulfothion sulfone	10.4	325.1→ 268.9, 325.1→ 297.0
Fenthion sulfone	9.0	311.1→ 125.0, 311.1→ 278.8
Fenthion sulfoxide	8.4	295.1→ 279.7, 295.1→ 108.9
Flonicamid	1.7	230.0→ 203.0, 230.0→ 148.0
Flubendiamide NH4+	13.8	700.0→ 407.9, 682.9→ 407.9
Fludioxonil NH4+	11.8	266.0→ 229.0, 266.0→ 227.1
Flufenacet	12.8	364.1→ 194.1, 364.1→ 152.2
Flufenoxuron	17.1	489.0→ 158.0, 489.0→ 141.1
Flumethrin NH4+	20.2	527.2→ 510.0, 527.2→ 267.0
Flumetsulam	2.0	326.2→ 128.8, 326.2→ 128.3
Flumioxazin	10.7	355.0→ 327.0, 355.0→ 299.0
Fluometuron	8.9	233.0→ 72.0, 233.0→ 160.0
Fluopicolide	11.9	383.0→ 173.0, 385.1→ 174.9
Fluopiram	12.5	397.0→ 173.0, 397.0→ 208.0
Fluoxastrobin	12.8	459.1→ 427.1, 459.1→ 188.1
Fluquinconazole	12.6	376.1→ 307.1, 376.1→ 349.1
Flusilazole	13.3	316.2→ 247.0, 316.2→ 165.1
Flutolanil	12.0	324.0→ 262.0, 324.0→ 242.0
Flutriafol	9.7	302.1→ 70.1, 302.1→ 123.0
Fomesafen (NH4-Adduct)	11.3	456.1→ 344.0, 458.1→ 346.0
Fonofos	14.3	247.0→ 109.0, 247.0→ 127.0
Fosthiazate	8.9	284.1→ 227.9, 284.1→ 104.0
Fuberidazole	6.9	185.0→ 157.0, 185.0→ 65.0

Analyte	Retention Time (mins)	MRM transitions *(m/z)*
Furathiocarb	15.9	383.1→ 195.0, 383.1→ 252.1
Heptenofos	10.1	251.0→ 127.0, 251.0→ 124.8
Hexaconazole	14.3	314.0→ 70.0, 316.0→ 70.0
Hexaflumuron	15.5	461.1→ 158.2, 461.1→ 141.1
Hexazinone	7.3	253.2→ 71.0, 253.2→ 85.0
Hexythiazox	16.6	353.0→ 168.0, 353.0→ 228.0
Imazalil	13.6	297.2→ 159.1, 299.1→ 160.9
Imidacloprid	2.7	256.1→ 209.0, 256.1→ 175.0
Indoxacarb	15.2	528.1→ 248.9, 528.1→ 292.9
Ipconazole	15.3	334.2→ 70.0, 334.2→ 125.0
Iprodione	13.3	332.1→ 246.9, 330.0→ 245.0
Iprovalicarb	12.6	321.3→ 119.0, 321.3→ 203.1
Isofenfos	14.7	346.1→ 245.1, 346.1→ 217.1
Isofenfos-methyl	13.8	332.1→ 231.0, 332.1→ 273.0
Isoprocarb	9.4	194.1→ 95.0, 194.1→ 137.0
Isoprothiolane	12.1	291.1→ 231.0, 291.1→ 189.0
Isoproturon	9.7	207.2→ 72.0, 207.2→ 165.2
Isoxadifen-ethyl	13.9	313.2→ 296.1, 313.2→ 263.0
Isoxaflutole	10.0	360.1→ 251.1, 377.0→ 251.0
Kresoxim-methyl	13.9	314.0→ 116.0, 314.0→ 131.1
Lenacil	9.5	235.3→ 153.2, 235.3→ 136.2
Linuron	11.3	249.0→ 159.9, 249.0→ 182.0
Lufenuron	16.4	511.0→ 158.0, 511.0→ 141.0
Malaoxon	7.9	315.1→ 99.1, 315.1→ 127.1
Mandipropamid	11.9	412.1→ 328.1, 412.2→ 125.0
Mecarbam	13.0	330.1→ 227.0, 330.1→ 198.9
Mepanipyrim	12.9	224.2→ 106.0, 224.2→ 77.1
Mepronil	12.1	270.1→ 119.0, 270.1→ 228.1
Mesotrione	1.2	340.0→ 228.0, 357.1→ 227.9
Metaflumizone	16.1	507.1→ 178.1, 507.1→ 287.1
Metalaxyl	9.8	280.1→ 220.2, 280.1→ 192.2
Metamitron	3.4	203.1→ 175.0, 203.1→ 104.2
Metazachlor	9.6	278.1→ 209.9, 278.1→ 134.2
Metconazole	14.4	320.1→ 70.0, 320.1→ 125.0
Methacrifos	10.7	241.0→ 208.9, 241.0→ 124.9
Methamidofos	0.9	142.0→ 93.9, 142.0→ 112.1
Methiocarb	11.4	226.2→ 169.1, 226.2→ 121.2
Methiocarb sulfone	4.1	258.1→ 122.0, 258.1→ 200.9
Methiocarb sulfoxide	3.0	242.1→ 185.0, 242.1→ 122.1
Methomyl	1.6	163.0→ 106.0, 163.0→ 88.0
Methoxyfenozide	12.2	369.1→ 149.1, 369.1→ 313.2
Metobromuron	9.4	259.0→ 170.0, 259.0→ 148.1
Metolachlor	13.0	284.1→ 252.0, 286.1→ 254.0
Metoxuron	5.7	229.1→ 72.0, 231.1→ 71.9
Metrafenone	14.8	409.2→ 209.1, 411.2→ 209.1
Metribuzin	7.1	215.2→ 187.1, 215.2→ 84.1

