

Quantitation & Detection of Antibiotics, Specific Rice marker in Honey, Pesticide in cereals using SCIEX QTRAP 4500 system

SCIEX INDIA | 11-09-2025

Confidential – company proprietary



Objective

- To perform a quantitative analysis of antibiotics and SMR in honey sample using SCIEX QTRAP 4500 .
- To perform a quantitative analysis of multi residue pesticide in cereal sample.
- Reference Material was not provided by customer.
- Standard are arranged by SCIEX ,same used to prepare calibration curve.



Honey & Toor dal Samples received from Vindhyanchal botanical



Exion LC system



SCIEX QTRAP 4500

Quantitative analysis

Multi residue Antibiotics in Honey



Experiment Details

- Matrix : Honey
- Mode of Ionization : ESI Positive & ESI Negative
- Analyte's : 20 Veterinary Antibiotics
- Scan Type : MRM
- LC : Exion LC
- Acquisition : Analyst software
- Quantitation : SCIEX OS

Sl.No.	Name of the Compounds
1	Ampicillin
2	Chlortetracycline
3	Ciprofloxacin
4	Doxycycline
5	enrofloxacin
6	Erythromycin
7	Oxytetracycline
8	Sulfadiazine
9	Sulfadimethoxine
10	Sulfamethazine

Sl.No.	Name of the Compounds
11	Sulfamethoxazole
12	Sulfamethoxypyridazine
13	Sulfapyridine
14	Sulfathiazole
15	Tetracycline
16	Trimethoprim
17	Tylosin
18	Sulfadoxine
19	Chloramphenicol
20	4- epi Tetracycline

LC & MS method of analysis

Chromatographic Conditions	Exion LC
Analytical column	Phenomenex Luna 5µm
Mobile phase: Pump A	Ammonium formate with Formic acid in Water
Mobile phase: Pump B	Formic acid in Acetonitrile
Injection Volume	20 µL
Autosampler Temperature	15 °C
Column Oven Temperature	40 °C
Diluent for std preparation	[Water:ACN]+ Formic acid

Source parameters	QTRAP 4500
Curtain Gas[CUR]	35
Collision Gas[CAD]	9
Ion spray voltage[IS]	3000/-2800
Temperature[TEM]	550
Ion source Gas 1[GS1]	50
Ion source Gas 2[GS2]	55
Mode of Ionization	Positive & Negative

Run time 16 Mints



Honey sample taken in a 50 mL tarson tube



Water and Sodium chloride & then vortex vigorously for 45 sec.



Add 10ml of Formic acid in ACN & Vortex for 10mins



Centrifuge at 4000 rpm for 10 mins



Collect the organic layer 6ml & Evaporate at 40 °C to dryness



Reconstitution with 1ml of Diluent [80:20:0.1% FA] Water:ACN



Centrifuge at 10000 rpm for 5mins



Inject 20uL for LCMSMS

Sample preparation

MRM Transitions(+ Ve)

	Q1 Mass (Da)	Q3 Mass (Da)	Dwell Time (msec)	ID	DP (volts)	EP (volts)	CE (volts)	CXP (volts)
1	445.100	410.000	15.0	4- epi Tetracycline-01	65.000	10.000	27.000	10.000
2	445.100	427.000	15.0	4- epi Tetracycline-02	65.000	10.000	18.000	10.000
3	350.100	106.100	15.0	Ampicillin-01	75.000	10.000	33.300	10.000
4	350.100	160.000	15.0	Ampicillin-02	75.000	10.000	19.500	10.000
5	350.100	174.100	15.0	Ampicillin-03	75.000	10.000	22.000	10.000
6	479.100	444.000	15.0	Chlortetracycline-01	80.000	10.000	30.000	10.000
7	479.100	154.100	15.0	Chlortetracycline-02	80.000	10.000	37.000	10.000
8	479.100	462.100	15.0	Chlortetracycline-03	80.000	10.000	25.400	10.000
9	332.100	314.200	15.0	Ciprofloxacin-01	87.000	10.000	29.600	10.000
10	332.100	288.300	15.0	Ciprofloxacin-02	87.000	10.000	25.000	10.000
11	332.100	245.300	15.0	Ciprofloxacin-03	87.000	10.000	34.000	10.000
12	445.000	154.000	15.0	Doxycycline-01	74.800	10.000	35.000	10.000
13	445.000	428.000	15.0	Doxycycline-02	74.800	10.000	28.000	10.000
14	360.100	316.100	15.0	enrofloxacin-01	70.000	10.000	27.000	10.000
15	360.100	342.100	15.0	enrofloxacin-02	70.000	10.000	30.000	10.000
16	360.100	245.200	15.0	enrofloxacin-03	70.000	10.000	37.000	10.000
17	734.400	558.600	15.0	Erythromycin-01	80.000	10.000	28.000	10.000
18	734.400	158.000	15.0	Erythromycin-02	80.000	10.000	35.000	10.000
19	734.400	576.000	15.0	Erythromycin-03	80.000	10.000	28.000	10.000
20	461.100	201.000	15.0	Oxytetracycline-01	80.000	10.000	52.000	10.000
21	461.100	443.100	15.0	Oxytetracycline-02	80.000	10.000	19.000	10.000
22	461.100	426.200	15.0	Oxytetracycline-03	80.000	10.000	28.000	10.000
23	251.000	156.200	15.0	Sulfadiazine-01	60.000	10.000	22.000	10.000
24	251.000	92.000	15.0	Sulfadiazine-02	60.000	10.000	36.000	10.000
25	311.000	156.200	15.0	Sulfadimethoxine-01	74.000	10.000	26.000	10.000
26	311.000	108.000	15.0	Sulfadimethoxine-02	74.000	10.000	37.000	10.000
27	311.000	92.000	15.0	Sulfadimethoxine-03	74.000	10.000	45.000	10.000
28	279.100	186.100	15.0	Sulfamethazine-01	42.000	10.000	24.100	10.000
29	279.100	124.000	15.0	Sulfamethazine-02	42.000	10.000	29.000	10.000
30	254.000	156.000	15.0	Sulfamethoxazole-01	60.000	10.000	21.000	10.000
31	254.000	92.000	15.0	Sulfamethoxazole-02	60.000	10.000	21.000	10.000
32	280.920	91.900	15.0	Sulfamethoxypyridazine-01	71.000	10.000	41.000	10.000
33	280.920	107.900	15.0	Sulfamethoxypyridazine-02	71.000	10.000	31.000	10.000
34	249.900	156.000	15.0	Sulfapyridine-01	63.000	10.000	22.000	10.000
35	249.900	108.000	15.0	Sulfapyridine-02	63.000	10.000	33.000	10.000
36	256.000	92.000	15.0	Sulfathiazole-01	54.000	10.000	37.000	10.000
37	256.000	156.000	15.0	Sulfathiazole-02	54.000	10.000	20.000	10.000
38	445.000	410.000	15.0	Tetracycline-01	62.000	10.000	27.000	10.000
39	445.000	427.000	15.0	Tetracycline-02	62.000	10.000	18.000	10.000
40	291.100	230.100	15.0	Trimethoprim-01	75.600	10.000	33.000	10.000
41	291.100	261.300	15.0	Trimethoprim-02	75.600	10.000	34.000	10.000
42	291.100	123.200	15.0	Trimethoprim-03	75.600	10.000	68.000	10.000
43	916.500	772.500	15.0	Tylosin-01	58.000	10.000	42.000	10.000
44	916.500	174.500	15.0	Tylosin-02	58.000	10.000	79.000	10.000
45	310.970	155.900	15.0	Sulfadoxine-01	74.000	10.000	27.000	10.000
46	310.970	92.000	15.0	Sulfadoxine-02	74.000	10.000	45.000	10.000

MRM [-Ve mode]

	Q1 Mass (Da)	Q3 Mass (Da)	Dwell Time (msec)	ID	DP (volts)	EP (volts)	CE (volts)	CXP (volts)
1	320.800	151.800	20.0	CAP_1	-85.000	-10.000	-15.000	-10.000
2	320.800	256.800	20.0	CAP_2	-85.000	-10.000	-23.000	-10.000

Quantitative analysis

Specified Rice marker

Experiment Details

- Matrix : Honey
- Mode of Ionization : ESI Positive
- Scan type : MRM
- LC : Exion LC
- Acquisition : Analyst software
- Quantitation : SCIEX OS

Q1	Q3	DT	ANALYTE	DP	EP	CE	CXP
311.0	149.3	150	SMR-01	150	10	22	10
359.1	189.1	100	SMR-02	150	10	19	10

LC & MS method of analysis

Chromatographic Conditions	Exion LC
Analytical column	Kinetex XB-C18
Mobile phase: Pump A	Formic acid in Water
Mobile phase: Pump B	Formic acid in Methanol
Injection Volume	30 µL
Autosampler Temperature	15 °C
Column Oven Temperature	40 °C
Diluent for std preparation	100 % Water

Time[min]	Flow[ml/min]	A conc	B conc
0.00	0.600	95	5
2.00	0.600	95	5
3.00	0.600	90	10
4.00	0.600	90	10
5.00	0.600	5	95
6.00	0.600	5	95
7.00	0.600	95	5
10.00	0.600	95	5



Source parameters	QTRAP 4500
Curtain Gas[CUR]	35
Collision Gas[CAD]	9
Ion spray voltage[IS]	5000
Temperature[TEM]	550
Ion source Gas 1[GS1]	50
Ion source Gas 2[GS2]	55
Mode of Ionization	Positive



1gm of Sample taken in a 15 mL Tube



Add 4mL of water & Vortex vigorously.



Multi vortexer 2500rpm for 10mins



Centrifuge at 4500 rpm for 20 mins



Collect supernatant for filter



Filter and transfer 1ml into Autosampler vial



Inject 10uL for LCMSMS

Sample Extraction

Quantitative analysis

Multi residue pesticide



Experiment Details

- Matrix : Cereals [Toor dal]
- Mode of Ionization : ESI Positive & ESI Negative
- Analyte's : 92 Analytes
- Scan Type : scheduled MRM
- LC : Exion LC
- Acquisition : Analyst software
- Quantitation :SCIEX OS

LC & MS method of analysis

Chromatographic Conditions	Exion LC
Analytical column	Phenomenex Kinetex C18
Mobile phase: Pump A	Ammonium formate with Formic acid in Water
Mobile phase: Pump B	Ammonium formate with Formic acid in Methanol
Injection Volume	10 µL
Autosampler Temperature	15 °C
Column Oven Temperature	40 °C

Time[min]	Flow[ml/min]	A conc	B conc
0.00	0.600	90	10
0.50	0.600	90	10
3.00	0.600	40	60
10.00	0.600	10	90
12.00	0.600	10	90
13.00	0.600	90	10
15.00	0.600	90	10



Source parameters	QTRAP 5500+
Curtain Gas[CUR]	30
Collision Gas[CAD]	9
Ion spray voltage[IS]	5500/-4500
Temperature[TEM]	550
Ion source Gas 1[GS1]	50
Ion source Gas 2[GS2]	50
Mode of Ionization	Positive & Negative



2.5gm of Sample taken in a 50 mL centrifuge tube



Add 10ml of water & vortex & acetic acid in acetonitrile & vortex 10mins.



Quechers -Add the prepared buffer-salt mixture[EN15662]&vortex



Centrifuge it for 10min at 4000rpm



aliquot of 2mL transferred into a vial and add SPE cleanup salts. vortex for 30 s and centrifuge for 5min at 4000 rpm.



