

### Simultaneous Analysis of Veterinary Drugs by LC-MS/MS (1)

Examples of separation by LC-MS/MS of a standard sample of drugs on the Positive List.

Veterinary drug mixture PL-1-3 (Wako Pure Chemical Industries, Ltd.) 21 components

- Components corresponding to those for Simultaneous Test Method I for Veterinary Drugs using HPLC (in livestock food and fish)–

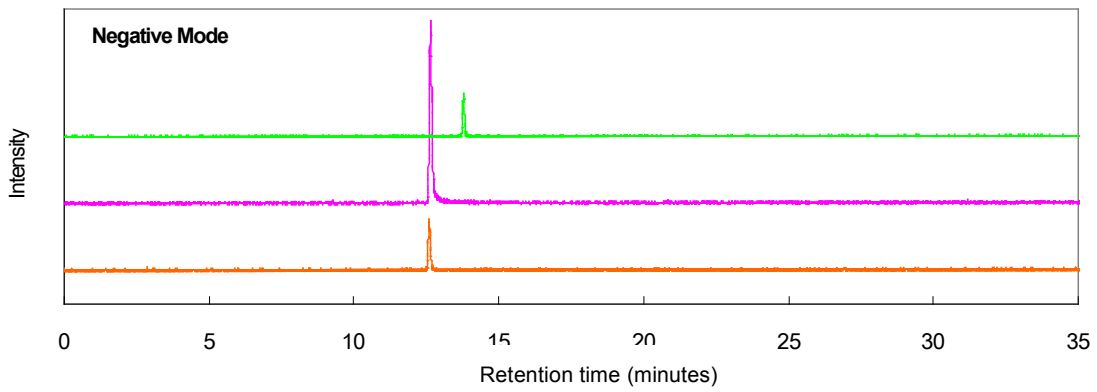
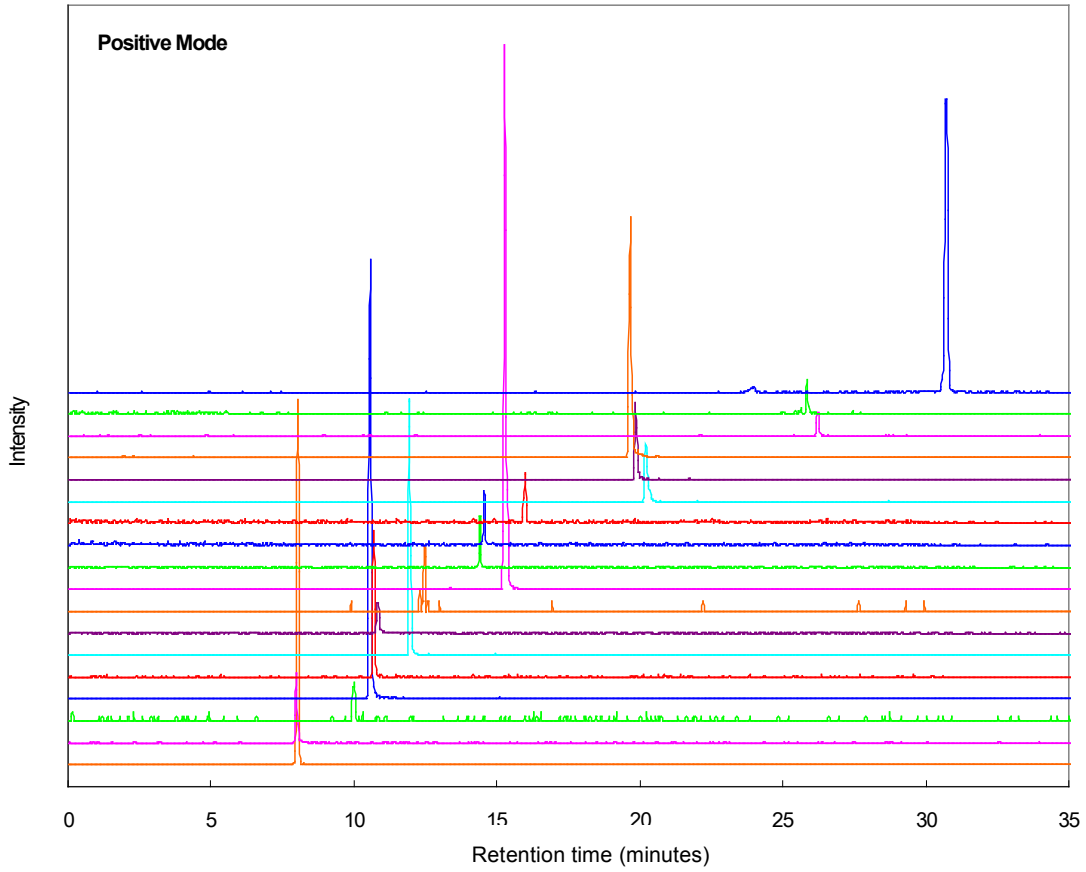
**Table 1. Analytical conditions**