300 Pesticide Screen by LC-MS/MS

Application #AN3120

Analyte	Retention Time (mins)	MRM transitions *(m/z)*
Mevinfos A	4.9	225.0→ 193.0, 225.0→ 127.0
Mevinfos B	3.4	225.0→ 193.0, 225.0→ 127.0
Molinate	12.0	188.2→ 126.2, 188.2→ 55.1
Monocrotofos	1.8	224.2→ 192.9, 224.2→ 126.9
Monolinuron	8.7	215.1→ 126.1, 215.1→ 148.1
Myclobutanil	12.2	289.2→ 70.0, 289.2→ 125.0
Napropamide	12.9	272.2→ 129.1, 272.2→ 171.1
Nitenpyram	1.3	271.1→ 189.2, 271.1→ 126.0
Novaluron	15.6	493.0→ 158.1, 493.0→ 141.1
Nuarimol	11.2	315.0→ 252.0, 315.0→ 81.0
Ofurace	7.6	282.0→ 160.1, 282.0→ 236.3
Omethoate	1.0	214.0→ 183.0, 214.0→ 125.0
Oxadiazon	16.2	345.0→ 220.0, 345.0→ 303.0
Oxadixyl	6.4	279.0→ 219.0, 279.0→ 133.0
Oxamyl NH4+	1.2	237.1→ 72.0, 220.2→ 72.0
Oxycarboxin	4.5	268.1→ 174.9, 268.1→ 147.0
Oxydemeton-methyl	1.4	247.0→ 108.9, 247.0→ 168.9
Paclobutrazol	11.8	294.0→ 70.0, 294.0→ 125.0
Paraoxon	9.4	275.9→ 219.9, 275.9→ 248.0
Paraoxon-methyl	6.1	248.1→ 202.1, 248.1→ 90.0
Parathion	13.8	292.0→ 236.0, 292.0→ 264.1
Penconazole	13.7	248.1→ 70.0, 284.1→ 159.0
Pencycuron	14.8	329.3→ 125.1, 331.3→ 127.0
Pendimethalin	16.9	282.2→ 212.1, 282.2→ 194.1
Pethoxamid	12.7	296.2→ 131.0, 296.2→ 250.0
Phenmedipham	10.8	301.2→ 168.0, 301.2→ 136.0
Phenthoate	13.9	321.0→ 247.0, 321.0→ 275.1
Phorate sulfone	9.6	293.0→ 170.8, 293.0→ 96.7
Phorate sulfoxide	9.2	277.0→ 199.0, 277.0→ 171.0
Phosalone	14.6	368.0→ 182.0, 369.9→ 183.9
Phosphamidon	6.4	300.2→ 127.1, 300.2→ 226.8
Phoxim	14.7	299.2→ 129.2, 299.2→ 77.1
Picloram	1.2	243.0→ 224.9, 241.0→ 222.9
Picolinafen	16.2	377.1→ 238.0, 377.1→ 359.0
Picoxystrobin	13.6	368.0→ 205.0, 368.0→ 145.0
Piperonyl butoxide	16.2	356.2→ 177.2, 356.2→ 119.0
Pirimicarb	9.0	239.2→ 72.0, 239.2→ 182.3
Pirimiphos-ethyl	16.3	334.1→ 198.0, 334.1→ 182.3
Pirimiphos-methyl	14.8	306.2→ 108.0, 306.2→ 164.3
Prochloraz	14.4	376.0→ 308.0, 376.0→ 70.0
Profenofos	15.6	375.0→ 304.9, 373.0→ 302.9
Prometryn	12.6	242.2→ 158.1, 242.2→ 200.0
Propachlor	9.6	212.0→ 170.0, 212.0→ 94.1
Propamocarb	1.1	189.0→ 102.0, 189.0→ 144.0
Propaquizafop	16.0	444.2→ 100.0, 444.2→ 371.0
Propargite NH4+	17.0	368.2→ 231.1, 368.2→ 175.0