Collect 1 mL of supernatant for evaporation



Reconstitution with 500 µL of 1:1 Mobile phase A:B, vortex and filter



Inject 10µL for LCMSMS

Sample Extraction

MRM Transition[+Ve mode]

	Q1 Mass (Da)	Q3 Mass (Da)	Retention Time (min)	ID	DP (volts)	EP (volts)	CE (volts)	CXP (volts)
1	184.100	142.900	3.20	Acephate-01	46.000	10.000	13.000	10.000
2	184.100	124.800	3.20	Acephate-02	46.000	10.000	25.000	10.000
3	223.000	126.000	4.60	Acetamid-01	75.000	10.000	27.000	10.000
4	223.000	56.000	4.60	Acetamid-02	75.000	10.000	35.000	10.000
5	367.800	199.000	8.80	Anilofos-01	100.000	10.000	19.000	10.000
6	367.800	125.000	8.80	Anilofos-02	100.000	10.000	39.000	10.000
7	425.000	182.000	6.30	Azimsulfuron-1	19.000	10.000	22.000	10.000
8	425.000	139.100	6.30	Azimsulfuron-2	19.000	10.000	64.000	10.000
9	404.000	372.000	6.90	Azoxystrobin-01	90.000	10.000	22.000	10.000
10	404.000	344.000	6.90	Azoxystrobin-02	90.000	10.000	32.000	10.000
11	411.000	182.100	6.70	Benfuracarb-01	95.350	10.000	27.000	10.000
12	411.000	149.200	6.70	Benfuracarb-02	95.350	10.000	34.000	10.000
13	431.200	275.000	7.40	Bispyribac-sodium-0	71.000	10.000	21.000	10.000
14	431.200	413.000	7.40	Bispyribac-sodium-0	71.000	10.000	27.000	10.000
15	411.100	148.900	6.70	Bensulfuron-methyl-0	86.000	10.000	27.000	10.000
16	411.000	119.000	6.70	Bensulfuron-methyl-0	81.000	10.000	51.000	10.000
17	338.200	268.900	9.20	Bitertanol-01	51.000	10.000	13.000	10.000
18	338.200	99.100	9.20	Bitertanol-02	51.000	10.000	16.000	10.000
19	343.000	307.000	7.30	Boscalid-01	91.000	10.000	27.000	10.000
20	343.000	140.000	7.30	Boscalid-02	91.000	10.000	27.000	10.000
21	306.000	201.000	10.50	Buprofezin-01	32.000	10.000	20.000	10.000
22	306.000	116.000	10.40	Buprofezin-02	32.000	10.000	24.000	10.000
23	312.100	238.100	8.60	Butachlor-01	40.000	10.000	17.000	10.000
24	312.100	162.100	8.60	Butachlor-02	40.000	10.000	29.000	10.000
25	202.000	127.000	5.80	Carbaryl-01	53.000	10.000	40.000	10.000
26	202.000	145.000	5.80	Carbaryl-02	53.000	10.000	13.000	10.000
27	192.000	160.000	4.10	Carbendazim-01	90.000	10.000	30.000	10.000
28	192.000	132.000	4.10	Carbendazim-02	90.000	10.000	43.000	10.000
29	412.000	366.000	8.60	Carfentrazone-ethyl-	80.000	10.000	25.000	10.000
30	412.000	346.000	8.60	Carfentrazone-ethyl-	80.000	10.000	31.000	10.000
31	334.000	138.900	8.90	Carpropamid-01	31.000	10.000	18.000	10.000
32	334.000	103.000	8.90	Carpropamid-02	31.000	10.000	40.000	10.000
33	484.000	453.000	6.60	Chlorantriprole-01	66.000	10.000	23.000	10.000
34	484.000	286.000	6.60	Chlorantriprole-02	66.000	10.000	19.000	10.000
35	415.000	186.100	7.40	chlorimuron ethyl-01	89.000	10.000	26.000	10.000
36	415.000	83.100	7.40	chlorimuron ethyl-02	89.000	10.000	66.000	10.000
37	395.100	175.200	7.90	Chromafenozide-1	95.000	10.000	30.000	10.000
38	395.100	339.100	7.90	Chromafenozide-2	95.000	10.000	10.000	10.000

	Q1 Mass (Da)	Q3 Mass (Da)	Retention Time (min)	ID	DP (volts)	EP (volts)	CE (volts)	CXP (volts)
39	350.000	266.100	8.60	Clodinafop-propargyl-01	81.000	10.000	21.000	10.000
40	350.000	91.000	8.60	Clodinafop-propargyl-02	81.000	10.000	41.000	10.000
41	240.100	125.000	6.90	Clomazone(Command)-01	46.000	10.000	27.000	10.000
42	240.000	89.000	6.90	Clomazone(Command)-02	46.000	10.000	65.000	10.000
43	250.000	169.000	4.40	Clothianidin-01	50.000	10.000	20.000	10.000
44	250.000	132.000	4.40	Clothianidin-02	50.000	10.000	29.000	10.000
45	375.000	256.000	9.70	Cyhalofop-butyl-01	40.000	10.000	21.000	10.000
46	375.000	120.000	9.70	Cyhalofop-butyl-02	40.000	10.000	41.000	10.000
47	357.900	281.000	10.40	Diclofop-Methyl-01	41.000	10.000	19.000	10.000
48	357.900	120.100	10.40	Diclofop-Methyl-02	41.000	10.000	37.000	10.000
49	405.900	161.200	5.90	Diclosulam-01	95.000	10.000	32.000	10.000
50	405.900	378.200	5.90	Diclosulam-02	95.000	10.000	21.000	10.000
51	406.000	250.900	9.50	Difencconazole-01	122.000	10.000	35.000	10.000
52	406.000	337.200	9.50	Difencconazole-02	122.000	10.000	24.000	10.000
53	233.000	72.200	6.00	Diuron-01	56.000	10.000	39.000	10.000
54	233.000	160.000	6.00	Diuron-02	56.000	10.000	37.000	10.000
55	328.000	109.000	10.50	Edifenphos-01	60.000	10.000	45.000	10.000
56	328.000	283.000	10.50	Edifenphos-02	60.000	10.000	23.000	10.000
57	330.100	121.000	8.10	Epoxiconazole-01	79.000	10.000	27.000	10.000
58	330.100	101.100	8.10	Epoxiconazole-02	79.000	10.000	63.000	10.000
59	397.100	261.100	8.90	Ethoxysulfuron-01	24.000	10.000	20.000	10.000
60	397.100	353.000	8.90	Ethoxysulfuron-02	24.000	10.000	16.000	10.000
61	384.168	282.100	10.20	Fluazifop-P-buthyl-01	76.000	10.000	29.000	10.000
62	384.168	328.100	10.20	Fluazifop-P-buthyl-02	76.000	10.000	25.000	10.000
63	488.100	156.000	6.80	Flucetosulfuron-01	87.000	10.000	25.000	10.000
64	488.100	273.000	6.80	Flucetosulfuron-02	87.000	10.000	33.000	10.000
65	364.100	194.200	8.00	Flufenacet-01	51.000	10.000	17.000	10.000
66	364.100	152.100	8.00	Flufenacet-02	51.000	10.000	29.000	10.000
67	316.000	247.000	8.40	Flusilazole-01	81.000	10.000	27.000	10.000
68	316.200	165.000	8.40	Flusilazole-02	81.000	10.000	37.000	10.000
69	382.000	342.000	7.40	Fluxapyroxad-01	10.000	10.000	30.000	10.000
70	382.000	314.100	7.40	Fluxapyroxad-02	10.000	10.000	35.000	10.000
71	314.000	70.000	9.10	Hexaconazole-01	52.000	10.000	38.000	10.000
72	314.000	159.000	9.10	Hexaconazole-02	52.000	10.000	38.000	10.000
73	290.200	177.000	5.20	Imazethapyr-01	96.000	10.000	37.000	10.000
74	290.200	230.000	5.20	Imazethapyr-02	96.000	10.000	35.000	10.000
75	256.000	209.200	4.40	Imidacloprid-01	78.000	10.000	24.000	10.000
76	256.000	175.200	4.40	Imidacloprid-02	78.000	10.000	28.000	10.000

MRM Transition

	Q1 Mass (Da)	Q3 Mass (Da)	Retention Time (min)	ID	DP (volts)	EP (volts)	CE (volts)	CXP (volts)
39	350.000	266.100	8.60	Clodinafop-propargyl-01	81.000	10.000	21.000	10.000
40	350.000	91.000	8.60	Clodinafop-propargyl-02	81.000	10.000	41.000	10.000
41	240.100	125.000	6.90	Clomazone(Command)-01	46.000	10.000	27.000	10.000
42	240.000	89.000	6.90	Clomazone(Command)-02	46.000	10.000	65.000	10.000
43	250.000	169.000	4.40	Clothianidin-01	50.000	10.000	20.000	10.000
44	250.000	132.000	4.40	Clothianidin-02	50.000	10.000	29.000	10.000
45	375.000	256.000	9.70	Cyhalofop-butyl-01	40.000	10.000	21.000	10.000
46	375.000	120.000	9.70	Cyhalofop-butyl-02	40.000	10.000	41.000	10.000
47	357.900	281.000	10.40	Diclofop-Methyl-01	41.000	10.000	19.000	10.000
48	357.900	120.100	10.40	Diclofop-Methyl-02	41.000	10.000	37.000	10.000
49	405.900	161.200	5.90	Diclosulam-01	95.000	10.000	32.000	10.000
50	405.900	378.200	5.90	Diclosulam-02	95.000	10.000	21.000	10.000
51	406.000	250.900	9.50	Difenciconazole-01	122.000	10.000	35.000	10.000
52	406.000	337.200	9.50	Difenciconazole-02	122.000	10.000	24.000	10.000
53	233.000	72.200	6.00	Diuron-01	56.000	10.000	39.000	10.000
54	233.000	160.000	6.00	Diuron-02	56.000	10.000	37.000	10.000
55	328.000	109.000	10.50	Edifenphos-01	60.000	10.000	45.000	10.000
56	328.000	283.000	10.50	Edifenphos-02	60.000	10.000	23.000	10.000
57	330.100	121.000	8.10	Epoxiconazole-01	79.000	10.000	27.000	10.000
58	330.100	101.100	8.10	Epoxiconazole-02	79.000	10.000	63.000	10.000
59	397.100	261.100	8.90	Ethoxysulfuron-01	24.000	10.000	20.000	10.000
60	397.100	353.000	8.90	Ethoxysulfuron-02	24.000	10.000	16.000	10.000
61	384.168	282.100	10.20	Fluazifop-P-buthyl-01	76.000	10.000	29.000	10.000
62	384.168	328.100	10.20	Fluazifop-P-buthyl-02	76.000	10.000	25.000	10.000
63	488.100	156.000	6.80	Flucetosulfuron-01	87.000	10.000	25.000	10.000
64	488.100	273.000	6.80	Flucetosulfuron-02	87.000	10.000	33.000	10.000
65	364.100	194.200	8.00	Flufenacet-01	51.000	10.000	17.000	10.000
66	364.100	152.100	8.00	Flufenacet-02	51.000	10.000	29.000	10.000
67	316.000	247.000	8.40	Flusilazole-01	81.000	10.000	27.000	10.000
68	316.200	165.000	8.40	Flusilazole-02	81.000	10.000	37.000	10.000
69	382.000	342.000	7.40	Fluxapyroxad-01	10.000	10.000	30.000	10.000
70	382.000	314.100	7.40	Fluxapyroxad-02	10.000	10.000	35.000	10.000
71	314.000	70.000	9.10	Hexaconazole-01	52.000	10.000	38.000	10.000
72	314.000	159.000	9.10	Hexaconazole-02	52.000	10.000	38.000	10.000
73	290.200	177.000	5.20	Imazethapyr-01	96.000	10.000	37.000	10.000
74	290.200	230.000	5.20	Imazethapyr-02	96.000	10.000	35.000	10.000
75	256.000	209.200	4.40	Imidacloprid-01	78.000	10.000	24.000	10.000
76	256.000	175.200	4.40	Imidacloprid-02	78.000	10.000	28.000	10.000

	Q1 Mass (Da)	Q3 Mass (Da)	Retention Time (min)	ID	DP (volts)	EP (volts)	CE (volts)	CXP (volts)
77	528.000	203.000	9.60	Indoxacarb-01	20.000	10.000	70.000	10.000
78	528.000	56.000	9.60	Indoxacarb-02	20.000	10.000	56.000	10.000
79	507.900	167.200	6.60	Iodosulfuron-methyl-01	79.000	10.000	27.000	10.000
80	508.000	141.000	6.60	Iodosulfuron-methyl-02	81.000	10.000	35.000	10.000
81	289.100	91.000	8.70	Iprobenfos-01	56.000	10.000	31.000	10.000
82	289.100	205.000	8.70	Iprobenfos-02	56.000	10.000	15.000	10.000
83	291.000	231.200	7.60	Isoprothiolane-1	73.000	10.000	16.000	10.000
84	291.000	188.900	7.60	Isoprothiolane-2	33.000	10.000	28.000	10.000
85	207.200	72.100	6.40	Isoproturon-01	57.000	10.000	35.000	10.000
86	207.200	165.000	6.40	Isoproturon-02	57.000	10.000	20.000	10.000
87	314.000	116.000	8.70	Kresoxym methyl-01	60.000	10.000	51.000	10.000
88	314.000	132.000	8.70	Kresoxym methyl-02	60.000	10.000	30.000	10.000
89	249.100	182.000	7.10	Linuron-01	66.000	10.000	23.000	10.000
90	249.100	160.000	7.10	Linuron-02	66.000	10.000	27.000	10.000
91	504.100	182.100	6.00	MesoSulfuron-Methyl-01	111.000	10.000	30.000	10.000
92	504.100	139.200	6.00	MesoSulfuron-Methyl-02	111.000	10.000	71.000	10.000
93	280.000	220.000	6.40	Metalaxyl(including metalaxy	58.000	10.000	20.000	10.000
94	280.000	192.000	6.40	Metalaxyl(including metalaxy	58.000	10.000	28.000	10.000
95	222.200	165.000	6.40	Methabenzthiazuron-01	41.000	10.000	25.000	10.000
96	222.200	150.000	6.40	Methabenzthiazuron-02	41.000	10.000	47.000	10.000
97	163.000	106.000	4.00	Methomyl-01	34.000	10.000	17.000	10.000
98	163.000	88.000	4.00	Methomyl-02	34.000	10.000	17.000	10.000
99	215.100	187.100	5.60	Metribuzin-01	70.000	10.000	27.000	10.000
100	215.100	84.100	5.60	Metribuzin-02	70.000	10.000	29.000	10.000
101	382.000	167.000	5.40	Metsulfuron-methyl-01	76.000	10.000	21.000	10.000
102	382.110	198.970	5.40	Metsulfuron-methyl-02	25.000	10.000	22.000	10.000
103	224.000	127.000	4.10	Monocrotophos-01	52.000	10.000	16.000	10.000
104	224.000	98.000	4.10	Monocrotophos-02	52.000	10.000	20.000	10.000
105	493.000	158.100	9.80	Novaluron-01	71.000	10.000	27.000	10.000
106	493.000	141.100	9.80	Novaluron-02	71.000	10.000	69.000	10.000
107	425.100	182.100	6.30	Orthosulfamuron-01	50.000	10.000	35.000	10.000
108	425.100	156.100	6.30	Orthosulfamuron-02	50.000	10.000	35.000	10.000
109	341.100	229.900	9.10	Oxadiazon-01	100.000	10.000	22.000	10.000
110	341.100	150.900	9.10	Oxadiazon-02	100.000	10.000	39.000	10.000
111	345.200	303.000	10.60	Oxadiazon-01	71.000	10.000	19.000	10.000
112	345.200	219.900	10.60	Oxadiazon-02	71.000	10.000	29.000	10.000
113	247.000	169.000	3.90	Oxydemeton-methyl-01	71.000	10.000	19.000	10.000
114	247.000	126.900	3.90	Oxydemeton-methyl-02	11.000	10.000	39.000	10.000

