Development and validation of a QuEChERS and HPLC-MS/MS method for trace analysis of ten diamide insecticides in agricultural products

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Table S1. Comparison of the current method with other previously reported methods.

Diamide pesticides	Samples	Method	LOD (μg kg^{-1})	LOQ (μg kg^{-1})	Time analysis (min)	RSD (%)	Reference
Cyantraniliprole	Vegetables	LC-MS/MS	2	5	3.5	2.6-15.1 (intra-day), 3.4-13.3 (inter-day)	1
Cyantraniliprole	Vegetables	LC	—	50	40	9.9-15.2	2
Cyantraniliprole	Vegetables	LC-MS/MS	5	10	5.1	1.6-8.9	3
Cyantraniliprole	Rice	LC-MS/MS	5.4	4.3	3.0	1.1-10.6	4
Cyantraniliprole	Corn	LC-MS/MS	—	10	4.2	4.7-10.1	5
Chlorantraniliprole	Fruits	LC	20	60	14.5	6-11	6
Chlorantraniliprole	Fruits	LC-MS/MS	8.6	17.2	15	2.7-6.1	7
Cyantraniliprole and chlorantraniliprole	Fruits, vegetables and cereals	LC-MS/MS	—	10	16	2-8	8
Chlorantraniliprole	Vegetables	LC	30	100	12.5	1.6-4.4 (intra-day), 5.5-9.1 (inter-day)	9
Chlorantraniliprole	Vegetables	LC	30	100	9.86	1.89-3.56	10
Chlorantraniliprole	Vegetables	LC	30	100	12.5	1.7-3.35	11
Chlorantraniliprole	Rice	LC-MS/MS	0.012-0.015	-	4.5	1.7-7.5	12
Chlorantraniliprole	Rice	LC-MS/MS	0.15	0.5	3	2.1-10.2	13
Chlorantraniliprole	Corn	LC-MS/MS	2-3	5-10	3.5	1.9-11.3 (intra-day) 4.7-10.4 (inter-day)	14
Tetrachlorantraniliprole	Corn	LC-MS/MS	—	1-6	—	2.87-8.21	15
Tetrachlorantraniliprole and cyantraniliprole	Corn	LC-MS/MS	—	10	6	< 10	16
Cyclaniliprole	Fruits, vegetables, and cereals	LC-MS/MS	—	10	10	< 13	17
Cyclaniliprole	Fruits and vegetables	LC-MS/MS	0.08-0.1	10	4	0.41-4.2	18
Cyclaniliprole	Fruits and vegetables	LC-MS/MS	—	10	10	0.4-12.1	19
Flubendiamide	Vegetables	LC	—	10	15	1.15-4.80	20
Flubendiamide	Vegetables	LC	—	10	10	<5%	21
Flubendiamide	Vegetables	LC	—	50	15	2.87-6.51	22
Flubendiamide	Vegetables	LC-MS/MS	0.3	—	12	1.79-4.81	23
Flubendiamide	Vegetables	LC	3	10	20	1.62-5.39	24
Cyhalodiamide	Rice	LC-MS/MS	0.5	2-10	5	1.2-10.7	25

Broflanilide	Fruits, vegetables, and cereals	LC-MS/MS	—	5	10	<1.8	26
Broflanilide	Rice	LC	0.16-1.67	0.54-5.48	14	3.29-8.15	27
Broflanilide	Fruits, vegetables, and cereals	LC-MS/MS	4	10	10	<21	28
Tetraniliprole	Rice	LC-MS	1.55-3.09	5.16-10.29	3.2	2.58-15.92	29
Tetraniliprole	Corn	LC-MS/MS	—	1	4.2	<13.52	30
Tetraniliprole	Vegetables	LC-MS	10	50	15	2.91-15.32	31
Tetraniliprole	Vegetables	LC-MS/MS	3	10	10	1.4-5.5	32
Fluchlordiniliprole	Rice	LC-MS	0.15-7.0	0.51-2.33	8	1.77-4.35 (intra-day) 1.73-4.20 (inter-day)	33
Five diamide insecticides	Fruits and cereals	LC-MS/MS	—	5-10	5	0.4-9.9 (intra-day) 1.7-13.5 (inter-day)	34
Five diamide insecticides	Edible mushrooms	LC-MS/MS	0.05-2	5	6	0.8-12.7 (intra-day) 2.8-12.2 (inter-day)	35
Five diamide insecticides	Vegetables	LC-MS/MS	—	0.03-0.8	6	3.8-9.4	36
Six diamide insecticides	Vegetables	LC	<15	34-51	20	1.1-9.7 (intra-day) 3.0-11.0 (inter-day)	37
Five diamide insecticides	Fruits and vegetables	LC-MS/MS	—	5	10	<10.9	38
Ten diamide insecticides	Fruits, vegetables, and cereals	LC-MS/MS	0.01-1	5	6	1.0-13.4 (intra-day) 2.3-15.7 (inter-day)	This work

