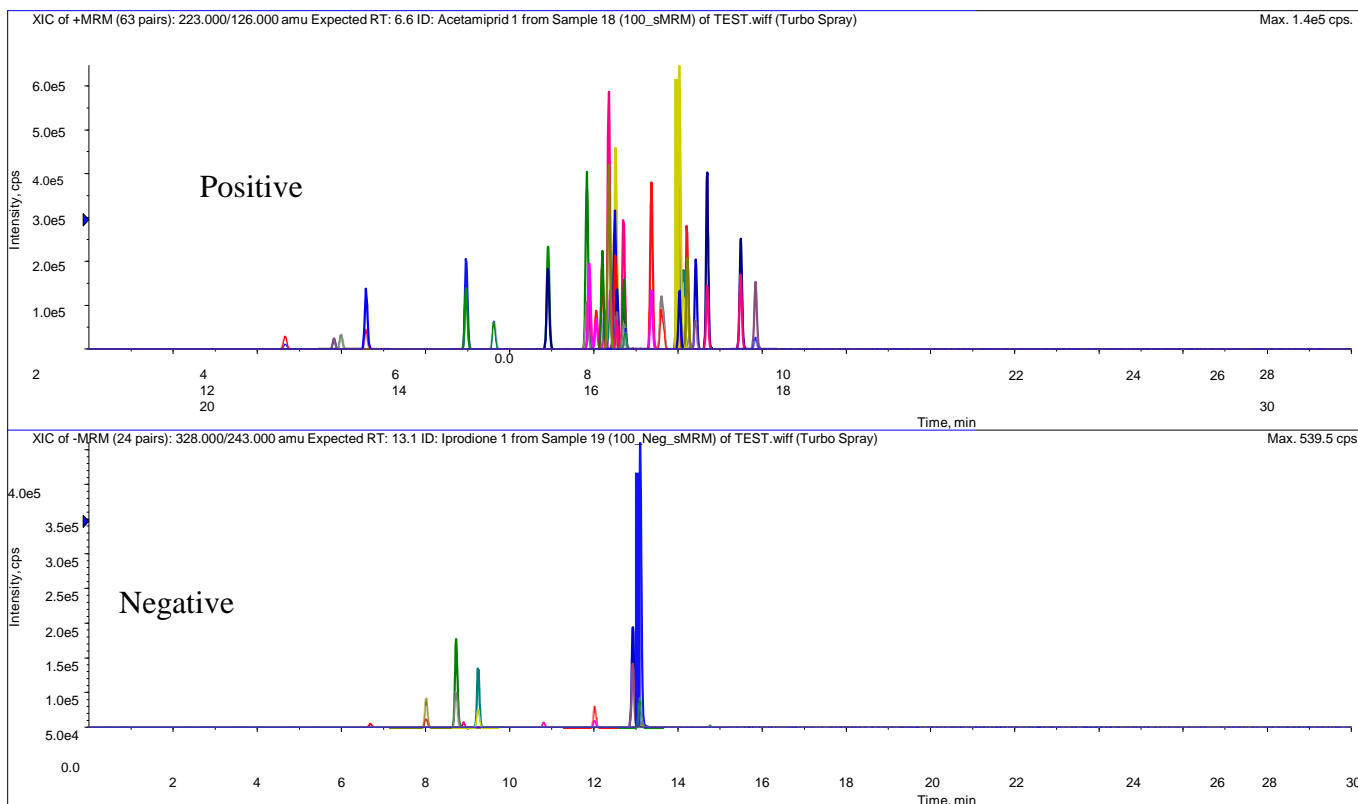


Simultaneous LC/MS/MS Analysis of Pesticides Used in Golf Courses

In 1990, Japanese Ministry of the Environment announced a “Interim Guidance Guidelines on Prevention of Water Contamination by Pesticides for Golf Courses”. Furthermore, the last revision 100929001 announced by the Environment Management Bureau, Ministry of Environment on Sep 29, 2010, states to measure 44 pesticides by LC/MS/MS.

Both quantifier and qualifier ions must be measured besides fenitrothion.

In this technical note, we introduce results of simultaneous analysis of 43 pesticides using 3200 QTRAP LC/MS/MS System (AB SCIEX) and InertSustain C18 HPLC column.



Conditions

Column : InertSustain C18 3 μ m, 150 \times 2.1 mm I.D.