MRM Transition

	Q1 Mass (Da)	Q3 Mass (Da)	Retention Time (min)	ID	DP (volts)	EP (volts)	CE (volts)	CXP (volts)
115	362.100	315.900	8.70	Oxyfluorfen-01	71.000	10.000	21.000	10.000
116	362.100	237.000	8.70	Oxyfluorfen-02	76.000	10.000	35.000	10.000
117	284.000	159.000	8.80	Penconazole-01	56.000	10.000	36.000	10.000
118	284.000	70.000	8.80	Penconazole-02	56.000	10.000	45.000	10.000
119	329.300	125.100	9.40	Pencycuron-01	71.000	10.000	33.000	10.000
120	329.300	218.000	9.40	Pencycuron-02	71.000	10.000	23.000	10.000
121	484.100	195.200	5.70	Penoxsulam-01	34.000	10.000	37.000	10.000
122	484.100	139.000	5.70	Penoxsulam-02	34.000	10.000	97.000	10.000
123	321.000	247.000	8.60	Phenthoate-01	34.000	10.000	17.000	10.000
124	321.000	275.000	8.60	Phenthoate-02	34.000	10.000	17.000	10.000
125	401.300	317.100	9.30	Pinoxaden-01	91.000	10.000	53.000	10.000
126	401.300	57.100	9.30	Pinoxaden-02	91.000	10.000	29.000	10.000
127	312.200	252.100	10.00	Pretilachlor-1	15.000	10.000	12.000	10.000
128	312.200	176.100	10.00	Pretilachlor-2	28.000	10.000	29.000	10.000
129	373.000	303.000	10.20	Profenofos-01	72.000	10.000	21.000	10.000
130	373.000	127.900	10.20	Profenofos-02	72.000	10.000	46.000	10.000
131	218.000	162.000	7.20	Propanil-01	82.000	10.000	21.000	10.000
132	218.000	127.100	7.20	Propanil-02	82.000	10.000	37.000	10.000
133	444.100	299.100	10.40	Propaquizafop-1	99.000	10.000	31.000	10.000
134	444.100	100.000	10.40	Propaquizafop-2	90.000	10.000	35.000	10.000
135	218.100	105.100	3.40	Pymetrozine-01	74.000	10.000	27.000	10.000
136	218.100	78.100	3.40	Pymetrozine-02	74.000	10.000	53.000	10.000
137	388.100	194.000	9.10	Pyraclostrobin-01	59.000	10.000	19.000	10.000
138	388.000	163.000	9.10	Pyraclostrobin-02	51.000	10.000	29.000	10.000
139	415.260	182.070	7.80	Pyrazosulfuron ethyl-01	25.000	10.000	20.000	10.000
140	415.260	139.050	7.80	Pyrazosulfuron ethyl-02	40.000	10.000	44.000	10.000
141	373.100	298.900	10.10	Quizalofop-ethyl-01	94.000	10.000	25.000	10.000
142	373.000	271.000	10.10	Quizalofop-ethyl-02	116.000	10.000	33.000	10.000
143	748.500	142.200	9.60	Spinetoram A-01	16.000	10.000	45.000	10.000
144	748.500	98.100	9.60	Spinetoram A-02	16.000	10.000	109.000	10.000
145	760.500	142.200	10.20	Spinetoram B-01	81.000	10.000	41.000	10.000
146	760.500	98.100	10.20	Spinetoram B-02	81.000	10.000	101.000	10.000
147	732.400	142.200	9.00	Spinosad A-01	40.000	10.000	33.000	10.000
148	732.400	98.100	9.00	Spinosad A-02	40.000	10.000	88.000	10.000
149	746.500	142.200	9.60	Spinosad D-01	60.000	10.000	33.000	10.000
150	746.500	98.200	9.60	Spinosad D-02	60.000	10.000	89.000	10.000
151	471.200	211.000	6.80	Sulfosulfuron-01	51.000	10.000	21.000	10.000
152	471.200	261.100	6.80	Sulfosulfuron-02	51.000	10.000	27.000	10.000

153	277.963	173.900	4.70	Sulfoxaflor-01	61.000	10.000	13.000	10.000
154	277.963	154.000	4.70	Sulfoxaflor-02	61.000	10.000	41.000	10.000
155	308.200	70.000	8.70	Tebuconazole-01	96.000	10.000	57.000	10.000
156	308.200	125.100	8.70	Tebuconazole-02	96.000	10.000	51.000	10.000
157	253.100	126.000	4.80	Thiacloprid-01	65.000	10.000	29.000	10.000
158	253.100	186.000	4.80	Thiacloprid-02	65.000	10.000	24.000	10.000
159	292.000	211.000	4.00	Thiamethoxam-01	74.000	10.000	17.000	10.000
160	292.000	181.000	4.00	Thiamethoxam-02	96.000	10.000	31.000	10.000
161	526.900	148.100	8.10	Thifluzamide-01	122.000	10.000	62.000	10.000
162	526.900	107.000	8.10	Thifluzamide-02	122.000	10.000	94.000	10.000
163	355.000	88.000	6.00	Thiodicarb-01	10.000	10.000	26.000	10.000
164	355.000	193.000	6.00	Thiodicarb-02	10.000	10.000	14.000	10.000
165	247.000	89.000	6.20	Thiometon-01	25.000	10.000	10.000	10.000
166	247.000	61.000	6.20	Thiometon-02	25.000	10.000	50.000	10.000
167	343.100	151.100	5.30	Thiophanate-methyl-01	95.000	10.000	29.000	10.000
168	343.100	311.000	5.30	Thiophanate methyl-02	76.000	10.000	17.000	10.000
169	364.200	152.000	8.00	Topramezone-01	81.000	10.000	22.000	10.000
170	364.200	124.300	8.00	Topramezone-02	81.000	10.000	50.000	10.000
171	294.000	197.200	7.60	Triadimefon-01	76.000	10.000	21.000	10.000
172	294.000	225.000	7.60	Triadimefon-02	76.000	10.000	19.000	10.000
173	402.100	167.100	5.20	Triasulfuron-01	46.000	10.000	25.000	10.000
174	402.100	140.800	5.20	Triasulfuron-02	46.000	10.000	29.000	10.000
175	257.000	108.900	4.60	Trichlorfon-01	61.000	10.000	27.000	10.000
176	257.000	220.800	4.60	Trichlorfon-02	61.000	10.000	17.000	10.000
177	190.000	163.000	5.10	Tricyclazole-01	100.000	10.000	33.000	10.000
178	190.000	136.000	5.10	Tricyclazole-02	100.000	10.000	41.000	10.000
179	409.000	186.000	9.70	Trifloxystrobin-01	51.000	10.000	23.000	10.000
180	409.000	206.000	9.70	Trifloxystrobin-02	51.000	10.000	21.000	10.000

MRM Transition[-Ve Mode]

	Q1 Mass (Da)	Q3 Mass (Da)	Retention Time (min)	ID	DP (volts)	EP (volts)	CE (volts)	CXP (volts)
1	681.200	254.000	8.48	Flubendiamide-01	-94.000	-12.000	-31.000	-11.000
2	681.200	274.000	8.49	Flubendiamide-02	-94.000	-12.000	-25.000	-11.000
3	434.910	330.000	8.29	Fipronil-01	-60.000	-5.500	-20.000	-4.000
4	436.915	332.000	8.29	Fipronil-02	-60.000	-5.500	-20.000	-4.000

Result and discussion

Antibiotics

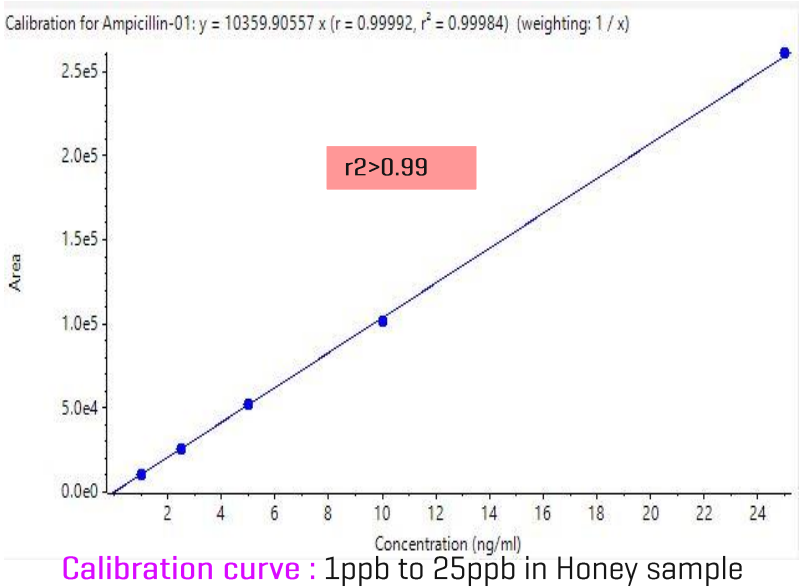


Ampicillin [m/z : 350.1>106.1]

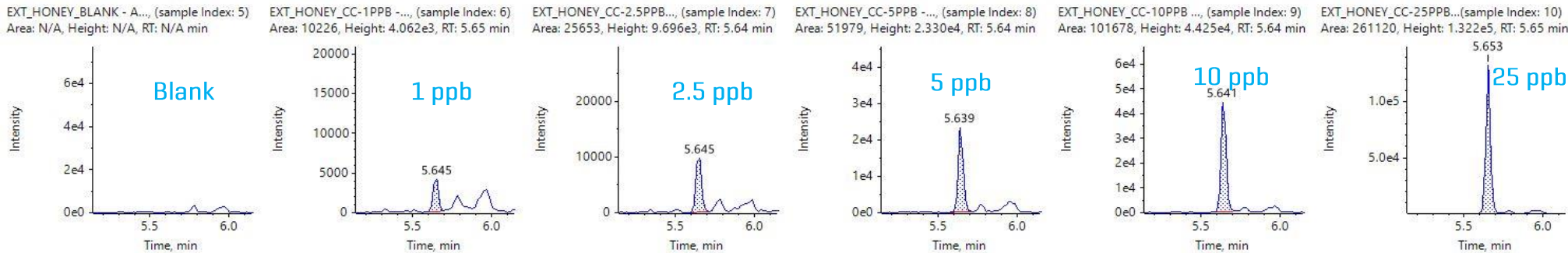
Result table

Index	Sample Name	Sample Type	Component Name	Area	Actual Concentr...	Calculat ... Concent...	Retent... Time	Used	Accuracy
3	EXT_HONEY_BLANK	Unknown	Ampicillin-01	N/A	N/A	N/A	N/A	☒	N/A
51	EXT_HONEY_CC-1PPB	Standard	Ampicillin-01	10226	1.00	0.987	5.65	☒	98.71
99	EXT_HONEY_CC-2.5PPB	Standard	Ampicillin-01	25653	2.50	2.476	5.64	☒	99.05
147	EXT_HONEY_CC-5PPB	Standard	Ampicillin-01	51979	5.00	5.017	5.64	☒	100.35
195	EXT_HONEY_CC-10PPB	Standard	Ampicillin-01	101678	10.00	9.815	5.64	☒	98.15
243	EXT_HONEY_CC-25PPB	Standard	Ampicillin-01	261120	25.00	25.205	5.65	☒	100.82
291	EXT_HONEY_BLANK	Unknown	Ampicillin-01	N/A	N/A	N/A	N/A	☒	N/A
339	EXT_HONEY_QC-10PPB-01	Quality Control	Ampicillin-01	98639	10.00	9.521	5.65	☒	95.21
387	EXT_HONEY_QC-10PPB-02	Quality Control	Ampicillin-01	101977	10.00	9.843	5.65	☒	98.43
435	EXT_HONEY_QC-10PPB-03	Quality Control	Ampicillin-01	101486	10.00	9.796	5.65	☒	97.96
483	EXT_HONEY_QC-10PPB-04	Quality Control	Ampicillin-01	98234	10.00	9.482	5.65	☒	94.82
531	EXT_HONEY_QC-10PPB-05	Quality Control	Ampicillin-01	107308	10.00	10.358	5.66	☒	103.58
579	EXT_HONEY_QC-10PPB-06	Quality Control	Ampicillin-01	102009	10.00	9.847	5.65	☒	98.47
627	EXT_HONEY_BLANK	Unknown	Ampicillin-01	N/A	N/A	N/A	N/A	☒	N/A
675	EXT_HONEY_QC-5PPB-01	Quality Control	Ampicillin-01	50050	5.00	4.831	5.65	☒	96.62
723	EXT_HONEY_QC-5PPB-02	Quality Control	Ampicillin-01	48567	5.00	4.688	5.65	☒	93.76
771	EXT_HONEY_QC-5PPB-03	Quality Control	Ampicillin-01	46650	5.00	4.503	5.65	☒	90.06
819	EXT_HONEY_QC-5PPB-04	Quality Control	Ampicillin-01	48807	5.00	4.711	5.65	☒	94.22
867	EXT_HONEY_QC-5PPB-05	Quality Control	Ampicillin-01	49714	5.00	4.799	5.65	☒	95.97
915	EXT_HONEY_QC-5PPB-06	Quality Control	Ampicillin-01	50968	5.00	4.920	5.65	☒	98.39
963	EXT_HONEY_BLANK	Unknown	Ampicillin-01	N/A	N/A	N/A	N/A	☒	N/A
1011	EXT_HONEY_SAMPLE-01	Unknown	Ampicillin-01	2175	N/A	0.210	5.76	☒	N/A
1059	EXT_HONEY_SAMPLE-02 (Du...	Unknown	Ampicillin-01	1145	N/A	0.111	5.78	☒	N/A