Analyte	Retention Time (mins)	MRM transitions *(m/z)*
Propazine	11.0	230.2→ 188.1, 230.2→ 146.1
Propetamfos	12.4	282.1→ 138.0, 282.1→ 156.1
Propham	9.4	180.1→ 138.1, 180.1→ 120.1
Propiconazole	14.0	342.1→ 159.0, 342.1→ 69.0
Propisochlor	14.0	284.2→ 224.0, 284.2→ 148.0
Propoxur	7.2	210.1→ 111.1, 210.1→ 168.0
Propyzamide	11.9	256.1→ 190.0, 256.1→ 173.0
Proquinazid	17.7	373.2→ 330.9, 373.2→ 289.0
Prosulfocarb	15.5	252.2→ 91.0, 252.2→ 128.1
Prosulfuron	9.0	420.1→ 141.0, 420.1→ 167.1
Prothioconazole	14.1	344.1→ 326.0, 346.1→ 328.1
Prothioconazole-desthio	13.0	312.0→ 70.0, 312.0→ 125.0
Pymetrozine	1.5	218.0→ 105.0, 218.0→ 78.0
Pyraclostrobin	14.5	388.1→ 194.0, 388.1→ 163.0
Pyrazophos	14.8	374.0→ 222.0, 374.0→ 194.0
Pyridaben	18.0	365.0→ 309.0, 365.0→ 147.0
Pyridapenthion	12.4	341.0→ 189.0, 341.0→ 205.0
Pyridate	19.1	379.1→ 206.9, 379.1→ 350.9
Pyrifenox	13.0	295.1→ 93.0, 297.1→ 93.0
Pyrimethanil	11.3	200.0→ 82.0, 200.0→ 107.0
Pyriproxyfen	16.7	322.0→ 96.0, 322.0→ 185.0
Pyroxsulam	5.6	435.0→ 195.1, 435.0→ 194.0
Quinalfos	13.9	299.0→ 271.0, 299.0→ 243.0
Quinoclamine	6.8	208.0→ 105.0, 208.0→ 77.0
Quinoxyfen	16.4	308.0→ 197.0, 308.0→ 162.0
Rotenone	13.4	395.1→ 213.1, 395.1→ 192.0
Secbumeton	10.6	226.2→ 170.1, 226.2→ 100.0
Silthiofam	13.5	268.0→ 252.0, 268.0→ 73.0
Simazine	7.2	202.2→ 132.1,202.2→ 104.0
Simetryn	9.4	214.1→ 124.1, 214.1→ 144.0
Spinosyn A	17.3	732.5→ 142.0, 732.5→ 98.0
Spinosyn D	18.3	746.5→ 142.0, 746.5→ 98.0
Spirodiclofen	17.4	313.1→ 295.0, 313.1→ 213.0
Spiromesifen	16.8	371.2→ 273.1, 371.2→ 255.2
Spirotetramat	12.8	374.2→ 302.2, 374.2→ 330.2
Spiroxamine	13.3	298.3→ 100.1, 298.3→ 144.1
Sulfotep	14.0	323.0→ 97.0, 323.0→ 115.0
Tau-fluvalinate	18.9	503.0→ 208.0, 503.0→ 181.0
Tebuconazole	13.9	308.1→ 70.0, 308.1→ 125.0
Tebufenozide	13.5	353.2→ 297.2, 353.2→ 133.0
Tebufenpyrad	15.9	334.0→ 145.0, 334.0→ 117.0
Teflubenzuron	16.3	381.1→ 158.2, 381.1→ 141.2
Tembotrione (NH4 adduct)	5.9	458.0→ 340.9, 458.0→ 441.0
Terbufos	16.1	289.1→ 103.1, 289.1→ 232.9
Terbufos sulfone	11.1	321.1→ 171.0, 321.1→ 115.0
Terbufos sulfoxide	11.0	305.1→ 187.2, 305.1→ 131.1

300 Pesticide Screen by LC-MS/MS

Application #AN3120

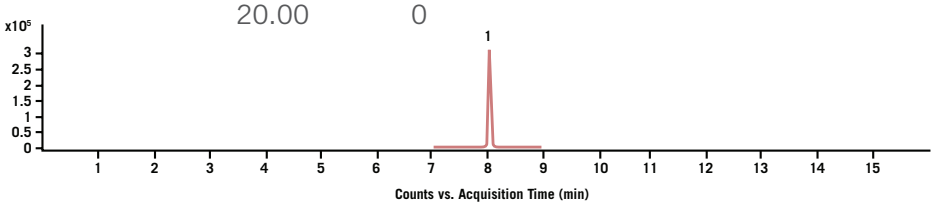
Analyte	Retention Time (mins)	MRM transitions (*m/z*)
Terbumeton	11.3	226.2→ 170.1, 226.2→ 142.0
Terbuthylazine	11.4	230.2→ 174.0, 232.2→ 176.0
Terbutryn	12.9	242.1→ 186.1, 242.1→ 96.0
Tetrachlorvinfos	13.5	367.0→ 127.0, 365.0→ 127.0
Tetraconazole	12.9	372.0→ 159.0, 374.0→ 161.2
Thiabendazole	6.2	202.1→ 174.9, 202.1→ 131.0
Thiacloprid	4.7	253.1→ 126.1, 253.1→ 99.1
Thiencarbazone-methyl	2.3	391.0→ 130.0, 391.0→ 230.0
Thiodicarb	9.2	355.0→ 88.0, 355.0→ 108.0
Thiophanate-methyl	7.6	343.0→ 151.1, 343.0→ 311.0
Thiamethoxam	1.7	292.0→ 211.0, 292.0→ 181.0
Tolclophos-methyl	14.9	301.2→ 268.9, 303.1→ 270.9
Tolylfluanid	13.9	347.0→ 237.8, 347.0→ 137.1
Topramezone	1.6	364.1→ 334.1, 364.1→ 125.0
Triadimefon	12.1	294.2→ 197.2, 294.2→ 225.0
Triadimenol	12.4	296.2→ 70.0, 298.2→ 70.0
Triallate	16.7	304.1→ 142.9, 304.1→ 86.2
Triazofos	12.6	314.0→ 162.0, 314.2→ 119.0
Trichlorfon	3.4	257.0→ 108.9, 257.0→ 220.8
Tricyclazole	5.2	190.1→ 136.1, 190.1→ 163.0
Trifloxystrobin	15.3	409.0→ 186.0, 409.0→ 206.0
Triflumizole	15.3	346.0→ 278.0, 346.0→ 73.0
Triflumuron	14.6	359.1→ 156.2, 359.1→ 139.0
Triforin	10.6	435.0→ 390.0, 437.0→ 392.0
Triticonazole A	12.7	318.0→ 70.0, 318.0→ 125.0
Triticonazole B	10.9	318.0→ 70.0, 318.0→ 125.0
Vamidothion	3.4	288.1→ 146.0, 288.1→ 118.0
Zoxamide	14.2	336.0→ 187.0, 338.0→ 189.0