Eluent : A) 5 mM Ammonium acetate

B) CH₃OH

A/B = 80/20 - 13 min - 10/90 - 10 min hold, v/v

* Reequilibration for next analysis: 7 min

Flow Rate : 0.25 mL/min

Col. Temp. : 40 $^{\circ}$ C

Detection : LC/MS/MS (3200 QTRAP: ESI, MRM)

Inj. Vol. : 5 μ L

Data Supply: Mr. Tateda in AB SCIEX, Japan

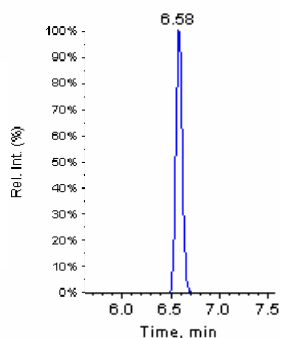
MRM (Q1/Q3)		Quantifier
Components	Qualifier	(ESI,
Positive)		
ion		R.T.
Thiamethoxam		292/132
	292/211	
4.7 Imidacloprid		256/175
	256/209	
5.8 Clothianidin		250/132
	250/169	
6.0 Acetamiprid		223/126
	225/128	
6.6 Ethoxysulfuron		399/261
	399/218	
9.0 Simazine		202/104
	202/68	
9.6 Metalaxyl		280/220
	280/192	
10.9 Azoxystrobin		404/372
	404/329	
11.8 Siduron		233/137
	233/94	
11.9 Flutolanil		
324/242	324/262	12.2
Propyzamide		256/190
	258/192	12.4
Mepronil		270/119
	270/91	12.4
Isoprothiolane		291/231
	291/189	12.5
Cafenstrole		351/100
	351/72	12.5
Cumyluron		303/185
	303/125	12.5
Cyproconazole		292/70
	292/125	12.5
Simeconazole		294/73
	294/70	12.7
Tetraconazol		372/159
	372/70	12.7
Triflumizole metabolite		295/215
	295/176	12.8
Tebuconazole		308/70
	310/70	13.4
Propiconazole		342/159
	344/161	13.6
Diazinon		305/169
	305/97	14.0
Butamifos		333/180
	333/96	14.0
Pencycuron		329/125
	329/89	14.0
Difenoconazole		406/251
	408/253	14.1
Isoxathion	314/105	314/97 14.2
Terbucarb	278/222	278/166 14.2
Triflumizole	346/278	348/280 14.4
Oxaziclomefone	376/190	376/161 14.7
Pyributicarb		331/181
	331/108	15.5
Pendimethalin		282/212
	282/194	15.8

MRM (Q1/Q3)		Quantifier
Components	Qualifier	(ESI,
Negative)		
ion		R.T.
Flazasulfuron		406/251
	406/154	
6.7 Harosulfuron-methyl		433/252
	433/78	
8.0 Cafenstrole metabolite		250/186
	250/67	
8.7 Triclopyr		254/196
	256/198	
8.9 Mecoprop		213/141
	215/143	
9.3 Cyclosulfamuron		420/265
	420/78	
10.8 Boscalid		341/112
	343/112	
12.0 Thifluzamide		527/125
	527/166	
12.9 Iprodione		328/243
	330/245	
13.1 Tebufenozide		
351/149	351/105	13.1
Bensulide		396/213
	396/111	13.1
Dithiopyr		400/352
	400/304	14.8

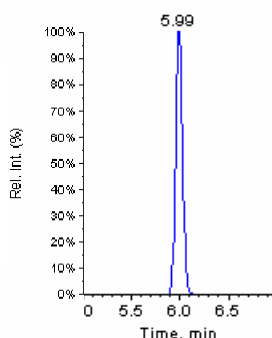
(Conc. of each compound: 100 µg/L)