- Accuracy are well within the limit of $\pm 20\%$ throughout the calibration curve
- Correlation of coefficient R2 value 0.99



Result table: Calibration, QC, and samples



Chromatogram: Matrix based linearity from 1ppb to 25ppb in Honey



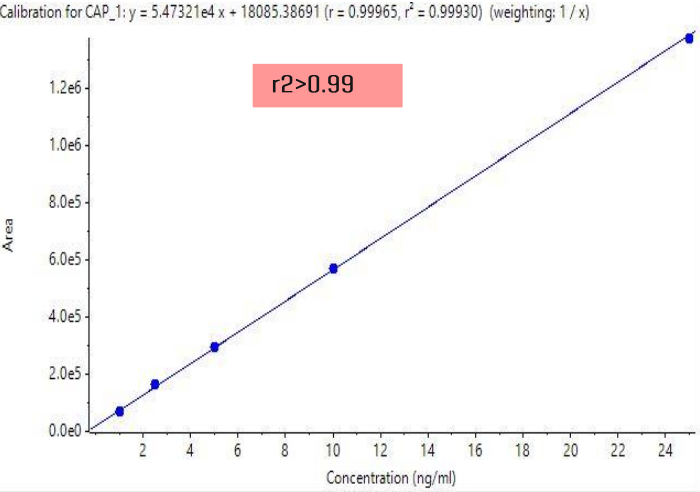
Chloramphenicol (m/z : 320.8>151.8)

Result table

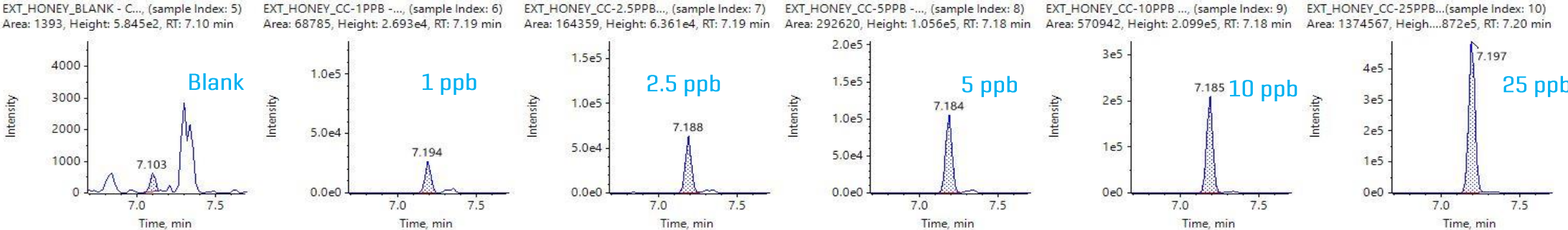
Index	Sample Name	Sample Type	Compo... Name	Area	Actual Concentr...	Calculat ... Concent...	Retent... Time	Used	Accuracy
47	EXT_HONEY_BLANK	Unknown	CAP_1	1393	N/A	< 0	7.10	☑	N/A
95	EXT_HONEY_CC-1PPB	Standard	CAP_1	68785	1.00	0.926	7.19	☑	92.63
143	EXT_HONEY_CC-2.5PPB	Standard	CAP_1	164359	2.50	2.673	7.19	☑	106.90
191	EXT_HONEY_CC-5PPB	Standard	CAP_1	292620	5.00	5.016	7.18	☑	100.32
239	EXT_HONEY_CC-10PPB	Standard	CAP_1	570942	10.00	10.101	7.18	☑	101.01
287	EXT_HONEY_CC-25PPB	Standard	CAP_1	1374567	25.00	24.784	7.20	☑	99.14
335	EXT_HONEY_BLANK	Unknown	CAP_1	13480	N/A	< 0	7.33	☑	N/A
383	EXT_HONEY_QC-10PPB-01	Quality Control	CAP_1	581223	10.00	10.289	7.20	☑	102.89
431	EXT_HONEY_QC-10PPB-02	Quality Control	CAP_1	636391	10.00	11.297	7.19	☑	112.97
479	EXT_HONEY_QC-10PPB-03	Quality Control	CAP_1	565757	10.00	10.006	7.20	☑	100.06
527	EXT_HONEY_QC-10PPB-04	Quality Control	CAP_1	567006	10.00	10.029	7.19	☑	100.29
575	EXT_HONEY_QC-10PPB-05	Quality Control	CAP_1	578873	10.00	10.246	7.20	☑	102.46
623	EXT_HONEY_QC-10PPB-06	Quality Control	CAP_1	582889	10.00	10.319	7.20	☑	103.19
671	EXT_HONEY_BLANK	Unknown	CAP_1	996	N/A	< 0	7.10	☑	N/A
719	EXT_HONEY_QC-5PPB-01	Quality Control	CAP_1	297753	5.00	5.110	7.20	☑	102.20
767	EXT_HONEY_QC-5PPB-02	Quality Control	CAP_1	298980	5.00	5.132	7.20	☑	102.64
815	EXT_HONEY_QC-5PPB-03	Quality Control	CAP_1	296521	5.00	5.087	7.19	☑	101.74
863	EXT_HONEY_QC-5PPB-04	Quality Control	CAP_1	286132	5.00	4.897	7.19	☑	97.95
911	EXT_HONEY_QC-5PPB-05	Quality Control	CAP_1	290113	5.00	4.970	7.19	☑	99.40
959	EXT_HONEY_QC-5PPB-06	Quality Control	CAP_1	301474	5.00	5.178	7.20	☑	103.55
1007	EXT_HONEY_BLANK	Unknown	CAP_1	11756	N/A	< 0	7.34	☑	N/A
1055	EXT_HONEY_SAMPLE-01	Unknown	CAP_1	119	N/A	< 0	7.19	☑	N/A
1103	EXT_HONEY_SAMPLE-02 (Du...	Unknown	CAP_1	131	N/A	< 0	7.21	☑	N/A

Result table: Calibration, QC, and samples

- Accuracy are well within the limit of $\pm 20\%$ throughout the calibration curve
- Correlation of coefficient R2 value 0.99



Calibration curve : 1ppb to 25ppb in Honey sample



Chromatogram: Matrix based linearity from 1ppb to 25ppb in Honey

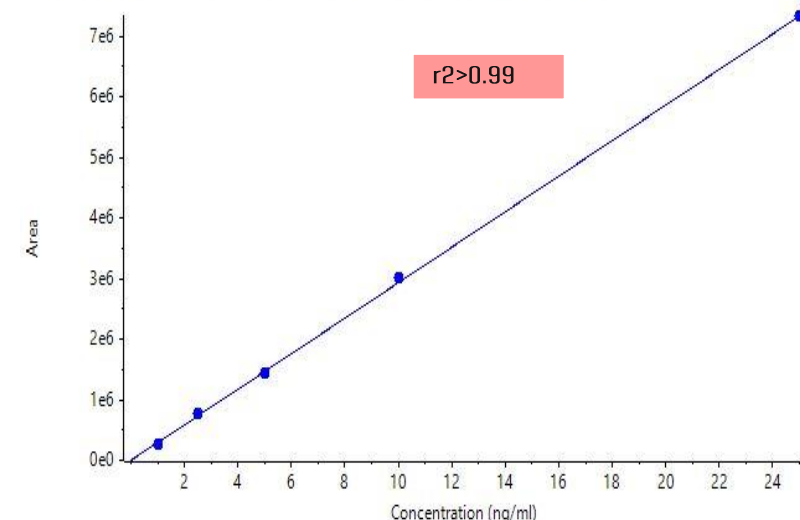
Sulfadoxine [m/z : 310.97>155.9]

Result table

Index	Sample Name	Sample Type	Component Name	Area	Actual Concentr...	Calculated Concentr...	Retention Time	Used	Accuracy
46	EXT_HONEY_BLANK	Unknown	Sulfadoxine-02	8276	N/A	0.350	7.41	☑	N/A
94	EXT_HONEY_CC-1PPB	Standard	Sulfadoxine-02	129730	1.00	1.121	7.42	☑	112.12
142	EXT_HONEY_CC-2.5PPB	Standard	Sulfadoxine-02	333156	2.50	2.412	7.42	☑	96.49
190	EXT_HONEY_CC-5PPB	Standard	Sulfadoxine-02	657360	5.00	4.470	7.41	☑	89.40
238	EXT_HONEY_CC-10PPB	Standard	Sulfadoxine-02	1287998	10.00	8.473	7.41	☐	84.73
286	EXT_HONEY_CC-25PPB	Standard	Sulfadoxine-02	3970261	25.00	25.496	7.42	☑	101.99
334	EXT_HONEY_BLANK	Unknown	Sulfadoxine-02	8571	N/A	0.352	7.42	☑	N/A
382	EXT_HONEY_QC-10PPB-01	Quality Control	Sulfadoxine-02	1358670	10.00	8.921	7.42	☑	89.21
430	EXT_HONEY_QC-10PPB-02	Quality Control	Sulfadoxine-02	1326822	10.00	8.719	7.42	☑	87.19
478	EXT_HONEY_QC-10PPB-03	Quality Control	Sulfadoxine-02	1361361	10.00	8.938	7.42	☑	89.38
526	EXT_HONEY_QC-10PPB-04	Quality Control	Sulfadoxine-02	1366102	10.00	8.968	7.42	☑	89.68
574	EXT_HONEY_QC-10PPB-05	Quality Control	Sulfadoxine-02	1408972	10.00	9.240	7.43	☑	92.40
622	EXT_HONEY_QC-10PPB-06	Quality Control	Sulfadoxine-02	1453300	10.00	9.522	7.43	☑	95.22
670	EXT_HONEY_BLANK	Unknown	Sulfadoxine-02	5240	N/A	0.331	7.42	☑	N/A
718	EXT_HONEY_QC-5PPB-01	Quality Control	Sulfadoxine-02	722722	5.00	4.885	7.43	☑	97.70
766	EXT_HONEY_QC-5PPB-02	Quality Control	Sulfadoxine-02	720923	5.00	4.873	7.43	☑	97.47
814	EXT_HONEY_QC-5PPB-03	Quality Control	Sulfadoxine-02	756727	5.00	5.101	7.42	☑	102.01
862	EXT_HONEY_QC-5PPB-04	Quality Control	Sulfadoxine-02	734490	5.00	4.960	7.42	☑	99.19
910	EXT_HONEY_QC-5PPB-05	Quality Control	Sulfadoxine-02	737633	5.00	4.979	7.42	☑	99.59
958	EXT_HONEY_QC-5PPB-06	Quality Control	Sulfadoxine-02	761901	5.00	5.133	7.42	☑	102.67
1006	EXT_HONEY_BLANK	Unknown	Sulfadoxine-02	8573	N/A	0.352	7.41	☑	N/A
1054	EXT_HONEY_SAMPLE-01	Unknown	Sulfadoxine-02	1155	N/A	0.305	7.40	☑	N/A
1102	EXT_HONEY_SAMPLE-02 (Du...	Unknown	Sulfadoxine-02	1734	N/A	0.309	7.41	☑	N/A

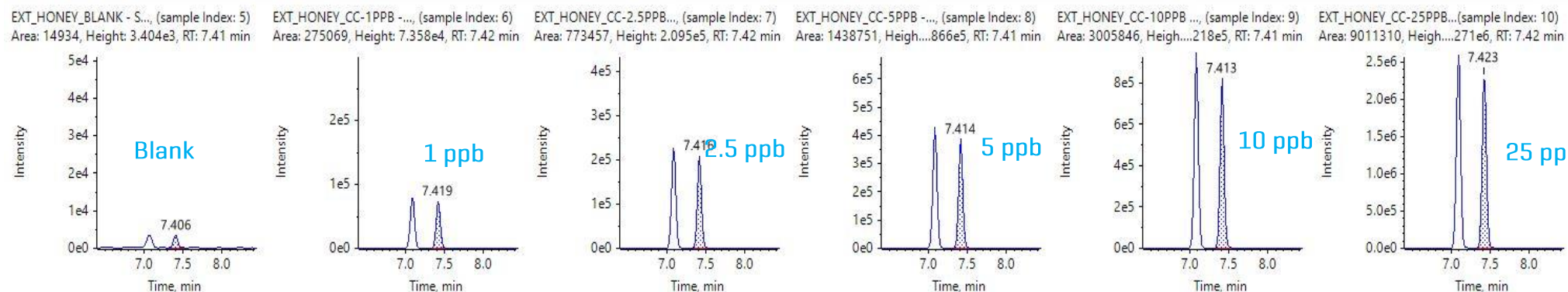
- Accuracy are well within the limit of $\pm 20\%$ throughout the calibration curve
- Correlation of coefficient R^2 value 0.99

Calibration for Sulfadoxine-01: $y = 2.93265e5 x$ ($r = 0.99904$, $r^2 = 0.99808$) (weighting: $1/x^2$)



Calibration curve : 1ppb to 25ppb in Honey sample

Result table: Calibration, QC, and samples



Chromatogram: Matrix based linearity from 1ppb to 25ppb in Honey

A full-page background image of a male scientist with a long white beard and safety glasses, wearing a white lab coat and blue gloves. He is using a pipette to transfer liquid into a clear bottle. The background shows a laboratory environment with various equipment and a poster on the wall.

