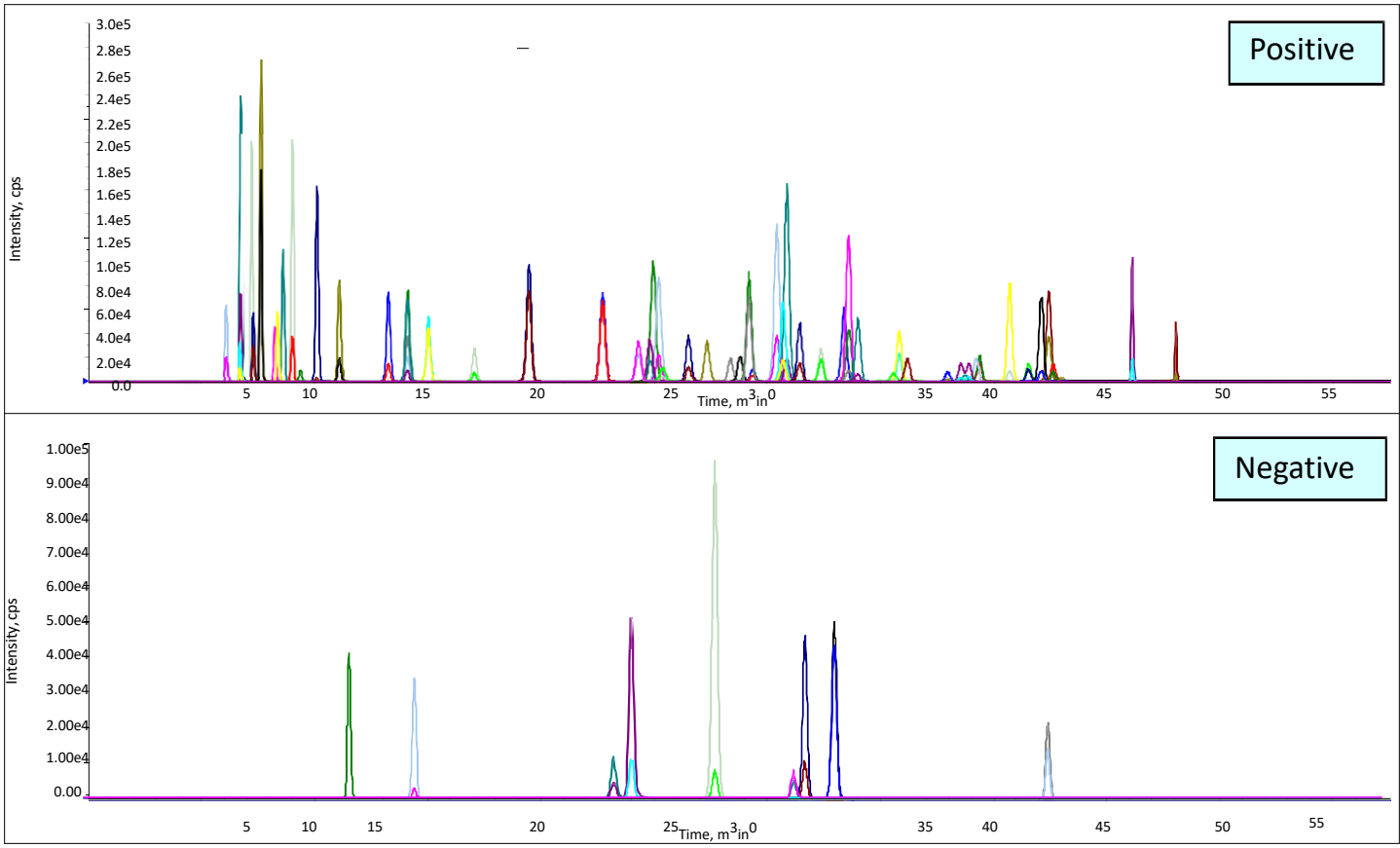
LT135

GL Sciences Inc.

Simultaneous Analysis of Tap Water Pesticides by LC/MS/MS

Testing methods of Japanese Water Supply Act were revised in April 2013, and 64 pesticides were added to the target compounds of the simultaneous analytical method using LC/MS/MS. In this note, an InertSustain C18 HPLC column and a 4000QTRAP linear tandem mass spectrometer (AB Sciex) were used. As a result, all the compounds added by the revision were detected with excellent peak shape.