Column:	<b>TSKgel ODS-100V, 3<math>\mu</math>m, 2.0mm ID x 15cm</b>
Mobile phase:	A: 0.1% formic acid in water B: 0.1% formic acid in acetonitrile
Gradient:	0min (10%B) → 10min (60%B) → 15min (60%B)
Flow rate:	0.2mL/min
Temperature:	40°C
Injection vol.:	5 $\mu$ L
Instrument:	QTRAP <sup>®</sup> (Applied Biosystems)
Ion Source:	ESI
Polarity:	Positive

**Table 2. List of monitoring ions**

No.	Drugs	Ionization	Monitoring ion (m/z)
1	Lincomycin	ESI (+)	407.2 / 126.3
2	Sulfacetamide	ESI (+)	215.1 / 92.1
3	Danofloxacin	ESI (+)	358.2 / 82.2
4	Xylazine	ESI (+)	221.1 / 90.1
5	Clenbuterol	ESI (+)	278.2 / 204.2
6	Pyrimethamine	ESI (+)	249.1 / 177.2
7	Trichlorfon(DEP)	ESI (+)	258.9 / 109.1
8	Tilmicosin	ESI (+)	869.6 / 174.2
9	Tiamulin	ESI (+)	494.3 / 192.1
10	Prednisolone	ESI (+)	361.2 / 147.0
11	Hydrocortisone	ESI (+)	363.3 / 121.1
12	Dexamethasone	ESI (+)	393.2 / 147.2
13	Emamectin B1a	ESI (+)	887.5 / 158.3
14	Famphur	ESI (+)	326.0 / 93.1
15	Fenobucarb(BPMC)	ESI (+)	208.2 / 95.1
16	Temephos(Abate)	ESI (+)	467.0 / 125.0
17	Allethrin	ESI (+)	303.2 / 91.2
18	Monensin	ESI (+)	688.5 / 461.4
19	Florfenicol	ESI (+)	357.8 / 184.8
20	2-Acetylamino-5-nitrothiazole	ESI (+)	185.9 / 138.9
21	Clorsulon	ESI (+)	379.7 / 343.9

Figure 1. MRM chromatogram of standard sample



## Simultaneous Analysis of Veterinary Drugs by LC-MS/MS (2)

Examples of separation by LC-MS/MS of a standard sample of drugs on the Positive List.

Veterinary drug mixture PL-2-1 (Wako Pure Chemical Industries, Ltd.) 24 components

– Components corresponding to those for Simultaneous Analytical Methods I and II for Veterinary Drugs using HPLC (in livestock food and fish) –

**Table 1. Analytical conditions**

Column:	<b>TSKgel ODS-100V, 3<math>\mu</math>m, 2.0mm ID x 15cm</b>
Mobile phase:	A: 0.1% formic acid in water B: 0.1% formic acid in acetonitrile
Gradient:	0min (0%B) → 35min (100%B) → 40min (100%B)
Flow rate:	0.2mL/min
Temperature:	40°C
Injection vol.:	2 $\mu$ L
Instrument:	QTRAP <sup>®</sup> (Applied MDS SCIEX)

**Table 2. List of monitoring ions**

No.	Drugs	Ionization	Monitoring ion (m/z)
1	5-Plopylsulfonyl-1H-benzimidazole-2-amine	ESI (+)	240.1 / 133.2
2	Levamisole	ESI (+)	207.1 / 91.2
3	Thiabendazole	ESI (+)	202.1 / 175.1
4	Trimethoprim	ESI (+)	291.1 / 230.3
5	Sulfadiazine	ESI (+)	251.1 / 92.2
6	Ormetoprim	ESI (+)	275.2 / 123.1
7	Sulfathiazole	ESI (+)	256.0 / 156.0
8	Sulfapyridine	ESI (+)	250.0 / 156.2
9	Sulfamerazine	ESI (+)	265.1 / 92.2
10	Thiamphenicol	ESI (+)	355.9 / 308.0
11	Sulfadimidine	ESI (+)	279.1 / 92.1
12	Sulfamethoxyipyridiazine	ESI (+)	281.1 / 156.1
13	Sulfamonomethoxine	ESI (+)	281.1 / 156.1
14	Sulfachlorpyridazine	ESI (+)	286.1 / 157.1
15	Sulfamethoxazole	ESI (+)	254.6 / 156.0
16	Sulfadoxine	ESI (+)	311.1 / 156.1
17	Ethopabate	ESI (+)	238.2 / 136.0
18	Sulfaquinoxaline	ESI (+)	301.0 / 156.2
19	Sulfadimethoxine	ESI (+)	311.1 / 156.2
20	Sulfanitran	ESI (+)	336.1 / 134.1
21	$\beta$ -Trenbolone	ESI (+)	271.2 / 165.3
22	$\alpha$ -Trenbolone	ESI (+)	271.2 / 165.2
23	Melengestrol Acetate	ESI (+)	397.2 / 279.4
24	Zeranol	ESI (+)	321.1 / 277.2

Figure 1. MRM chromatogram of standard sample