Repeatability for 5ppb and 10ppb

Statistics [Repeatability]

5ppb multiple injection

Row	Component Name	Actual Concentration	Num. Values	Mean	Standard Deviation	Percent CV	Value #1	Value #2	Value #3	Value #4	Value #5	Value #6
13	Sulfamethoxypyridazine-01	5.00	6 of 6	548104	5582	1.02	549448	545623	556974	543177	542176	551224
11	Sulfamethazine-01	5.00	6 of 6	1522193	16922	1.11	1525845	1516069	1498663	1527558	1549622	1515400
10	Sulfadimethoxine-01	5.00	6 of 6	1935884	31386	1.62	1954900	1906841	1886355	1960086	1958873	1948252
20	CAP_1	5.00	6 of 6	295162	5831	1.98	297753	298980	296521	286132	290113	301474
14	Sulfapyridine-01	5.00	6 of 6	573708	13825	2.41	577897	577513	555567	596371	568580	566317
8	Oxytetracycline-01	5.00	6 of 6	128862	3144	2.44	127436	134519	126497	126177	128216	130329
1	4- epi Tetracycline-01	5.00	6 of 6	500744	12872	2.57	519102	481103	503256	508103	498493	494406
15	Sulfathiazole-01	5.00	6 of 6	278320	8219	2.95	270270	267092	285250	285332	276775	285199
2	Ampicillin-01	5.00	6 of 6	49126	1492	3.04	50050	48567	46650	48807	49714	50968
16	Tetracycline-01	5.00	6 of 6	464047	14190	3.06	471158	459205	473468	478162	438659	463629
12	Sulfamethoxazole-01	5.00	6 of 6	688487	22814	3.31	705134	710769	676773	668288	710070	659890
6	enrofloxacin-01	5.00	6 of 6	2470846	85128	3.45	2496656	2409196	2364407	2427817	2590116	2536883
17	Trimethoprim-01	5.00	6 of 6	1204685	41654	3.46	1252287	1216045	1204282	1160317	1243476	1151704
5	Doxycycline-01	5.00	6 of 6	165596	5951	3.59	171433	168506	157350	167152	170136	159000
9	Sulfadiazine-01	5.00	6 of 6	351790	13503	3.84	359351	331185	357410	346917	370165	345713
19	Sulfadoxine-01	5.00	6 of 6	1690488	65205	3.86	1683832	1611428	1627622	1743448	1695671	1780930
18	Tylosin-01	5.00	6 of 6	121021	5316	4.39	119395	119077	112727	125390	127841	121697
4	Ciprofloxacin-01	5.00	6 of 6	510868	22924	4.49	489765	492532	540710	531990	490226	519986
3	Chlortetracycline-01	5.00	6 of 6	305275	17475	5.72	315149	302416	282738	321702	322752	286891
7	Erythromycin-01	5.00	6 of 6	23306	1818	7.80	23416	24588	25347	23937	22286	20261

✓ Percent CV is found <8% for all conc. level across ten replicates

Statistics (Repeatability)

10ppb multiple injection

Row	Component Name	Actual Concentration	Num. Values	Mean	Standard Deviation	Percent CV	Average...	Value #1	Value #2	Value #3	Value #4	Value #5	Value #6
7	Erythromycin-01	10.00	6 of 6	8.298	0.413	4.98	82.98	9.006	7.745	8.252	8.161	8.426	8.198
15	Sulfathiazole-01	10.00	6 of 6	9.146	0.337	3.68	91.46	9.376	8.889	9.178	8.621	9.541	9.271
12	Sulfamethoxazole-01	10.00	6 of 6	9.203	0.416	4.52	92.03	8.749	8.727	9.219	9.217	9.543	9.766
19	Sulfadoxine-01	10.00	6 of 6	9.325	0.312	3.35	93.25	8.838	9.428	9.390	9.162	9.352	9.782
13	Sulfamethoxypyridazine-01	10.00	6 of 6	9.523	0.197	2.07	95.23	9.676	9.566	9.605	9.143	9.497	9.652
14	Sulfapyridine-01	10.00	6 of 6	9.579	0.341	3.56	95.79	9.493	8.981	10.012	9.717	9.596	9.674
9	Sulfadiazine-01	10.00	6 of 6	9.630	0.215	2.23	96.30	9.522	9.860	9.334	9.611	9.900	9.555
16	Tetracycline-01	10.00	6 of 6	9.680	0.344	3.56	96.80	9.707	9.439	9.337	10.124	9.413	10.063
4	Ciprofloxacin-01	10.00	6 of 6	9.690	0.293	3.03	96.90	9.505	9.808	9.692	9.891	10.030	9.214
17	Trimethoprim-01	10.00	6 of 6	9.797	0.307	3.13	97.97	10.259	9.516	9.890	9.601	9.506	10.012
2	Ampicillin-01	10.00	6 of 6	9.808	0.314	3.20	98.08	9.521	9.843	9.796	9.482	10.358	9.847
1	4- epi Tetracycline-01	10.00	6 of 6	9.819	0.261	2.66	98.19	9.933	9.333	9.832	9.802	9.904	10.110
6	enrofloxacin-01	10.00	6 of 6	9.955	0.217	2.18	99.55	10.092	9.964	9.817	10.309	9.822	9.724
3	Chlortetracycline-01	10.00	6 of 6	10.050	0.606	6.03	100.50	8.836	10.329	10.451	10.307	10.289	10.088
8	Oxytetracycline-01	10.00	6 of 6	10.077	0.473	4.69	100.77	9.641	10.076	9.492	10.801	10.318	10.137
20	CAP_1	10.00	6 of 6	10.365	0.476	4.59	103.65	10.289	11.297	10.006	10.029	10.246	10.319
18	Tylosin-01	10.00	5 of 6	10.443	0.286	2.74	104.43	8.926	10.078	10.453	10.372	10.877	10.435
5	Doxycycline-01	10.00	6 of 6	10.533	0.218	2.07	105.33	10.606	10.449	10.391	10.940	10.345	10.469
11	Sulfamethazine-01	10.00	6 of 6	10.836	0.292	2.69	108.36	10.294	10.741	10.896	10.997	11.103	10.984
10	Sulfadimethoxine-01	10.00	6 of 6	11.051	0.388	3.51	110.51	10.460	10.815	11.176	10.953	11.431	11.474

✓Percent CV is found <6% for all conc. level across ten replicates

Concentration of antibiotic residues in honey samples

Analytes Name	Detection[ug/kg]	SPECS [MRL-PPB]
Ampicillin	0.210[BLQ]	10
Sulfadoxine	0.305[BLQ]	10

✓Remaining all other analyte are not detected.

Result and discussion

Specified Rice marker



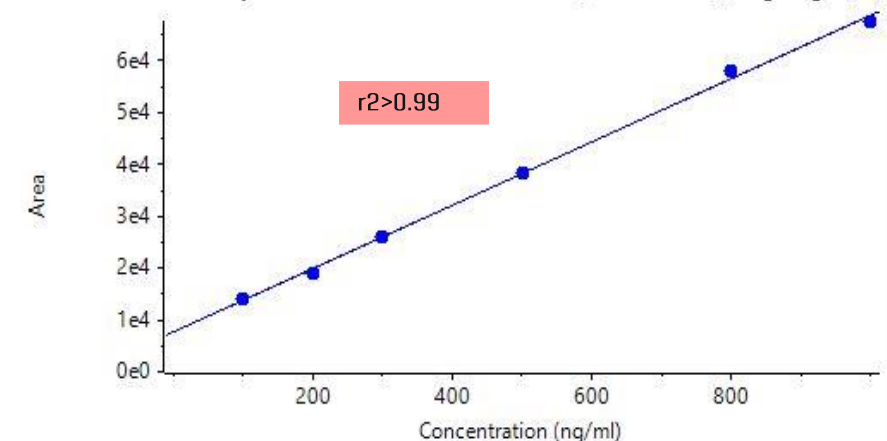
Acetyl furan-3-Glucopyranoside [m/z : 310.9>149.0]

Result table

Index	Sample Name	Sample T...	Component Name	Area	Actual Concentr...	Calculated Concentr...	Retention Time	Used	Accuracy
1	EXT_honey_Blank	Unknown	SMR-01	8546	N/A	10.787	3.97	☑	N/A
3	EXT_honey_CC100PPB	Standard	SMR-01	14131	100.00	102.994	3.98	☑	102.99
5	EXT_honey_CC200PPB	Standard	SMR-01	19138	200.00	185.675	3.97	☑	92.84
7	EXT_honey_CC300PPB	Standard	SMR-01	26109	300.00	300.775	3.98	☑	100.26
9	EXT_honey_CC500PPB	Standard	SMR-01	38223	500.00	500.802	3.97	☑	100.16
11	EXT_honey_CC800PPB	Standard	SMR-01	58160	800.00	829.994	3.97	☑	103.75
13	EXT_honey_CC1000PPB	Standard	SMR-01	67546	1000.00	984.975	3.98	☑	98.50
15	EXT_honey_Blank	Unknown	SMR-01	9196	N/A	21.514	3.99	☑	N/A
17	EXT_honey_Sample-01	Unknown	SMR-01	1462	N/A	< 0	3.99	☑	N/A
19	EXT_honey_Sample-02 dup	Unknown	SMR-01	1650	N/A	< 0	4.02	☑	N/A
21	EXT_honey_QC_1000PPB-01	Quality Con...	SMR-01	75462	1000.00	1115.679	4.05	☑	111.57
23	EXT_honey_QC_1000PPB-02	Quality Con...	SMR-01	75554	1000.00	1117.201	4.06	☑	111.72
25	EXT_honey_QC_1000PPB-03	Quality Con...	SMR-01	75958	1000.00	1123.872	4.06	☑	112.39
27	EXT_honey_QC_1000PPB-04	Quality Con...	SMR-01	71455	1000.00	1049.519	4.06	☑	104.95
29	EXT_honey_QC_1000PPB-05	Quality Con...	SMR-01	70828	1000.00	1039.172	4.06	☑	103.92
31	EXT_honey_QC_1000PPB-06	Quality Con...	SMR-01	75207	1000.00	1111.472	4.06	☑	111.15
33	EXT_honey_Blank	Unknown	SMR-01	461	N/A	< 0	3.92	☑	N/A
35	EXT_honey_QC500PPB-01	Quality Con...	SMR-01	42387	500.00	569.559	4.07	☑	113.91
37	EXT_honey_QC500PPB-02	Quality Con...	SMR-01	46444	500.00	636.536	4.07	☑	127.31
39	EXT_honey_QC500PPB-03	Quality Con...	SMR-01	44271	500.00	600.668	4.08	☑	120.13
41	EXT_honey_QC500PPB-04	Quality Con...	SMR-01	44877	500.00	610.674	4.08	☑	122.13
43	EXT_honey_QC500PPB-05	Quality Con...	SMR-01	43894	500.00	594.443	4.08	☑	118.89
45	EXT_honey_QC500PPB-06	Quality Con...	SMR-01	44459	500.00	603.771	4.08	☑	120.75

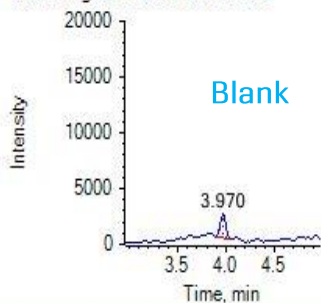
- Accuracy are well within the limit of $\pm 20\%$ throughout the calibration curve
- Correlation of coefficient R2 value 0.99

Calibration for SMR-01: $y = 60.98996x + 7739$, $r = 0.99910$, $r^2 = 0.99820$ (weighting: $1/x$)

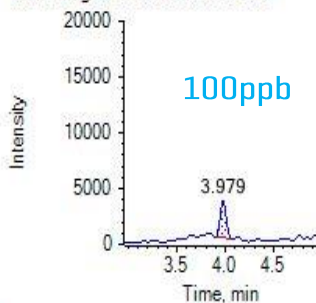


Calibration curve : 100ppb to 1000ppb in Honey sample

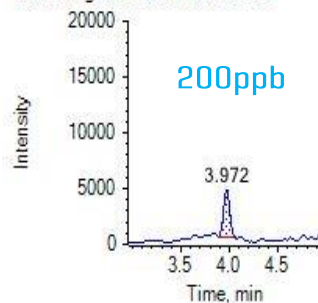
EXT_honey_Blank - ... (sample Index: 9)
Area: 8546, Height: 0.02e3, RT: 3.97 min
Noise Region Start-End: 1.86-2.36