<Compounds to be detected LC/MS/MS (ESI, Positive) - 1>

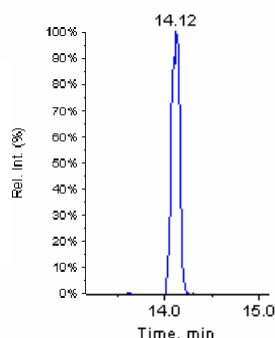
Acetamidiprid



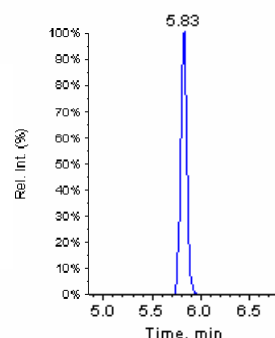
Clothianidin



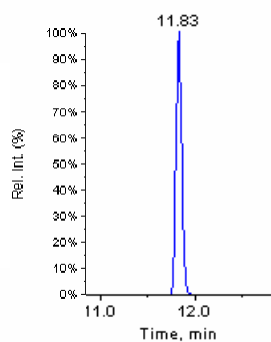
Difenoconazole



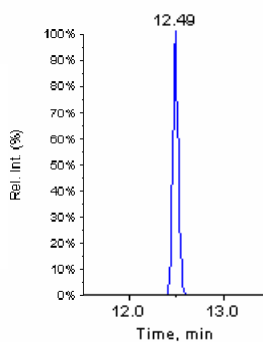
Imidacloprid



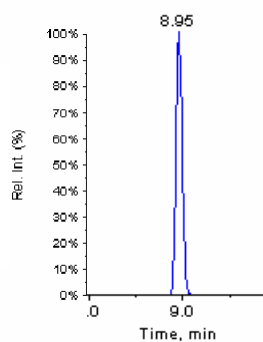
Azoxystrobin



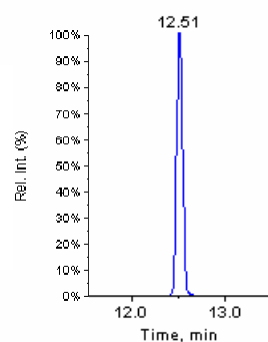
Cumyluron



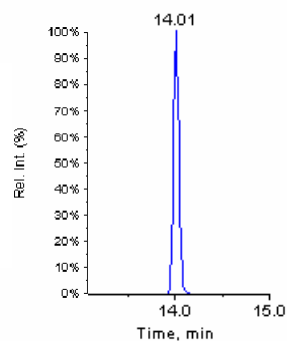
Ethoxysulfuron



Isoprothiolane

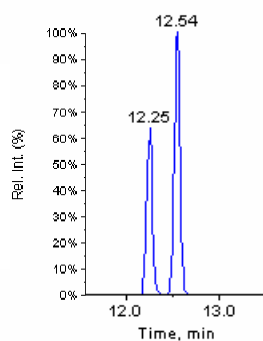


Butamifos

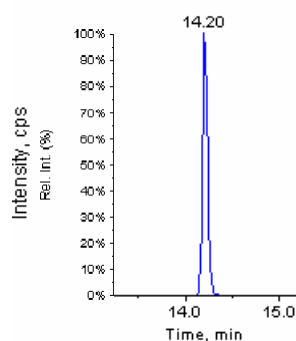


Cyproconazole

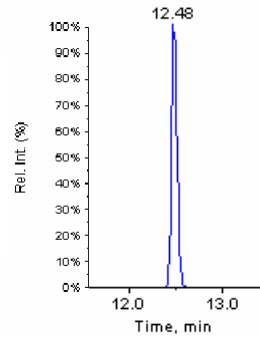