Compound name	MW	RT (min)	Ionization	Monitoring ion (*m/z*)		
				Precursor	Product	
Dinotefuran	202.2	6.1	ESI (+)	203	129	87
Nitenpyram	270.7	6.7	ESI (+)	271	126	237
Oxamyl	219.3	6.7	ESI (+)	237	72	90
Pymetrozine	217.2	7.2	ESI (+)	218	105	78
Thiamethoxam	291.7	7.3	ESI (+)	292	211	181
Monocrotophos	223.2	7.6	ESI (+)	224	127	193
Imidacliprid	255.7	8.2	ESI (+)	256	209	175
Clothianidin	249.7	8.3	ESI (+)	250	169	132
Trinexapac-ethyl	252.3	8.5	ESI (+)	253	69	207
Cinosulfuron	413.4	8.6	ESI (+)	414	183	83
Acetamiprid	222.7	9.0	ESI (+)	223	126	90
Thiacloprid	252.7	10.1	ESI (+)	253	126	90
Pyrazosulfuron-ethyl	414.4	11.1	ESI (+)	415	182	83
Cyanazine	240.7	13.2	ESI (+)	241	214	104
Ethoxysulfuron	398.4	14.1	ESI (+)	399	261	218
Metribuzin	214.3	14.1	ESI (+)	215	187	49
Bromacil	261.1	14.1	ESI (+)	261	205	188
Bendiocarb	223.2	15.0	ESI (+)	224	167	109
Fluazifop	327.3	17.1	ESI (+)	328	282	254
Furametpyr	333.8	19.5	ESI (+)	334	157	290
Metominostrobin(E)	284.3	22.7	ESI (+)	285	194	140
Linuron	249.1	24.8	ESI (+)	249	182	160
Pyriminobac-methyl(Z)	361.4	24.9	ESI (+)	362	330	284
Ametryn	227.3	25.2	ESI (+)	228	186	96
Acibenzolar-s-methyl	210.3	25.3	ESI (+)	211	136	211
Boscalid	343.2	26.5	ESI (+)	343	307	140
Cyproconazole	291.8	27.3	ESI (+)	292	70	125
Pyriminobac-methyl(E)	361.4	28.4	ESI (+)	362	330	284
Cyproconazole	291.8	28.8	ESI (+)	292	70	125
Cumyluron	302.8	29.2	ESI (+)	303	185	125
Benzobicyclon	447.0	29.3	ESI (+)	447	257	229
Diclomezine	255.1	29.7	ESI (+)	255	89	159
Prometryn	241.4	30.4	ESI (+)	242	158	200
Simeconazole	293.4	30.7	ESI (+)	294	70	73
Chromafenozide	394.5	30.9	ESI (+)	395	175	147
Tetraconazole	372.1	31.4	ESI (+)	372	159	70
Indanofan	340.8	32.3	ESI (+)	341	175	187
Naproanilide	291.4	33.3	ESI (+)	292	171	120
Tebuconazole	352.5	33.5	ESI (+)	353	133	297
Tetrachlorvinphos(CVMP)	366.0	33.6	ESI (+)	367	127	206
Diflubenzuron	307.8	34.0	ESI (+)	308	70	125
Cyprodinil	225.3	35.6	ESI (+)	226	93	77

Compound name	MW	RT (min)	Ionization	Monitoring ion (*m/z*)		
				Precursor	Product	
Etobenzanide	340.2	36.2	ESI (+)	340	179	149
Oxadiargyl	341.2	38.0	ESI (+)	341	223 358/223	
Difenoconazole	406.3	38.5	ESI (+)	406	251	337
Pyrazolate	439.3	38.7	ESI (+)	439	91	173
Difenoconazole	406.3	38.8	ESI (+)	406	251	337
Pirimiphos-methyl	305.3	39.2	ESI (+)	306	164	108
Phoxim	298.3	39.3	ESI (+)	299	77	129
Triflumizole	345.8	40.7	ESI (+)	346	278	73
Benzofenap	431.3	41.5	ESI (+)	431	105	119
Quizalofop-ethyl	372.8	42.1	ESI (+)	373	299	271
Oxaziclomefone	376.3	42.4	ESI (+)	376	190	161
Clomeprop	324.2	42.7	ESI (+)	324	120	203
Pentoxazone	353.8	43.0	ESI (+)	354	286	186
Amitraz	293.4	46.1	ESI (+)	294	163	122
Silafluofen	408.6	48.0	ESI (+)	426	287	168