Five diamide insecticides: chlorantraniliprole, cyantraniliprole, flubendiamide, cyclaniliprole, and tetrachlorantraniliprole.

Six diamide insecticides: five diamide insecticides and broflanilide.

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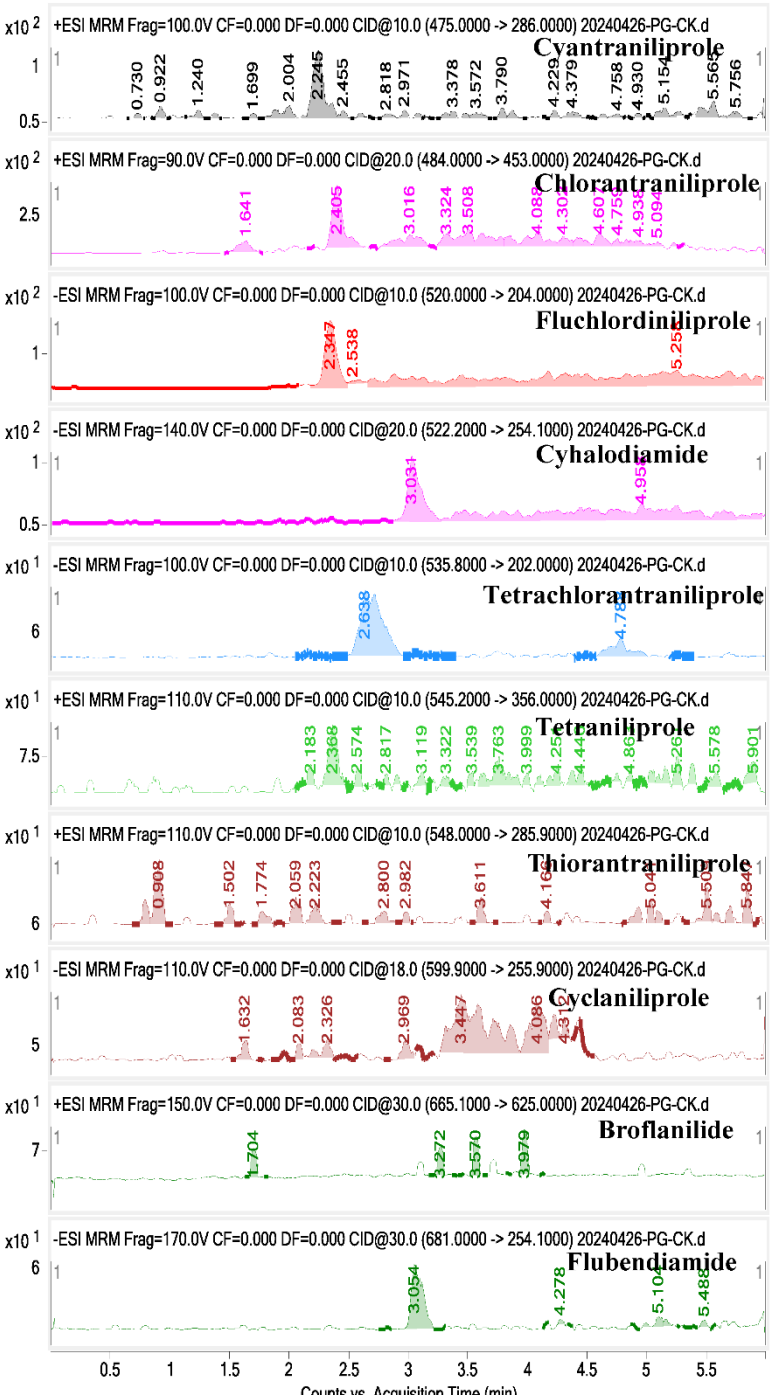

Figure S1. HPLC-MS/MS chromatograms of ten diamide insecticides of blank apple sample.