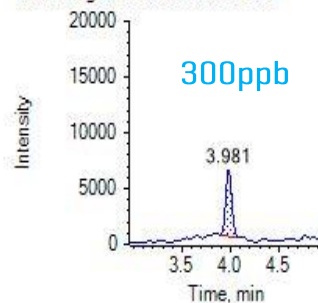
EXT_honey_CC100P... (sample Index: 10)
Area: 14131, Height: 0.2e3, RT: 3.98 min
Noise Region Start-End: 1.86-2.36



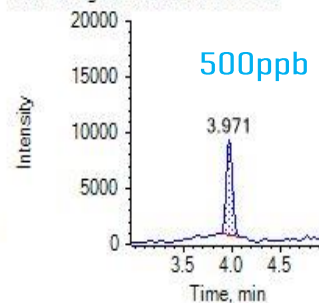
EXT_honey_CC200P... (sample Index: 11)
Area: 19138, Height: 0.2e3, RT: 3.97 min
Noise Region Start-End: 1.86-2.36



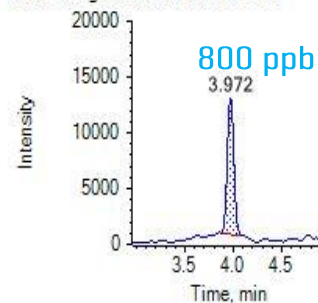
EXT_honey_CC300P... (sample Index: 12)
Area: 26109, Height: 0.3e3, RT: 3.98 min
Noise Region Start-End: 1.86-2.36



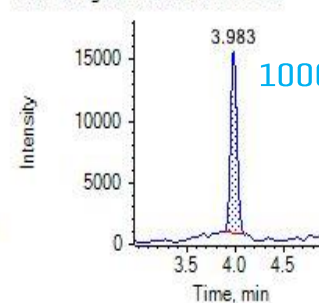
EXT_honey_CC500P... (sample Index: 13)
Area: 38223, Height: 0.8e3, RT: 3.97 min
Noise Region Start-End: 1.86-2.36



EXT_honey_CC800P... (sample Index: 14)
Area: 58160, Height: 1.1e4, RT: 3.97 min
Noise Region Start-End: 1.86-2.36



EXT_honey_CC1000... (sample Index: 15)
Area: 67546, Height: 1.1e4, RT: 3.98 min
Noise Region Start-End: 1.86-2.36



Chromatogram: Matrix based linearity from 100ppb to 1000ppb in Honey

Repeatability for 5ppb and 10ppb

Row	Component Name	Actual Concentration	Num. Values	Mean	Standard Deviation	Percent CV	Average A...	Value #1	Value #2	Value #3	Value #4	Value #5	Value #6
1	SMR-01	500.00	6 of 6	602.609	21.818	3.62	120.52	569.559	636.536	600.668	610.674	594.443	603.771
2	SMR-01	1000.00	6 of 6	1092.819	37.900	3.47	109.28	1115.679	1117.201	1123.872	1049.519	1039.172	1111.472

✓Percent CV is found <4 % for all conc. level across ten replicates

Result and discussion

Multi Residue pesticide

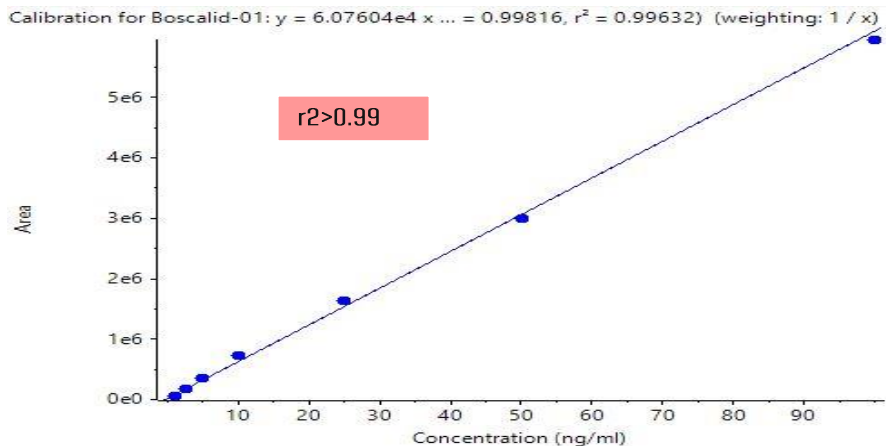


Boscalid [m/z :343.0>307.0]

Result table

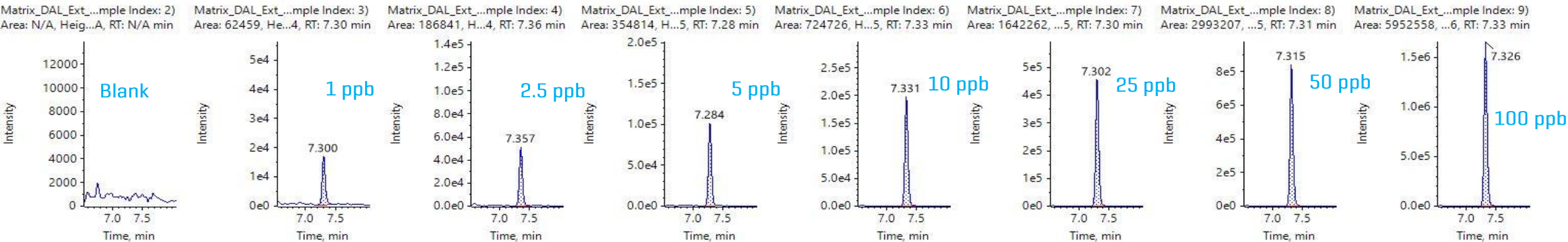
Index	Sample Name	Sample Type	Component Name	Area	Actual Concentr...	Calculat ... Concentr...	Retent... Time	Used	Accuracy
19	Matrix_DAL_Ext_Blank	Unknown	Boscalid-01	N/A	N/A	N/A	N/A	☒	N/A
203	Matrix_DAL_Ext_1ppb	Standard	Boscalid-01	62459	1.00	0.932	7.30	☒	93.20
387	Matrix_DAL_Ext_2.5ppb	Standard	Boscalid-01	186841	2.50	2.806	7.36	☒	112.23
571	Matrix_DAL_Ext_5ppb	Standard	Boscalid-01	354814	5.00	5.336	7.28	☒	106.73
755	Matrix_DAL_Ext_10ppb	Standard	Boscalid-01	724726	10.00	10.909	7.33	☒	109.09
939	Matrix_DAL_Ext_25ppb	Standard	Boscalid-01	1642262	25.00	24.731	7.30	☒	98.93
1123	Matrix_DAL_Ext_50ppb	Standard	Boscalid-01	2993207	50.00	45.083	7.31	☒	90.17
1307	Matrix_DAL_Ext_100ppb	Standard	Boscalid-01	5952558	100.00	89.666	7.33	☒	89.67
1491	Matrix_DAL_Ext_Blank	Unknown	Boscalid-01	N/A	N/A	N/A	N/A	☒	N/A
1675	Matrix_DAL_Sample_01	Unknown	Boscalid-01	904	N/A	0.005	7.57	☒	N/A
1859	Matrix_DAL_Sample_02 (DUP)	Unknown	Boscalid-01	701	N/A	0.002	6.98	☒	N/A

- Accuracy are well within the limit of $\pm 20\%$ throughout the calibration curve
- Correlation of coefficient R2 value 0.99



Result table: Calibration, QC, and samples

Calibration curve : 1ppb to 100ppb in cereal sample



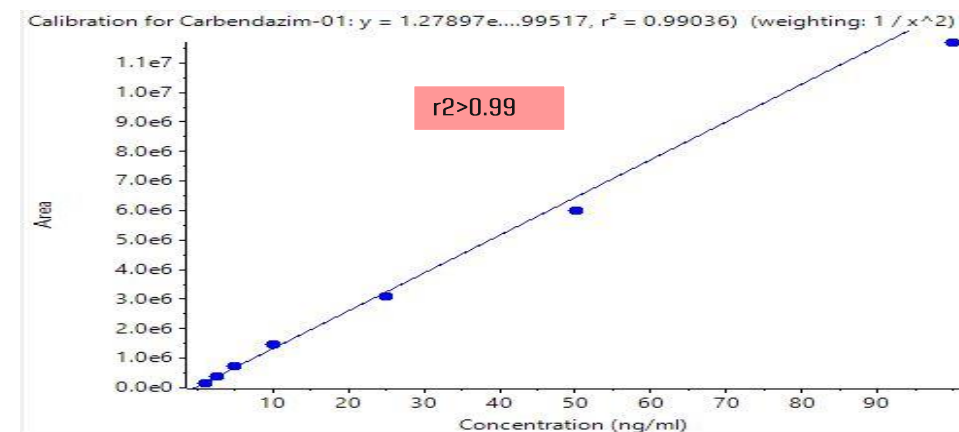
Chromatogram: Matrix based linearity from 1ppb to 100ppb in cereal sample

Carbendazim [m/z :192>160]

Result table

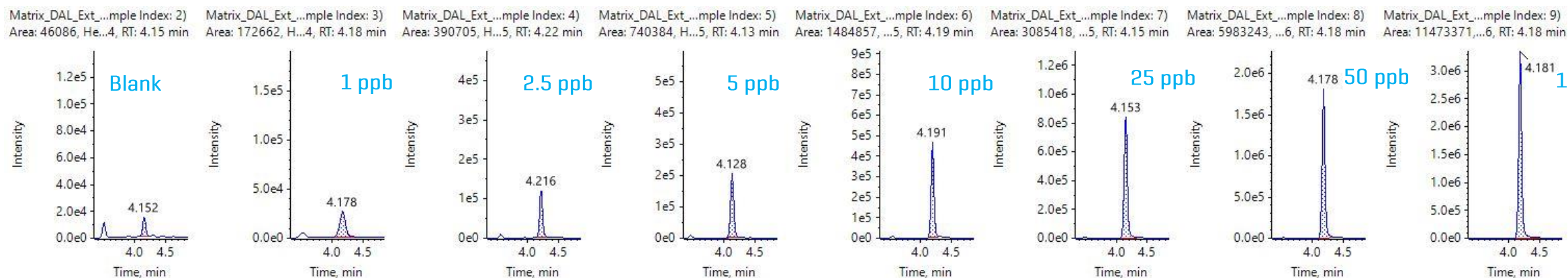
Index	Sample Name	Sample Type	Component Name	Area	Actual Concentr...	Calculated Concentr...	Retention Time	Used	Accuracy
27	Matrix_DAL_Ext_Blank	Unknown	Carbendazim-01	46086	N/A	< 0	4.15	☑	N/A
211	Matrix_DAL_Ext_1ppb	Standard	Carbendazim-01	172662	1.00	0.950	4.18	☑	94.98
395	Matrix_DAL_Ext_2.5ppb	Standard	Carbendazim-01	390705	2.50	2.661	4.22	☑	106.44
579	Matrix_DAL_Ext_5ppb	Standard	Carbendazim-01	740384	5.00	5.405	4.13	☑	108.11
763	Matrix_DAL_Ext_10ppb	Standard	Carbendazim-01	1484857	10.00	11.248	4.19	☑	112.48
947	Matrix_DAL_Ext_25ppb	Standard	Carbendazim-01	3085418	25.00	23.810	4.15	☑	95.24
1131	Matrix_DAL_Ext_50ppb	Standard	Carbendazim-01	5983243	50.00	46.552	4.18	☑	93.10
1315	Matrix_DAL_Ext_100ppb	Standard	Carbendazim-01	11473371	100.00	89.639	4.18	☑	89.64
1499	Matrix_DAL_Ext_Blank	Unknown	Carbendazim-01	42941	N/A	< 0	4.17	☑	N/A
1683	Matrix_DAL_Sample_01	Unknown	Carbendazim-01	316765	N/A	2.081	4.18	☑	N/A
1867	Matrix_DAL_Sample_02 (DUP)	Unknown	Carbendazim-01	311235	N/A	2.037	4.20	☑	N/A

- Accuracy are well within the limit of $\pm 20\%$ throughout the calibration curve
- Correlation of coefficient R2 value 0.99



Calibration curve : 1ppb to 100ppb in cereal sample

Result table: Calibration, QC, and samples



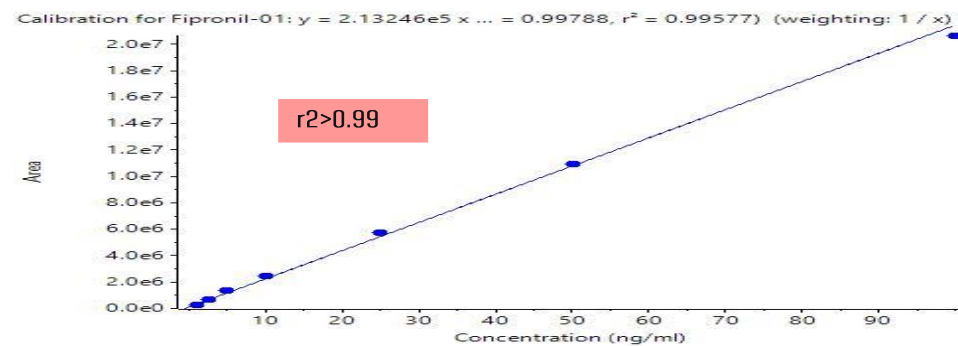
Chromatogram: Matrix based linearity from 1ppb to 100ppb in cereal sample