: An isomer exist



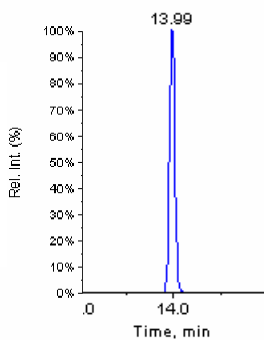
Isoxathion



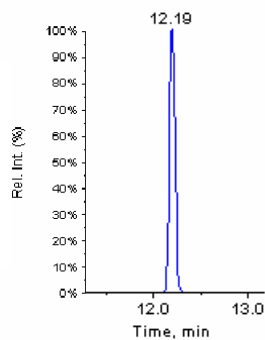
Cafenestrole



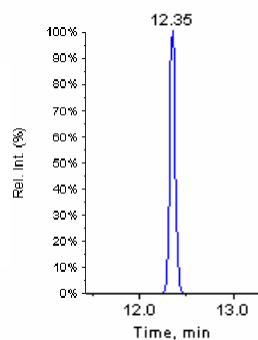
Diazinon



Flutolanil

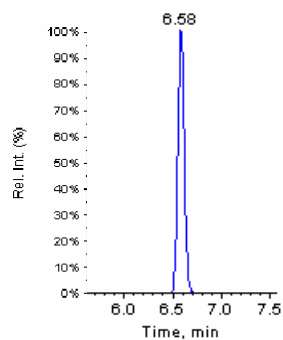


Mepronil

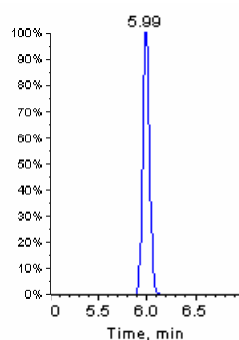


<Compounds to be detected by LC/MS/MS (ESI, Positive) - 2>

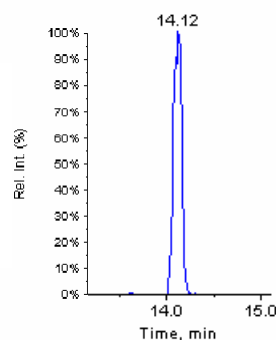
Acetamiprid



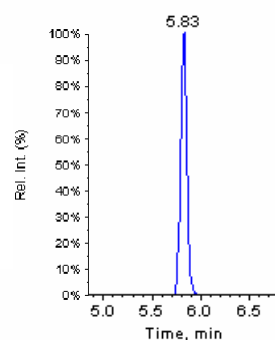
Clothianidin



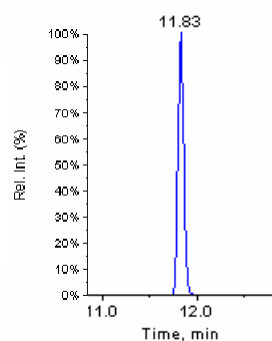
Difenoconazole



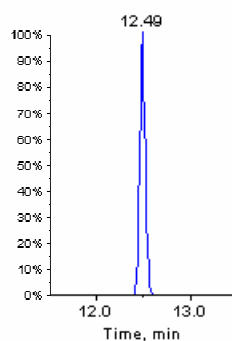
Imidacloprid



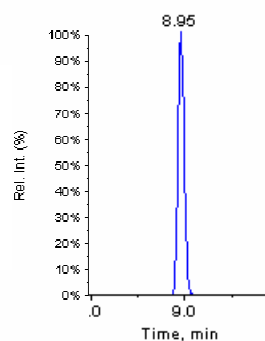
Azoxystrobin