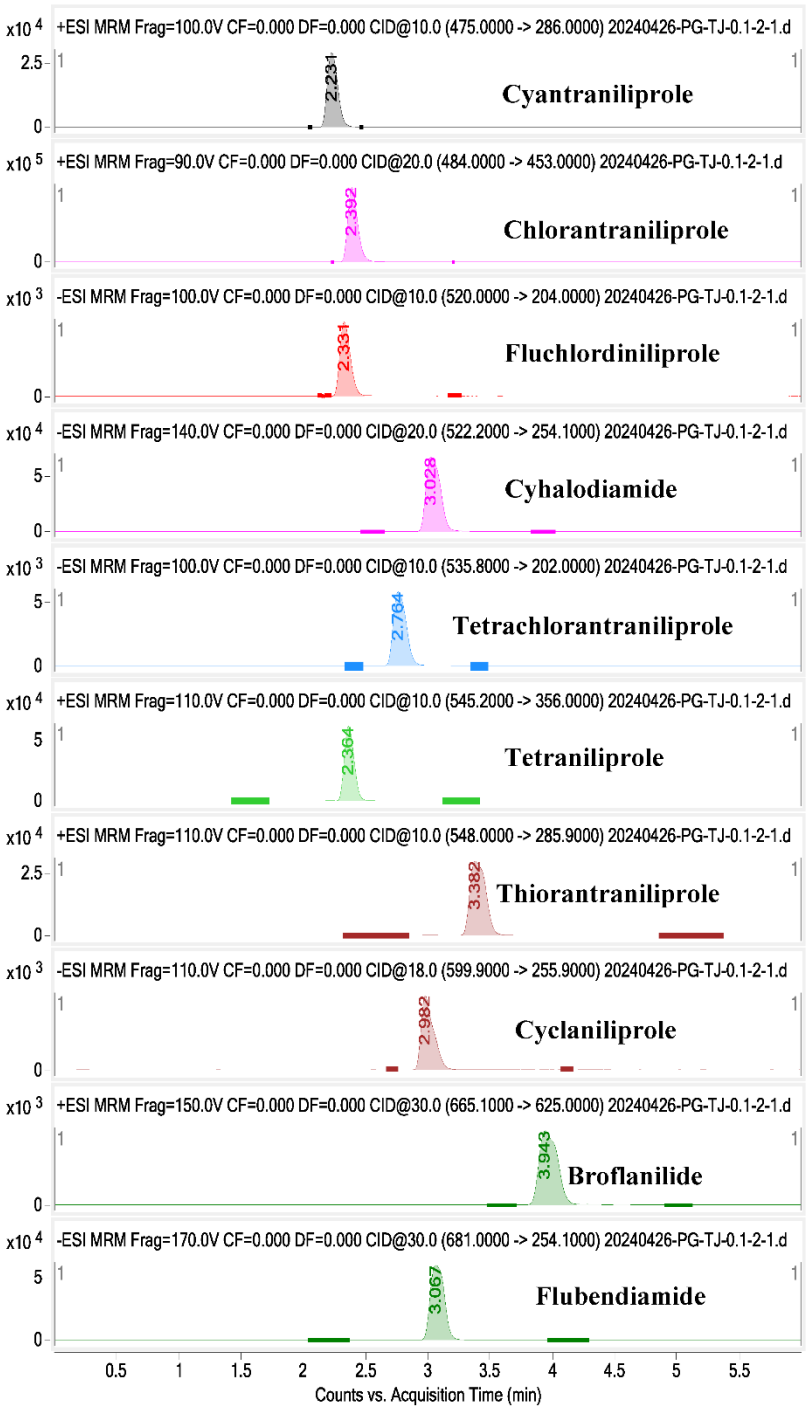

Figure S2. HPLC-MS/MS chromatograms of ten diamide insecticides of spiked apple sample (100 μg kg^{-1}).