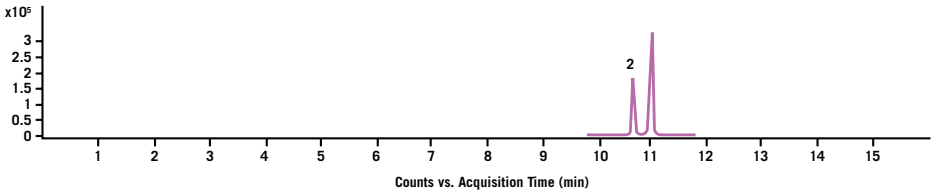
PESTICIDES BY LC-MS/MS

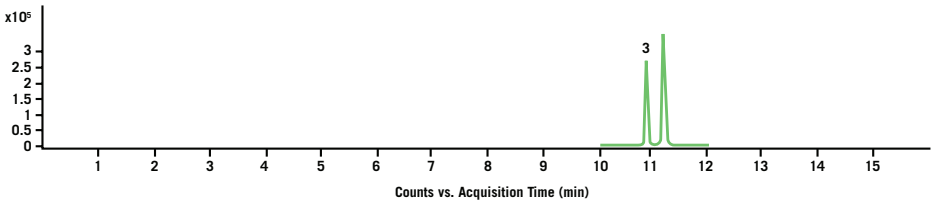
CONDITIONS

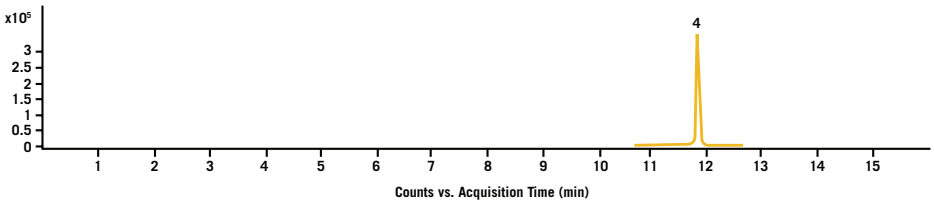
Column:	ACE UltraCore SuperC18, 2.5 µm
Dimensions:	50 x 2.1 mm
Part Number:	CORE-25A-0502U
Mobile Phase:	A: 0.1% formic acid + 5 mM ammonium formate in H_2O/MeOH (90:10 v/v) B: 0.1% formic acid + 5 mM ammonium formate in H_2O/MeOH (10:90 v/v)
Flow Rate:	0.4 mL/min
Injection:	20 µL
Temperature:	40 °C
Detection:	Agilent 6420 Triple Quadrupole MS, +ve mode ESI Dynamic MRM

Time (mins)	%B
0.00	0
1.00	0
15.00	100
18.00	100
18.05	0
20.00	0



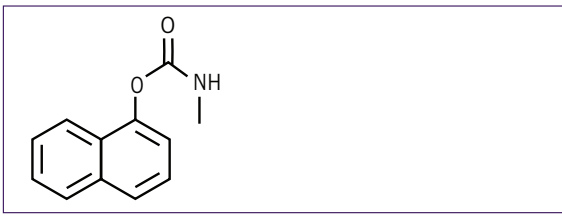




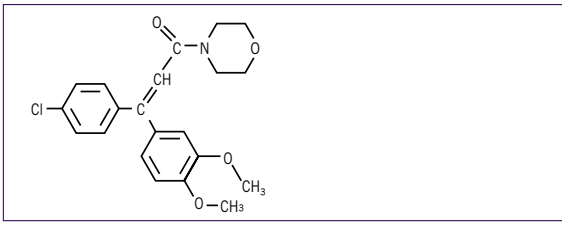


ANALYTES

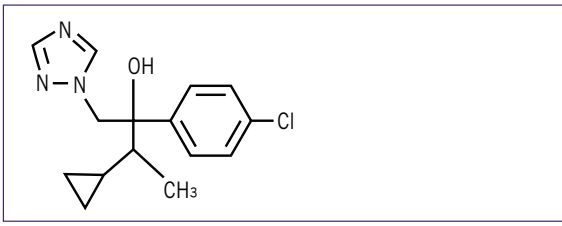
1. Carbaryl (m/z 202.10 → 145.10)



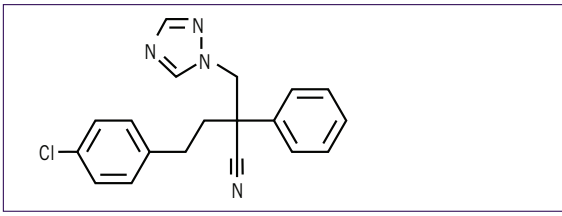
2. Dimethomorphs (m/z 388.10 → 301.10)



3. Cyproconazoles (m/z 292.10 → 70.00)



4. Fenbuconazole (m/z 337.10 → 70.00)



Also analyzed under same conditions:
Acephate, Acetamiprid, Aldicarb, Aldicarb sulfone, Aldicarb sulfoxide, Benomyl, Carbendazim, Carbofuran, Clofentezine, Clothianidin, Cyfluthrin, Demeton S-methylsulfone, Demeton S-methylsulfoxide, Dicrotophos, Dimethoate, Dinotefuran, DMA, DMPF, Flubendiamide, Folpet, Formetanate, Hexaconazole, Hexaflumuron, Imidacloprid, Indoxacarb, Mandipropamid, Methamidophos, Methomyl, Monocrotophos, Nicotine, Omethoate, Oxamyl, Pencycuron, Prochloraz, Propargite, Thiabendazole, Thiacloprid, Thiamethoxam, Thiodicarb, Thiophanate methyl and Triforine

PESTICIDE SEPARATION ON HALO 90 Å BIPHENYL

A mixture of pesticides with a wide range of polarities is separated with high efficiency using a HALO 90Å Biphenyl column. Closely-eluting and co-eluting compounds are easily identified using mass spectrometry detection, and quantified using extracted-ion chromatograms (see page 31 for peak identities). Pesticides, such as these, are commonly screened for in medical marijuana samples.