Fipronil (m/z :434.91>330)

Result table

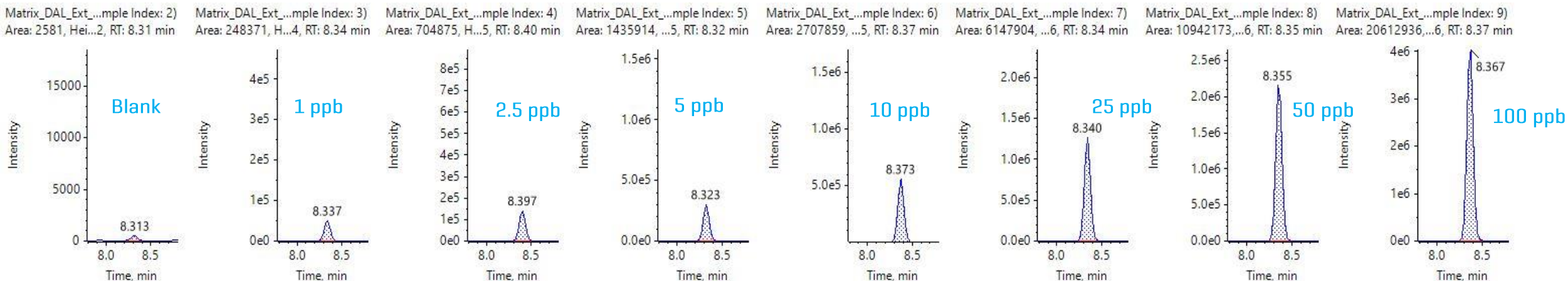
Index	Sample Name	Sample Type	Component Name	Area	Actual Concentr...	Calculated Concentr...	Retention Time	Used	Accuracy
183	Matrix_DAL_Ext_Blank	Unknown	Fipronil-01	2581	N/A	< 0	8.31	☑	N/A
367	Matrix_DAL_Ext_1ppb	Standard	Fipronil-01	248371	1.00	0.920	8.34	☑	91.99
551	Matrix_DAL_Ext_2.5ppb	Standard	Fipronil-01	704875	2.50	2.778	8.40	☑	111.13
735	Matrix_DAL_Ext_5ppb	Standard	Fipronil-01	1435914	5.00	5.754	8.32	☑	115.08
919	Matrix_DAL_Ext_10ppb	Standard	Fipronil-01	2707859	10.00	10.932	8.37	☑	109.32
1103	Matrix_DAL_Ext_25ppb	Standard	Fipronil-01	6147904	25.00	24.936	8.34	☑	99.74
1287	Matrix_DAL_Ext_50ppb	Standard	Fipronil-01	10942173	50.00	44.453	8.35	☑	88.91
1471	Matrix_DAL_Ext_100ppb	Standard	Fipronil-01	20612936	100.00	83.821	8.37	☑	83.82
1655	Matrix_DAL_Ext_Blank	Unknown	Fipronil-01	2679	N/A	< 0	8.35	☑	N/A
1839	Matrix_DAL_Sample_01	Unknown	Fipronil-01	1719	N/A	< 0	8.35	☑	N/A
2023	Matrix_DAL_Sample_02 (DUP)	Unknown	Fipronil-01	1623	N/A	< 0	8.39	☑	N/A

- Accuracy are well within the limit of $\pm 20\%$ throughout the calibration curve
- Correlation of coefficient R2 value 0.99



Result table: Calibration, QC, and samples

Calibration curve : 1ppb to 100ppb in cereal sample



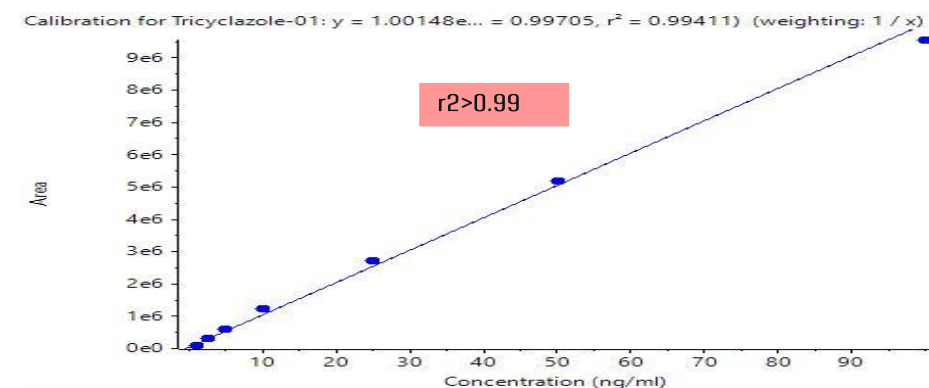
Chromatogram: Matrix based linearity from 1ppb to 100ppb in cereal sample

Tricyclazole (m/z : 190>163)

Result table

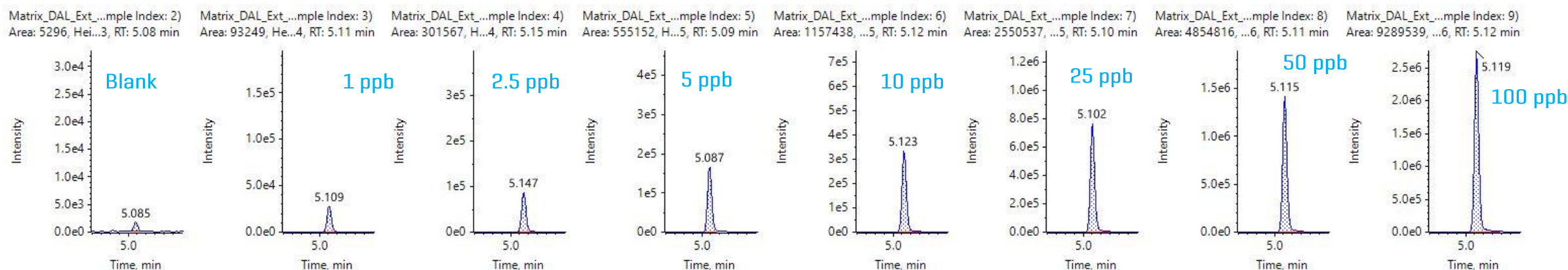
Index	Sample Name	Sample Type	Component Name	Area	Actual Concentr...	Calculat... Concent...	Retent... Time	Used	Accuracy
177	Matrix_DAL_Ext_Blank	Unknown	Tricyclazole-01	N/A	N/A	N/A	N/A	☑	N/A
361	Matrix_DAL_Ext_1ppb	Standard	Tricyclazole-01	105208	1.00	0.967	5.11	☑	96.66
545	Matrix_DAL_Ext_2.5ppb	Standard	Tricyclazole-01	324512	2.50	2.981	5.15	☑	119.25
729	Matrix_DAL_Ext_5ppb	Standard	Tricyclazole-01	622717	5.00	5.721	5.09	☑	114.42
913	Matrix_DAL_Ext_10ppb	Standard	Tricyclazole-01	1236656	10.00	11.361	5.12	☑	113.61
1097	Matrix_DAL_Ext_25ppb	Standard	Tricyclazole-01	2704143	25.00	24.843	5.10	☑	99.37
1281	Matrix_DAL_Ext_50ppb	Standard	Tricyclazole-01	5184105	50.00	47.627	5.11	☑	95.25
1465	Matrix_DAL_Ext_100ppb	Standard	Tricyclazole-01	9551380	100.00	87.749	5.12	☐	87.75
1649	Matrix_DAL_Ext_Blank	Unknown	Tricyclazole-01	N/A	N/A	N/A	N/A	☑	N/A
1833	Matrix_DAL_Sample_01	Unknown	Tricyclazole-01	5056	N/A	0.046	5.12	☑	N/A
2017	Matrix_DAL_Sample_02 (DUP)	Unknown	Tricyclazole-01	3516	N/A	0.032	5.14	☑	N/A

- Accuracy are well within the limit of $\pm 20\%$ throughout the calibration curve
- Correlation of coefficient R2 value 0.99



Calibration curve : 1ppb to 100ppb in cereal sample

Result table: Calibration, QC, and samples



Chromatogram: Matrix based linearity from 1ppb to 100ppb in cereal sample

Concentration of pesticide residues in cereal sample

Analytes Name	Detection[ug/kg]	SPECS [MRL- Mg/kg]
Carbendazim	2.08[BLQ]	2.0
Tricyclazole	0.046[BLQ]	3.0

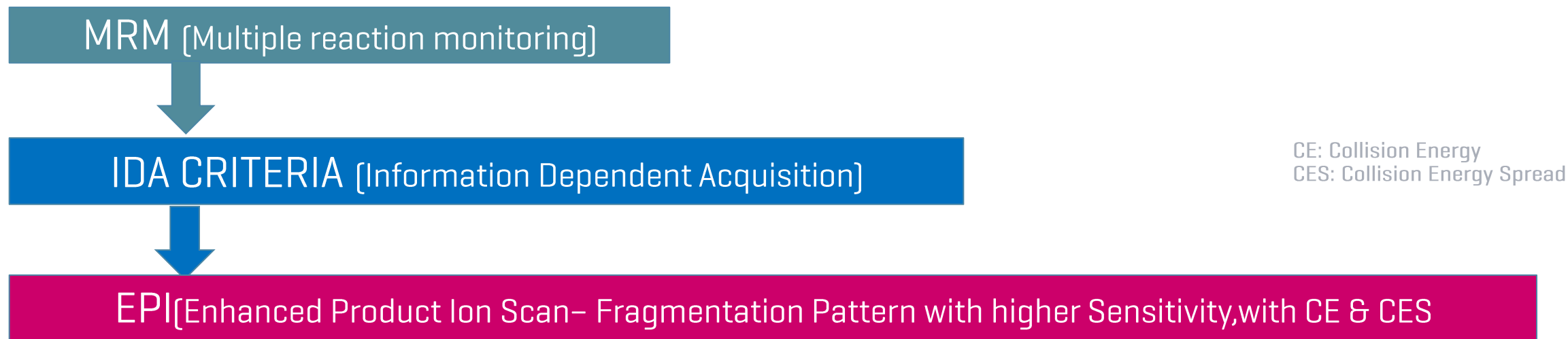
✓ Remaining all other analyte are not detected.

QTRAP workflow

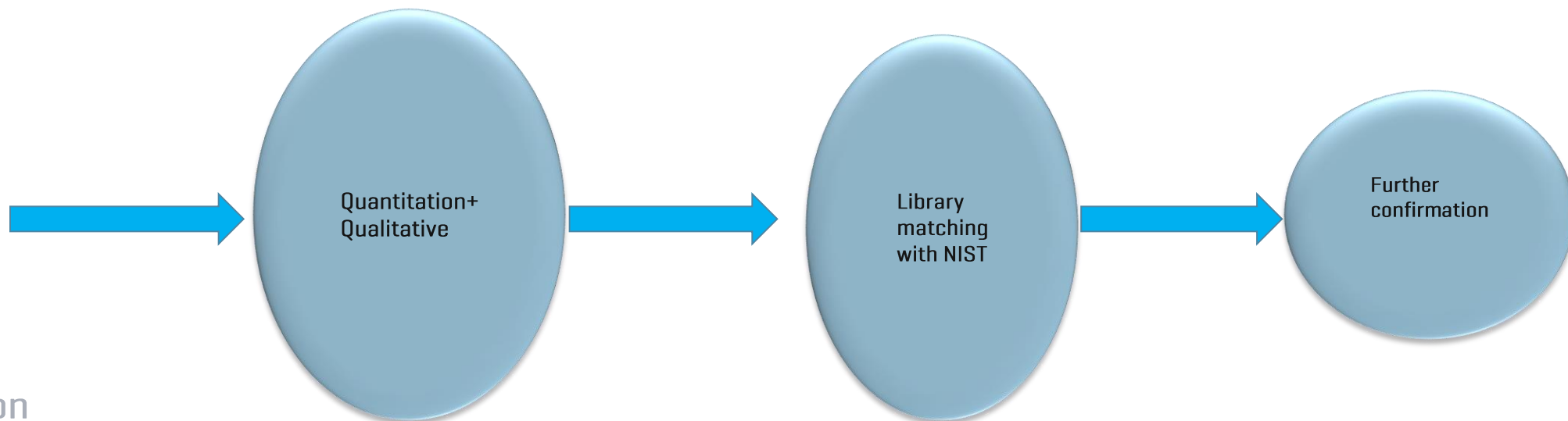
SRM, Multi Residue pesticide & Antibiotics



Targeted QTRAP workflow (MRM to EPI)