Compounbd name	MW	RT	Ionization	Monitoring ion (*m/z*) (min)		
				Precursor	Product	
MCPA	200.6	11.5	ESI (-)	199	141	-
Dichlorprop	235.1	14.4	ESI (-)	233	161	125
Propanil	218.1	24.5	ESI (-)	216	160	35
Inabenfide	338.8	25.3	ESI (-)	337	122	78
Tiadinil	267.7	27.8	ESI (-)	266	71	238
Fentrazamide	415.2	31.7	ESI (-)	413	171	179
Diflubenzuron	310.7	32.8	ESI (-)	309	156	289
Thifluzamide	528.1	33.0	ESI (-)	527	125	166
Fluazinam	465.1	42.5	ESI (-)	463	416	398

HPLC Conditions;

(1.0 µg/L each)

Column : InertSustain C18 (3 µm, 75 x 2.1 mm I.D.)

Eluent : A) 5 mM ammonium acetate in water
B) 5 mM ammonium acetate in methanol
A/B = 95/5 — 4 min — 60/40 — 35 min — 25/75 — 5 min — 0/100 – 6 min – 0/100 – — (equilibration for 10 min), v/v

Flow rate : 0.15 mL/min

Col. Temp. : 40 ℃

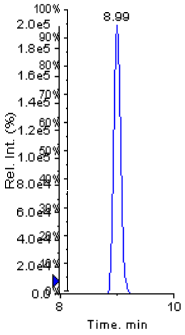
Sample Temp.: 5 ℃

Detection : MS/MS (4000 QTRAP: ESI, MRM)

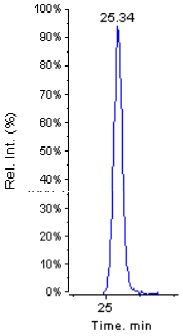
Inj. Volume : 100 µL

Cyproconazole and difenoconazole are detected as two peaks owing to existence of their isomers.