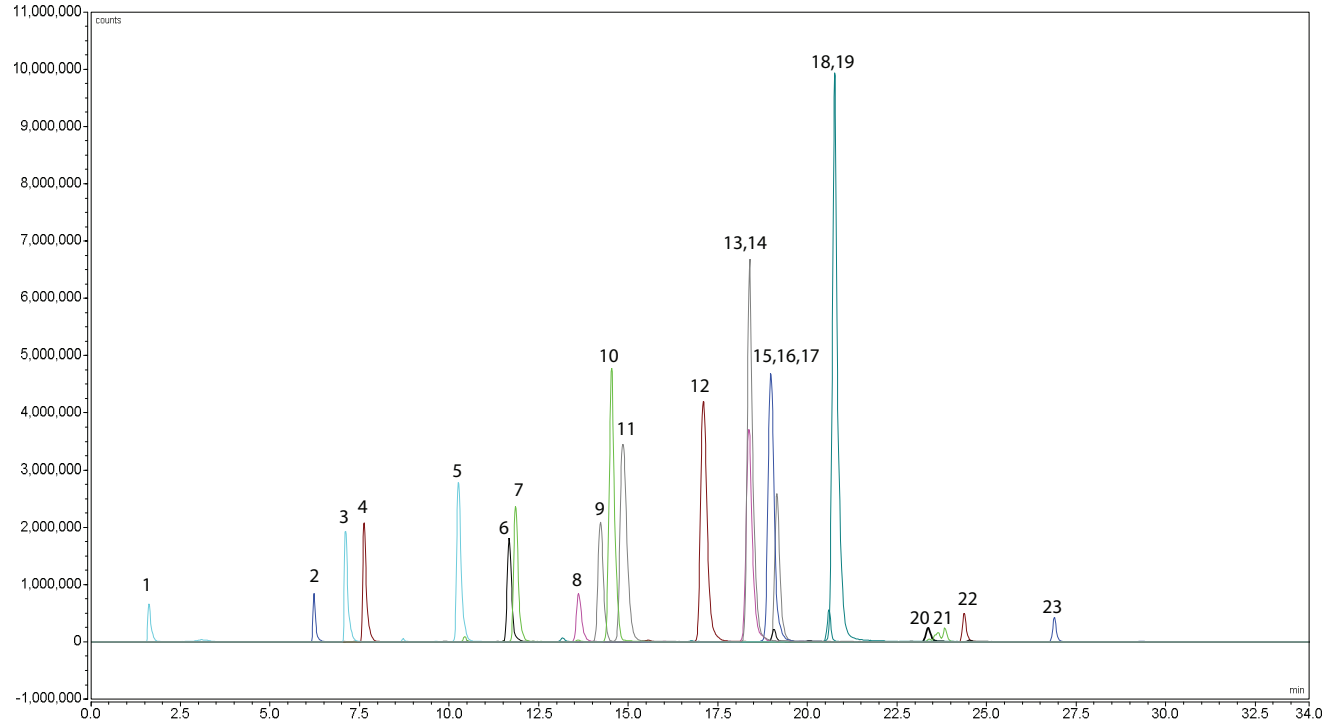
CONDITIONS

Column:	HALO 90 Å Biphenyl, 2.1 x 100 mm, 2.7 µm
Part Number:	92812-611
Mobile Phase:	A= Water/0.1% formic acid/4 mM ammonium formate
	B= Acetonitrile/0.1% formic acid/4 mM ammonium formate

Gradient

Time (mins)	%B
0.00	0
1.01	15
4.00	35
5.00	62
30.00	100
34.00	100

Flow Rate:	0.2 mL/min
Pressure:	89 bar (initial)
Temperature:	40 °C
Injection Volume:	1 µL
Sample Solvent:	Acetonitrile
Detection:	UV 254 nm
Data Rate:	10 Hz
LC System:	Shimadzu Nexera
MS System:	Thermo Fisher Orbitrap VelosPro ETD
ESI:	+3.8 kV
Scan range:	150-1000 m/z
Scan rate:	1.33 pps
Capillary:	350 °C
Sheath gas:	35
Auxiliary gas:	10
Scan Time:	2 µscans/50 ms max inject time
Heater Temperature:	150 °C



PEAK IDENTITIES:

	Compound	m/z	Retention (min)
1	Daminozide	161.096	1.616
2	Flonicamid	230.000	6.224
3	Thiamethoxam	292.000	7.109
4	Imidacloprid	256.050	7.631
5	Paclobutrazol	294.130	10.256
6	Fenhexamid	302.079	11.678
7	Myclobutanil	289.129	11.849
8	Bifenazate	301.150	13.610
9	Dimethomorph Isomer 1	388.130	14.226
10	Spirotetramat	374.190	14.535
11	Dimethomorph Isomer 2	388.130	14.846
12	Spinosad A	732.480	17.089
13	Spinosad D	746.490	18.363
14	Trifloxystrobin	409.100	18.391
15	Spinetoram	748.520	18.970
16	Pyrethrin II	373.200	19.068
17	Piperonyl butoxide	356.240	19.151
18	Pyrethrin I	329.210	20.594
19	Etoxazole	360.180	20.759
20	Abamectin A	895.500	23.370
21	Cypermethrin	433.110	23.610
22	Bifenthrin	440.160	24.370
23	Acequinocyl	407.230	26.890
observed in negative ion mode	Fludioxonil	247.048	9.763

An important advantage of the HALO 90Å Biphenyl column is that it can be used with 100% aqueous mobile phase without pore dewetting and loss of retention. This is especially useful for very polar pesticides, which are sometimes unretained or poorly retained on other column phases.

SEPARATION OF 6 PYRETHRINS ON HALO AQ-C18, 2.7 µm

Pyrethrins are insecticides derived from chrysanthemum flowers. The extracted chemicals can paralyze the nervous systems of insects and lead to death. These naturally occurring pyrethrin isomers can be separated rapidly with good resolution using a HALO AQ-C18 column.