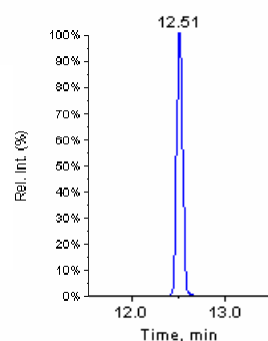
Cumyluron



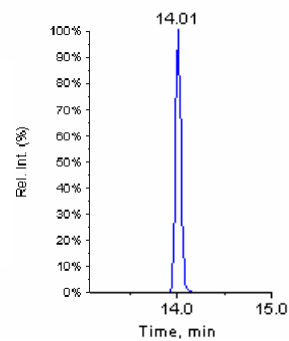
Ethoxysulfuron



Isoprothiolane

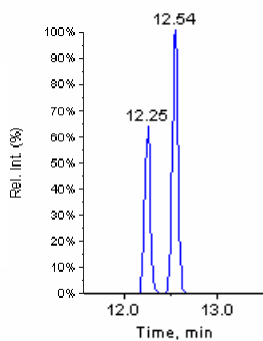


Butamifos

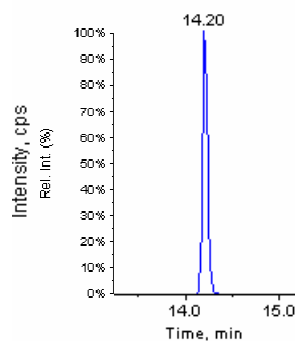


Cyproconazole

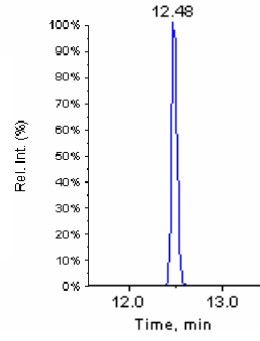
: An isomer exist



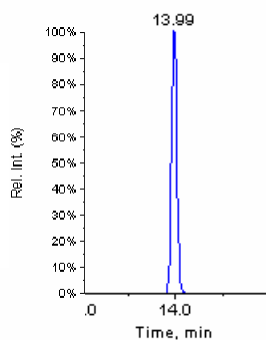
Isoxathion



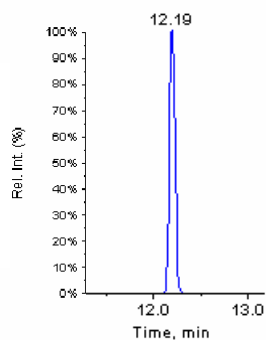
Cafenstrole



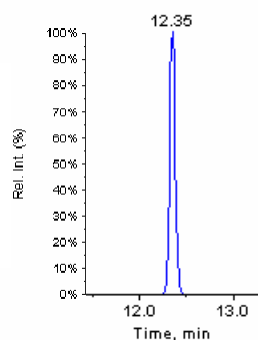
Diazinon



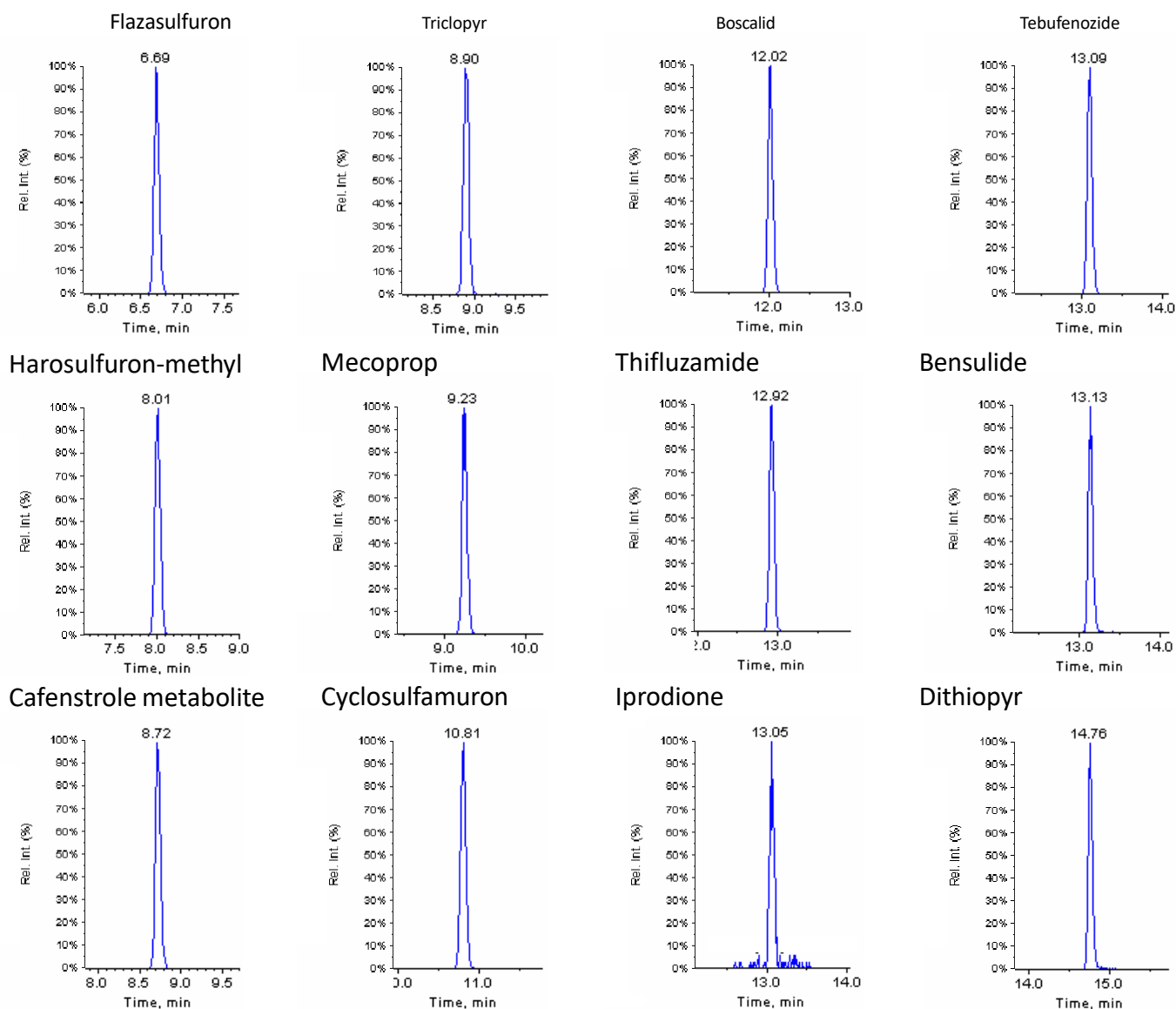
Flutolanil



Mepronil



<Compounds to be detected by LC/MS/MS (ESI, Negative)>



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