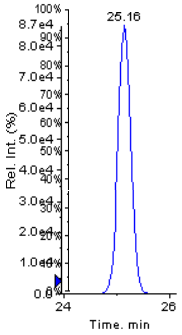
Acetamiprid



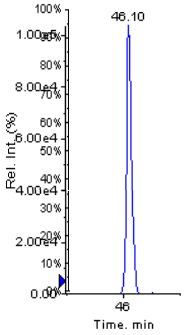
Acibenzolar -s-methyl



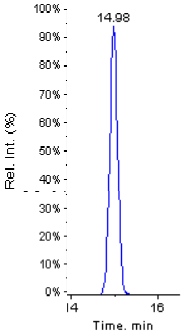
Ametryn



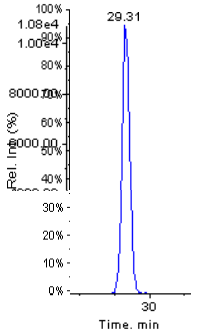
Amitraz



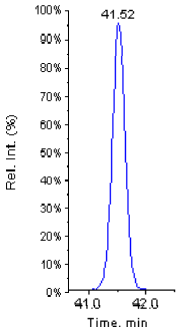
Bendiocarb



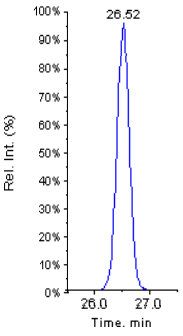
Benzobicyclon



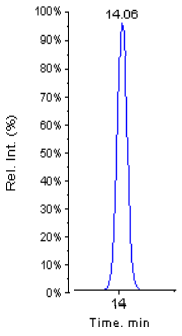
Benzofenap



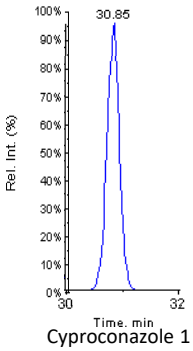
Boscalid



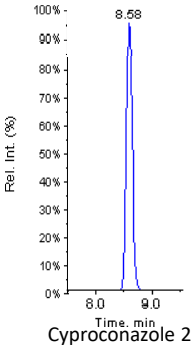
Bromacil



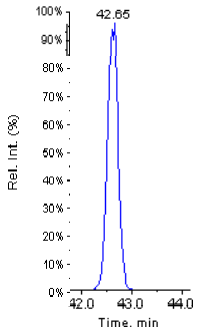
Chromafenozide



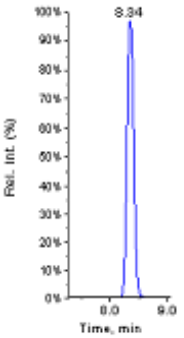
Cinosulfuron



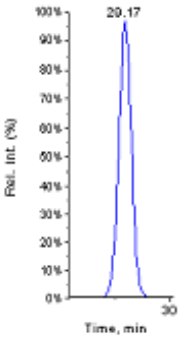
Clomeprop



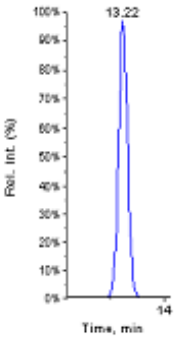
Clothianidin



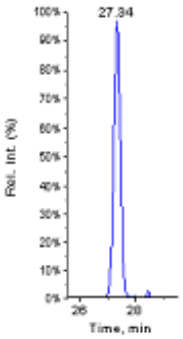
Cumyluron



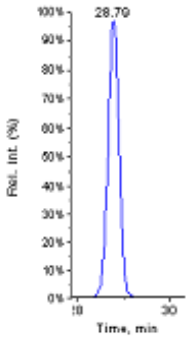
Cyanazine



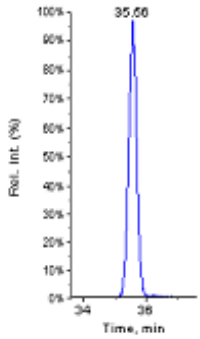
Cyproconazole 1
Q1/Q3=292/70



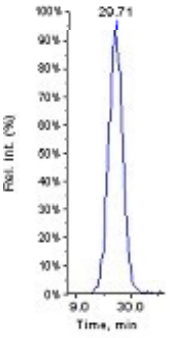
Cyproconazole 2
Q1/Q3=292/125



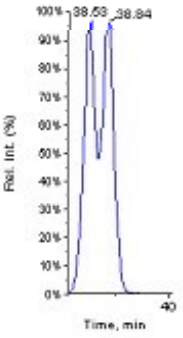
Cyprodinil



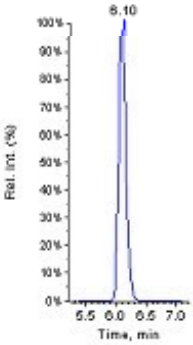
Diclomezine



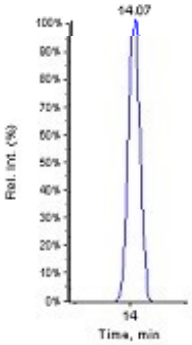
Difenoconazole



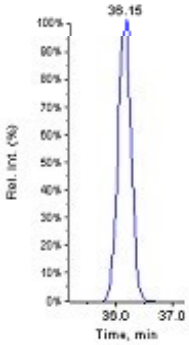
Dinotefuran



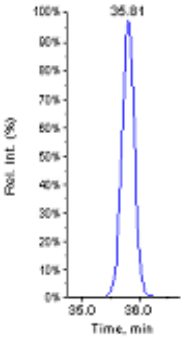
Ethoxysulfuron



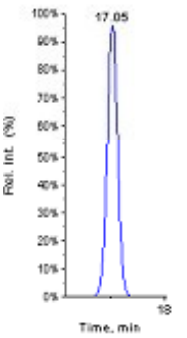
Etobenzanide



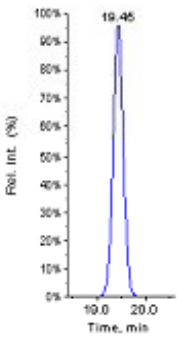
Fentrazamide



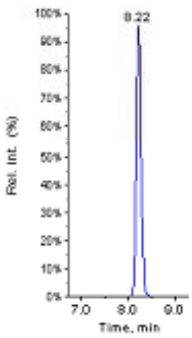
Fluazifop



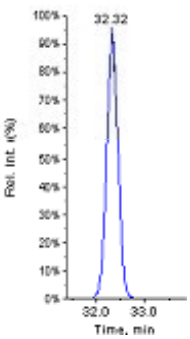
Furametpyr



Imidacliprid

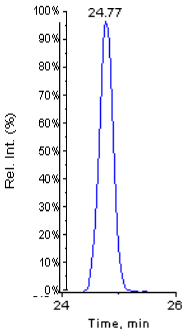


Indanofan

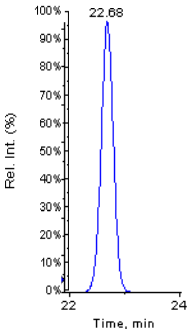


＜ Compounds detected in positive mode (2) ＞

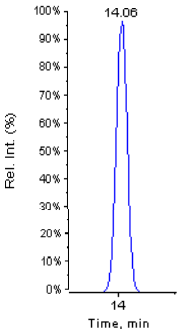
Linuron



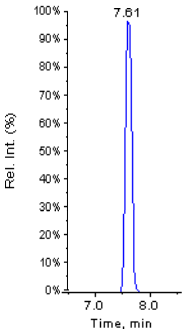
Metominostrobin(E)