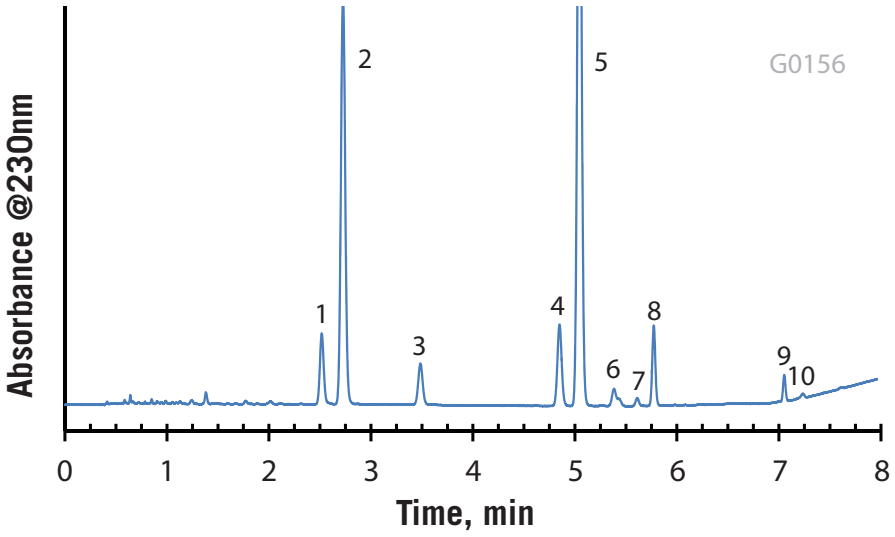
CONDITIONS

Column:	HALO 90 Å AQ-C18, 3.0 x 100 mm, 2.7 µm
Part Number:	92813-622
Mobile Phase:	A = 0.02 M sodium phosphate buffer, pH 3.0
	B= Acetonitrile

Gradient:

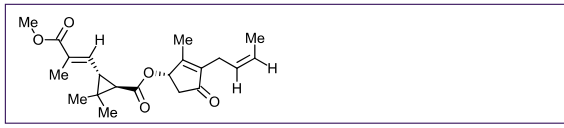
Time	%B
0.0	65
2.5	65
5.0	75
6.0	90
8.0	90

Flow Rate:	2.2 mL/min
Pressure:	245 bar
Temperature:	30 °C
Detection:	UV 230 nm, VWD
Injection Volume:	4 µL
Sample Solvent:	Acetonitrile
Response Time:	0.02 sec
Data rate:	25 Hz
Flow Cell:	2.5 µL semi-micro
LC System:	Shimadzu Prominence UFLC XR
ECV:	~14 µL

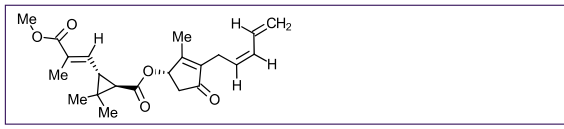


ANALYTES

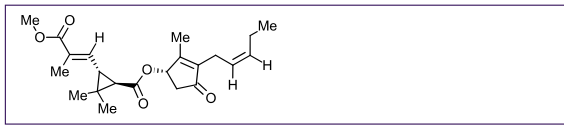
1. Cinerin II



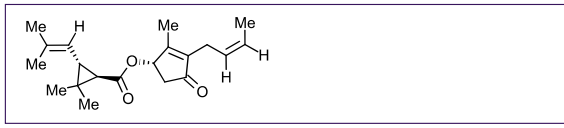
2. Pyrethrin II



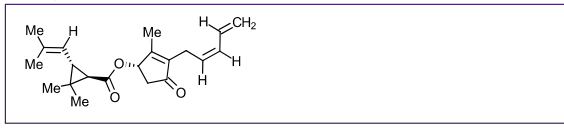
3. Jasmolin II



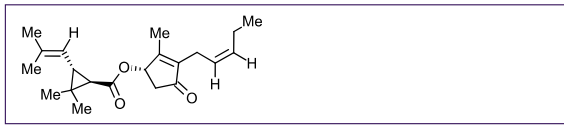
4. Cinerin I



5. Pyrethrin I



6. Unknown
7. Unknown
8. Jasmolin I



9. Unknown
10. Unknown

SEPARATION OF 6 PYRETHRINS ON HALO 5 C18

Pyrethrins are potent insecticides that affect the nervous systems of insects. These six pyrethrin isomers can be separated rapidly using a HALO 5 C18 column with low backpressure and good resolution.

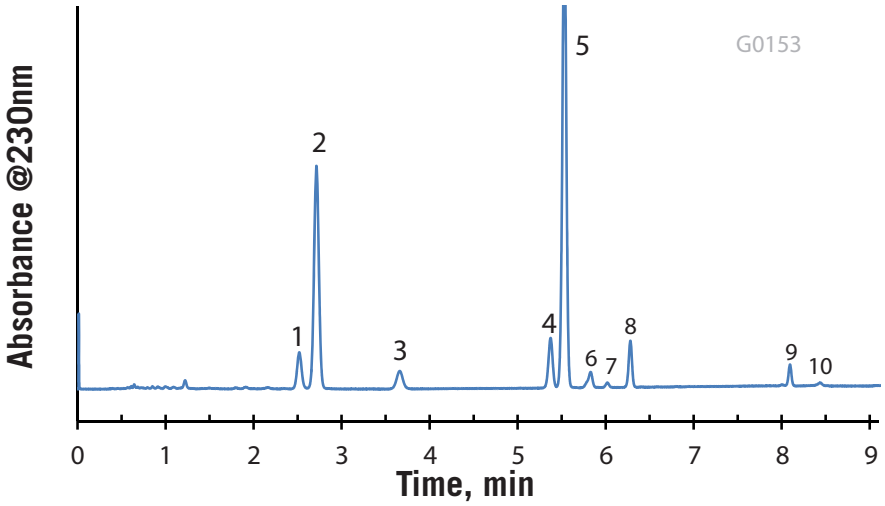
CONDITIONS

Column:	HALO 90 Å C18, 3.0 x 150 mm, 5 µm
Part Number:	95813-702
Mobile Phase:	A= Water
	B= Acetonitrile