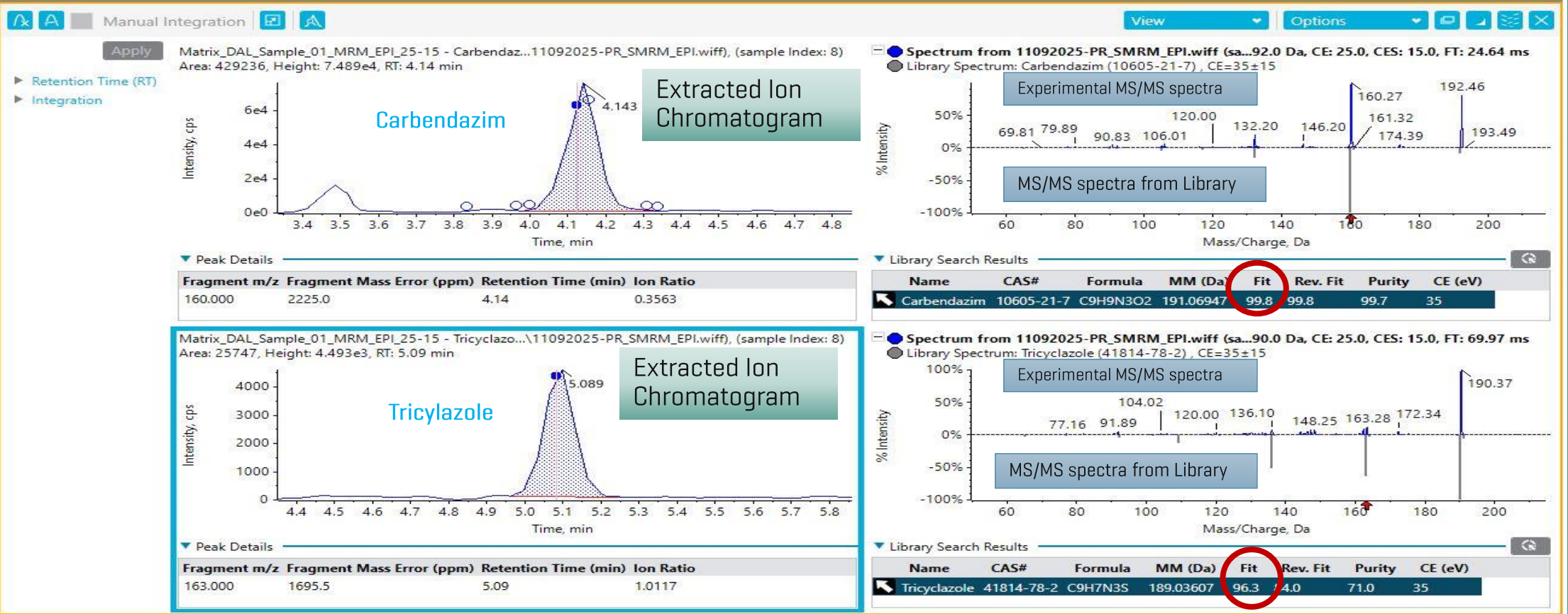
Single Injection



Qtrap MRM – EPI

Multi residue pesticide- LIBRARY HIT **NIST**

Index	Sample Name	Sample Type	Component Name	Library Hit	Library Confidence	Library Score	Retention Time	Area
27	Matrix_DAL_Sample_01_MRM_EPI_25-15	Unknown	Carbendazim-01	Carbendazim	✓	99.8	4.14	429236
183	Matrix_DAL_Sample_01_MRM_EPI_25-15	Unknown	Tricyclazole-01	Tricyclazole	✓	96.3	5.09	25747

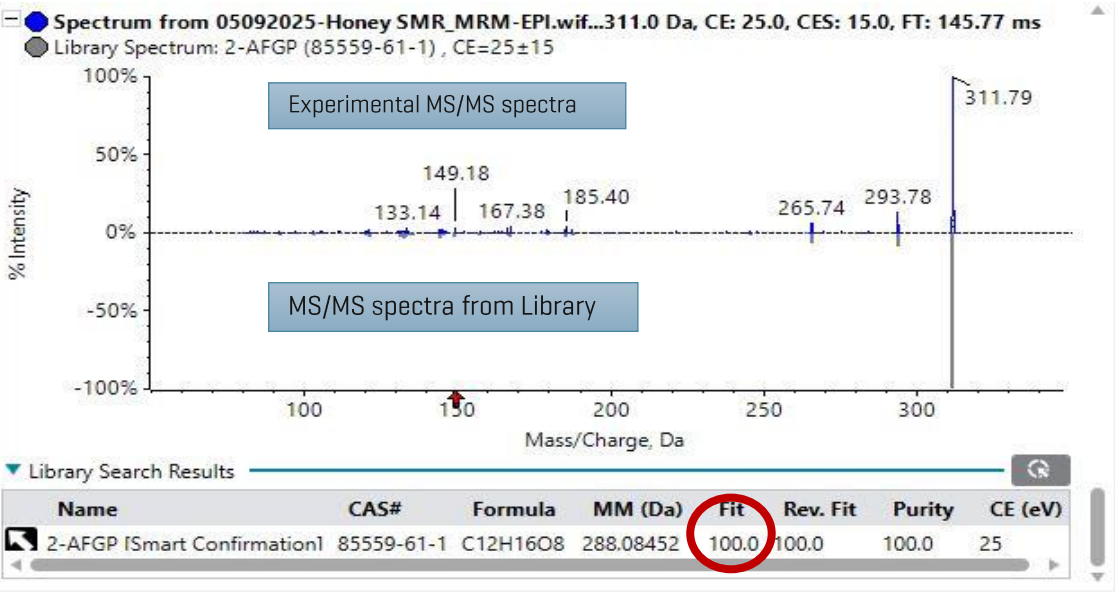
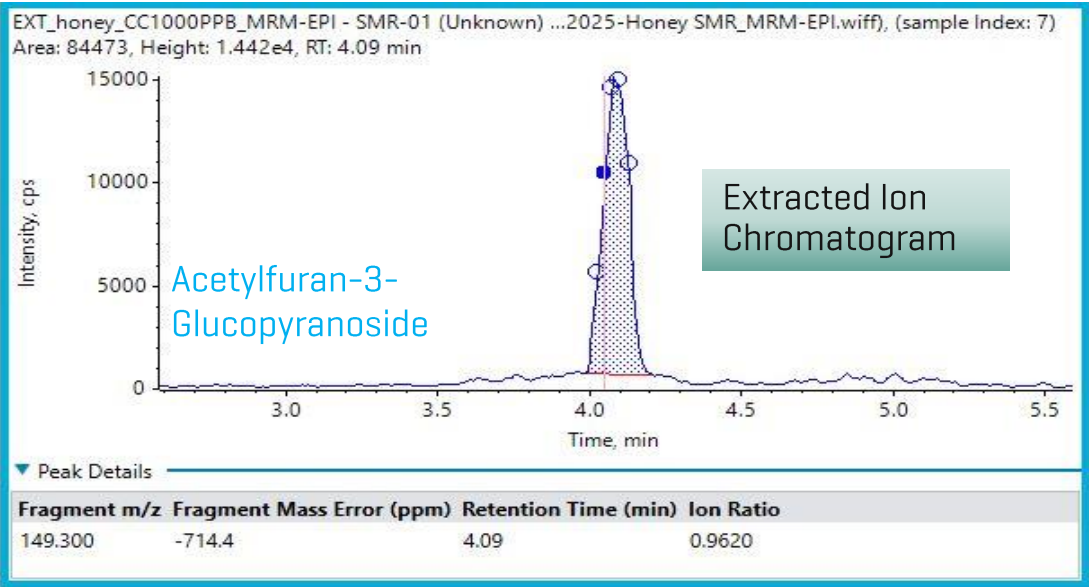


✓ The library hit was found to be 99.8 for carbendazim & 96.3 Tricyclazole FIT range

Qtrap MRM – EPI

Specified Rice marker- LIBRARY HIT NIST

Index	Sample Name	Sample Type	Library Hit	Library Confi...	Library Score	Retention Time	Component Name	Area
1	AQS_1000PPB_MRM-EPI-01	Unknown	2-AFGP [Smart Confirmation]	✓	100.0	4.10	SMR-01	538866
3	EXT_honey_CC1000PPB_MRM-EPI	Unknown	2-AFGP [Smart Confirmation]	✓	100.0	4.09	SMR-01	84473

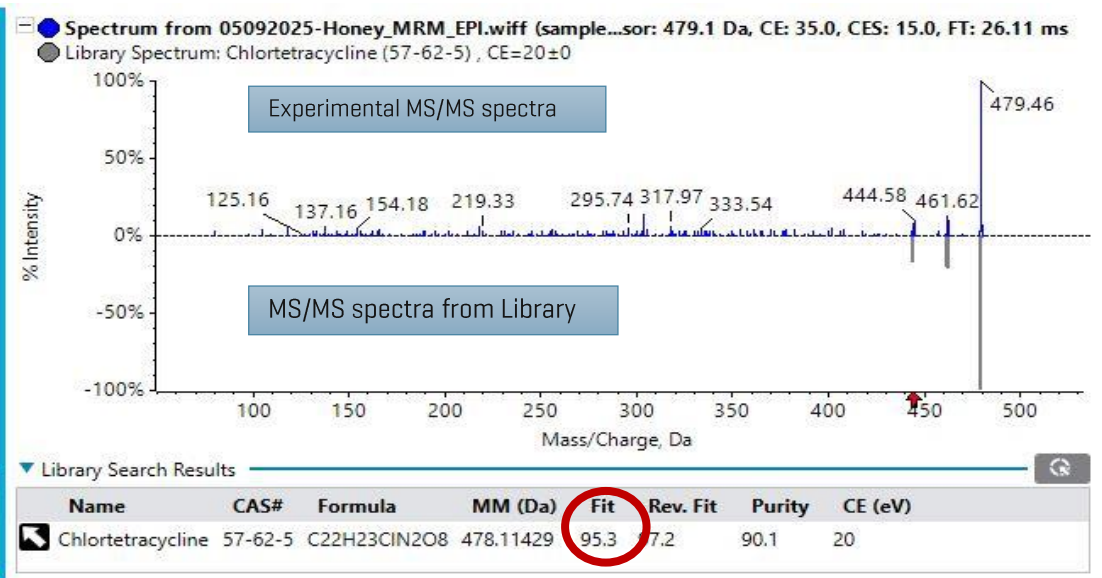
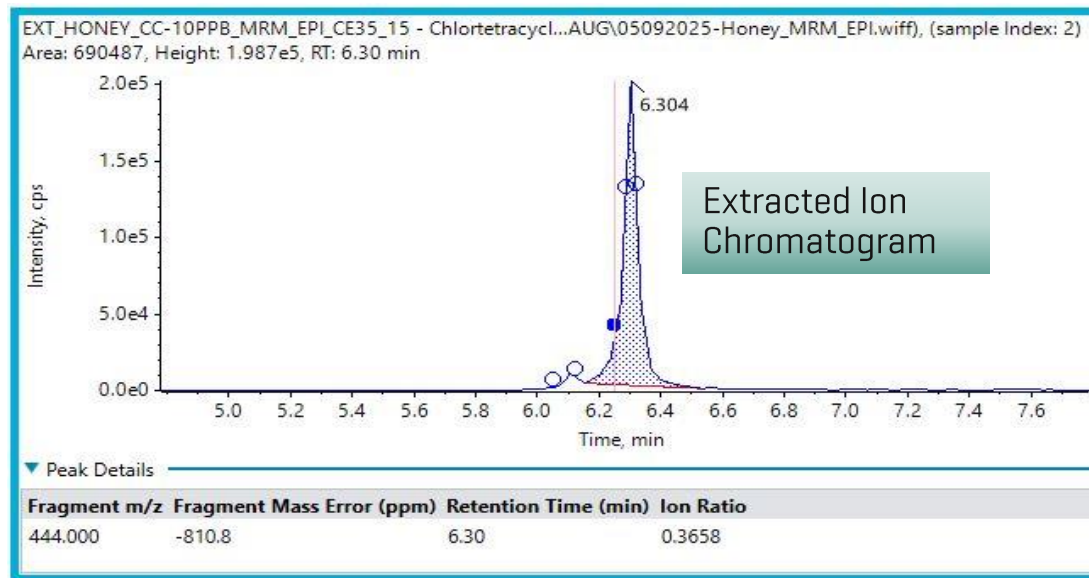


✓ The library hit was found to be 100 FIT for Acetylfuran-3-Glucopyranoside

Qtrap MRM – EPI

Antibiotics– LIBRARY HIT NIST

Index	Sample Name	Sample Type	Component Name	Library Hit	Library Confi...	Library Score	Retention Time	Area
58	EXT_HONEY_CC-10PPB_MRM_EPI_CE35_15	Unknown	Chlortetracycline-01	Chlortetracycline	✓	95.3	6.30	690487
8	EXT_HONEY_CC-10PPB_MRM_EPI_CE25_15	Unknown	Chlortetracycline-01	Chlortetracycline	✓	94.1	6.29	621502
108	EXT_HONEY_CC-10PPB_MRM_EPI_CE45_15	Unknown	Chlortetracycline-01	Chlortetracycline	✓	91.6	6.30	601802



✓ The library hit was found to be 95.3 FIT for Chlortetracycline.

Conclusion:

- The method and data acquired demonstrate the analysis provides sensitive and accurate results for the quantitation and confirmation of Antibiotics, pesticides and SMR using the SCIEX QTRAP 4500 System.
- The method was achieved with best sensitivity to meet the MRL/MRPL value in honey samples as per the EIC regulations.
- The developed method achieved acceptable accuracy [80-120%] for the calibration curves in matrix without any significant matrix interferences.
- Additionally have performed QTRAP MRM-EPI and matched with NIST & achieved best library matching score .

Thank You