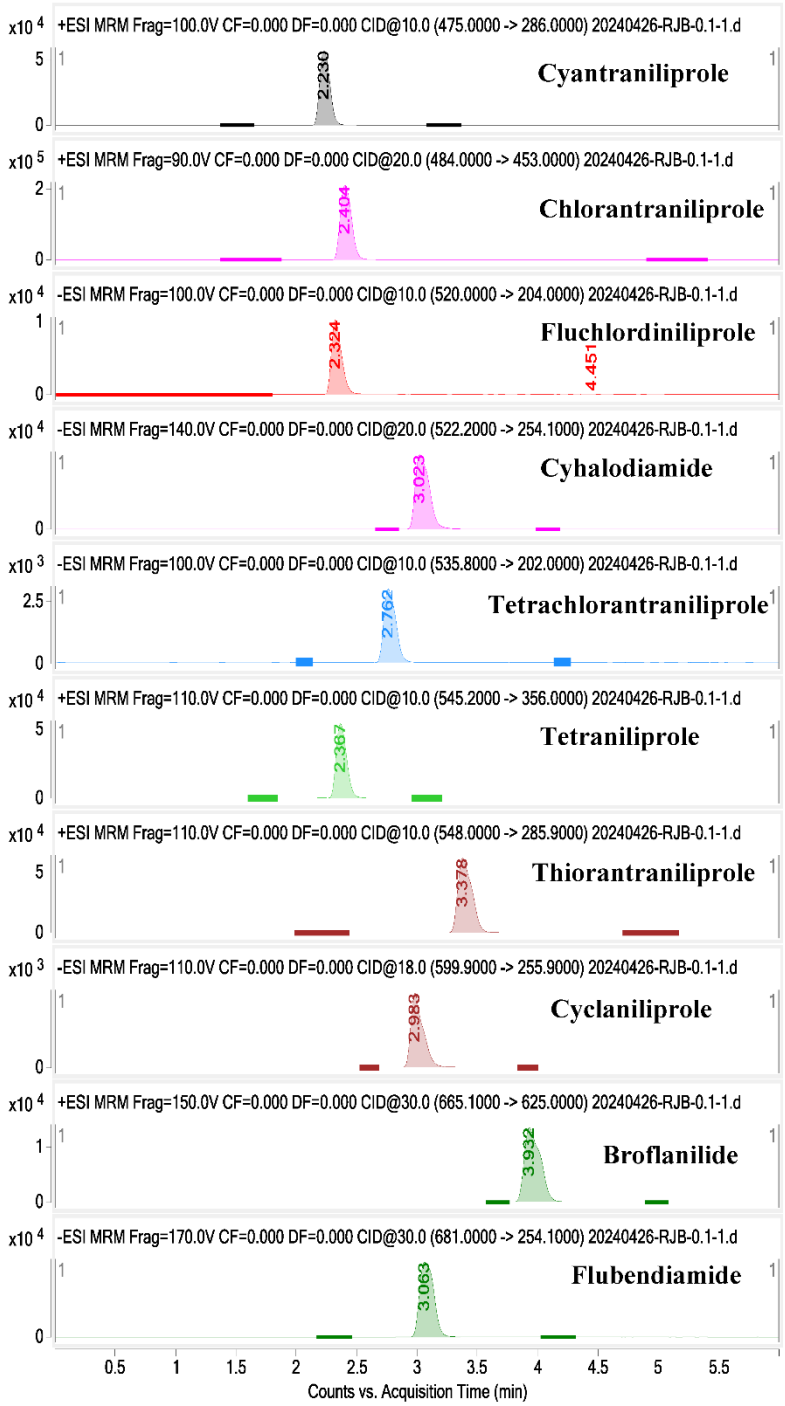

Figure S3. HPLC-MS/MS chromatograms of ten diamide insecticides of standard solution (100 μg kg^{-1}).