Gradient:

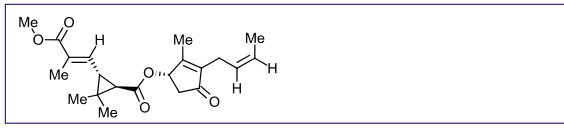
Time	%B
0.0	60
3.0	60
5.0	72
7.0	90
9.0	90

Flow Rate:	1.1 mL/min
Pressure:	170 bar
Temperature:	30 °C
Detection:	UV 230 nm, VWD
Injection Volume:	3.0 µL
Sample Solvent:	Acetonitrile
Response Time:	0.02 sec
Data rate:	17 Hz
Flow Cell:	2.5 µL semi-micro
LC System:	Shimadzu Prominence UFLC XR
ECV:	~14 µL

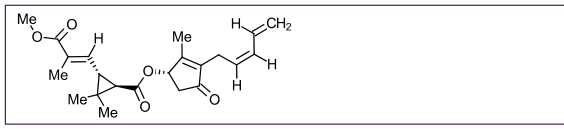


ANALYTES

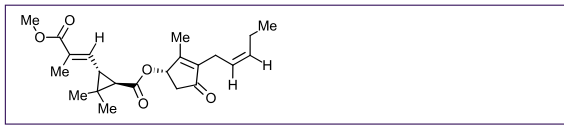
1. Cinerin II



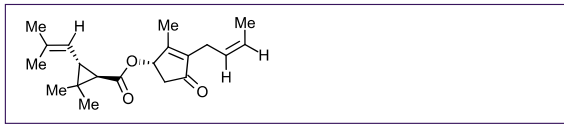
2. Pyrethrin II



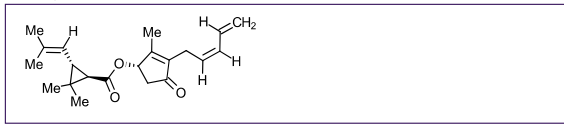
3. Jasmolin II



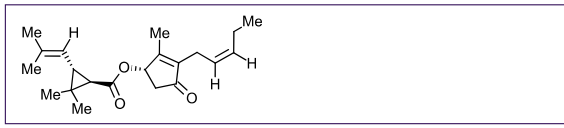
4. Cinerin I



5. Pyrethrin I



6. Unknown
7. Unknown
8. Jasmolin I



9. Unknown
10. Unknown

MYCOTOXINS BY LC-MS/MS

CONDITIONS

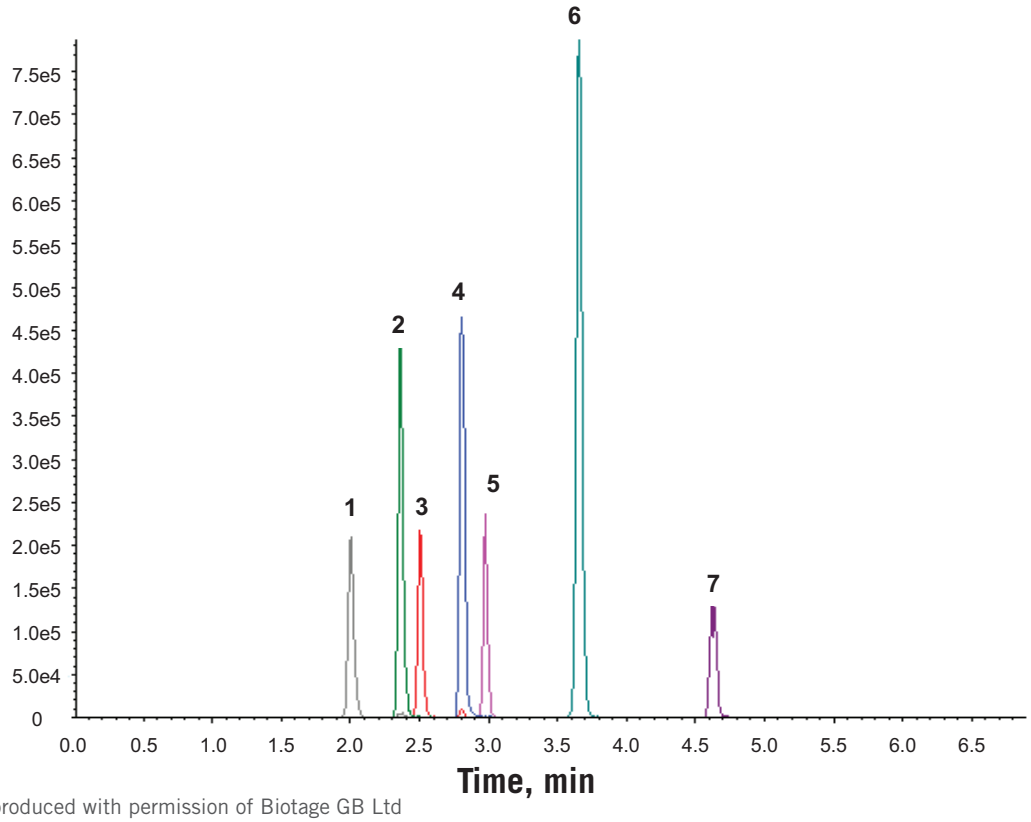
Column:	ACE Excel C18-AR, 2.7 µm
Dimensions:	50 x 2.1 mm
Part Number:	EXL-109-0502U
Mobile Phase:	A:1 mM ammonium acetate, 0.5% acetic acid in H_2O
	B:1 mM ammonium acetate, 0.5% acetic acid in 95% MeOH