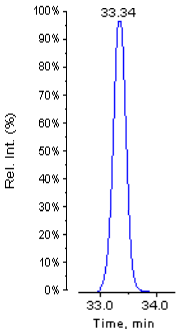
Metribuzin



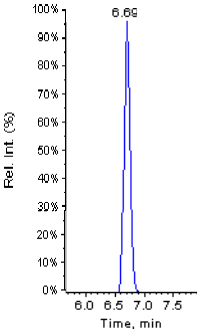
Monocrotopho



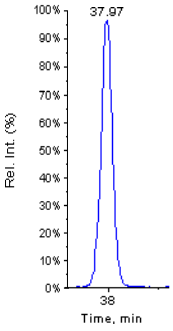
Naproanilide



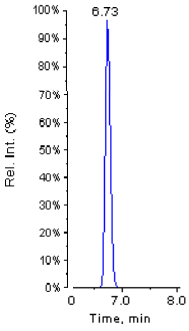
Nitenpyram



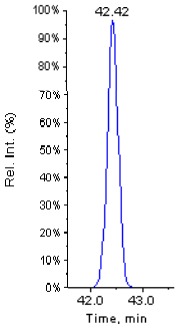
Oxadiargyl



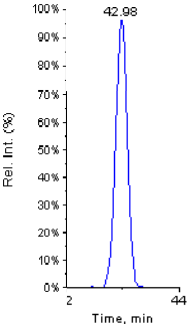
Oxamyl



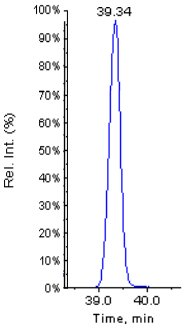
Oxaziclomefone



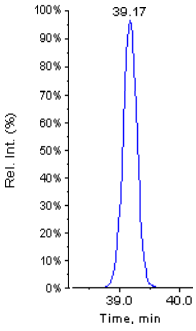
Pentoxazone



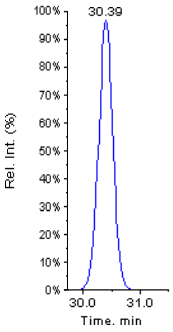
Phoxim



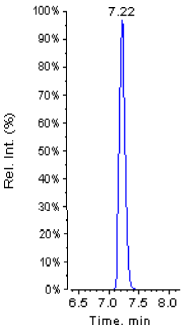
Pirimiphos-methyl



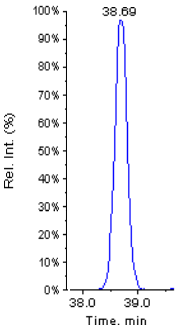
Prometryn



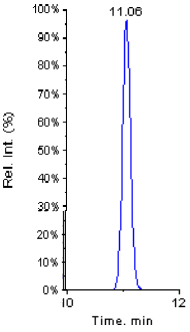
Pymetrozine



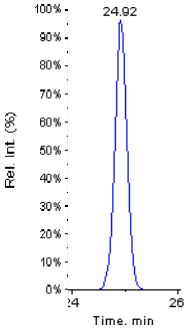
Pyrazolate



Pyrazosulfuron-ethyl



Pyriminobac-methyl(E)



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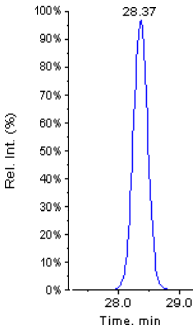
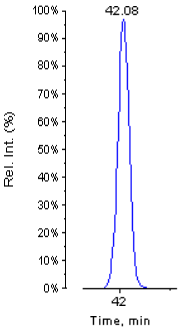
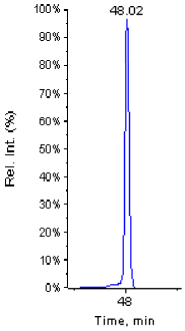