Time (mins)	%B
0.0	40
1.0	40
2.4	60
6.8	87

Flow Rate:	0.6 mL/min
Injection:	2 µL
Temperature:	40 °C
Detection:	AB SCIEX triple quad 5500
	Positive ESI mode
	Source temperature: 500 °C
	IonSpray voltage: 5500 V

ANALYTES

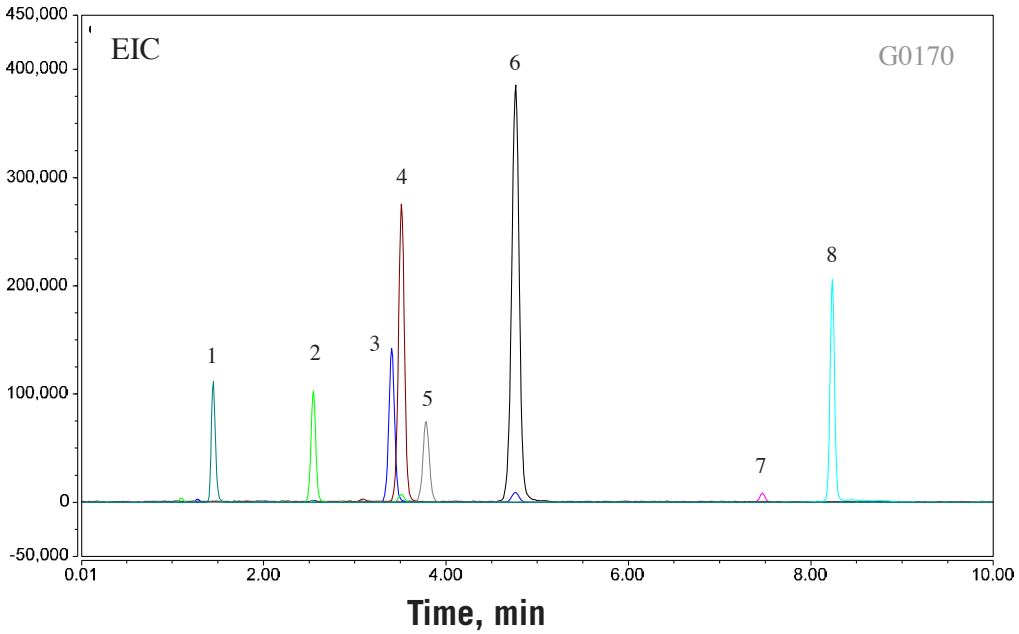
1. Aflatoxin G2 (m/z 331.1 → 313.1)
2. Aflatoxin G1 (m/z 329.0 → 243.1)
3. Aflatoxin B2 (m/z 315.1 → 287.0)
4. Aflatoxin B1 (m/z 313.1 → 285.0)
5. HT-2-toxin (m/z 442.2 → 263.1)
6. T-2-toxin (m/z 484.2 → 305.1)
7. Ochratoxin A (m/z 404.1 → 239.0)



LC-MS ANALYSIS OF MULTIPLE MYCOTOXINS ON HALO 90 Å BIPHENYL

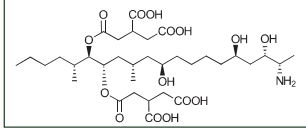
CONDITIONS

Column:	HALO 90 Å Biphenyl, 2.1 x 100 mm, 2.7 µm
Part Number:	92812-611
Mobile Phase A:	Water with 0.1% formic acid/ 5 mM ammonium formate
Mobile Phase B:	Acetonitrile with 0.1% formic acid/ 5 mM ammonium formate
Gradient:	**Time** **%B**
	0.0 32
	5.0 34
	10.0 60
Flow Rate:	0.4 mL/min
Initial Pressure:	182 bar
Temperature:	40 °C
Detection:	LC-MS
Injection Volume:	2.0 µL
MS System:	Thermo Fisher Orbitrap VelosPro ETD
ESI:	+4
Heat Block:	350 °C
Sheath Gas Flow:	34.88
Aux Gas Flow:	10.00

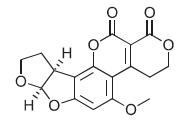


ANALYTES

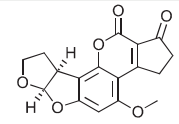
1. Fumonisin B1 (m/z: 722.8)



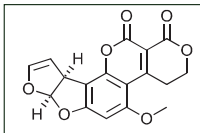
2. Aflatoxin G2 (m/z: 331.3)



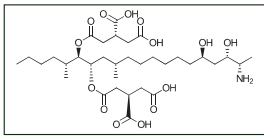
3. Aflatoxin B2 (m/z: 315.3)



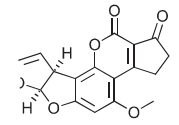
4. Aflatoxin G1 (m/z: 329.3)



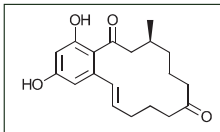
5. Fumonisin B2 (m/z: 706.8)



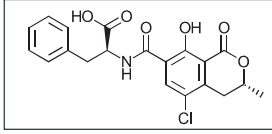
6. Aflatoxin B1 (m/z: 313.3)



7. Zearalenone (m/z: 319.4)



8. Ochratoxin A (m/z: 404.8)




macmod
SMARTER CHROMATOGRAPHY

macmod

103 Commons Court | Chadds Ford, PA 19317
Phone: (610) 358 9696 | Toll Free: 1 (800) 441 7508
info@mac-mod.com | www.mac-mod.com