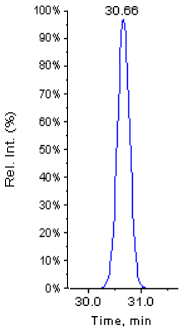
Quizalofop-ethyl



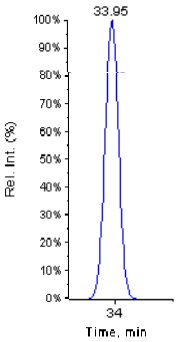
Silafluofen



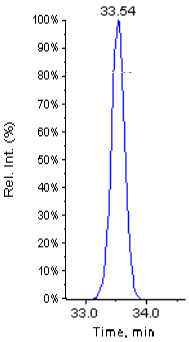
Simeconazole



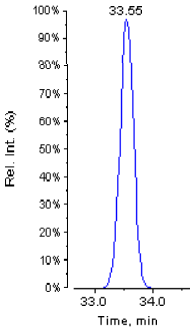
Tebuconazole



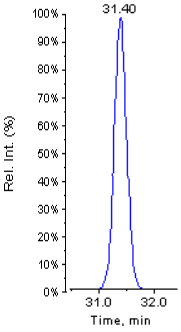
Tebufenozide



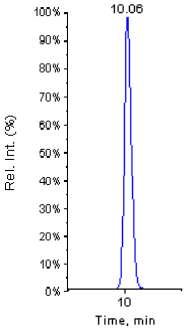
Tetrachlorvinphos (CVMP)



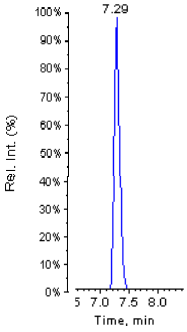
Tetraconazole



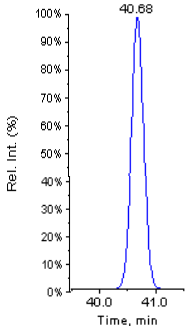
Thiacloprid



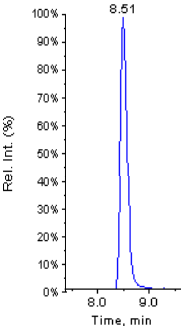
Thiamethoxam



Triflumizole



Trinexapac-ethyl



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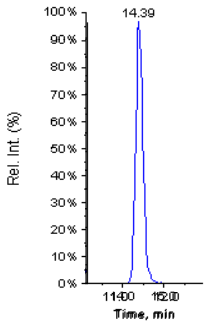
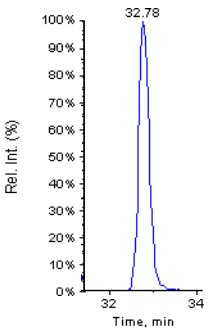
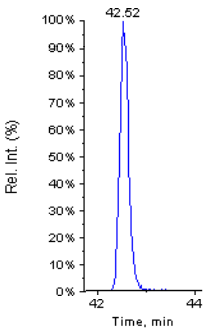
Dichlorprop



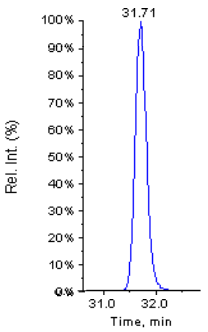
Diflubenzuron



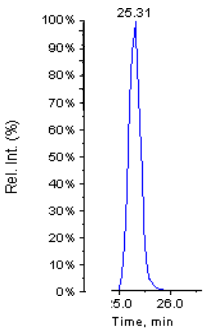
Fluazinam



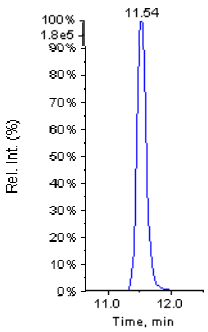
Flusulfamide



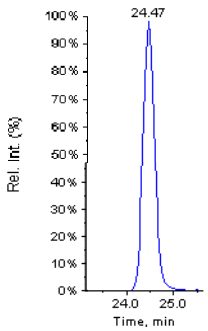
Inabenfide



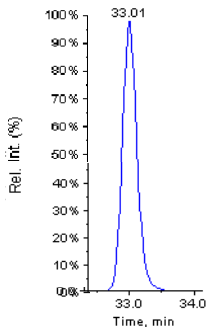
MCPA



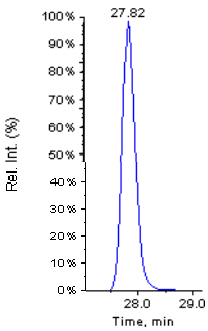
Propanil



Thifluzamide



Tiadinil



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