

## Concurrent Analysis of Sulfa Drugs by LC/MS

Sulfa drugs are synthetic antibacterial agents that are widely used in the animal industry. A notice issued by the Ministry of Health, Labor and Welfare [Shokuan No. 1129002; "Concurrent test method I for veterinary drugs by HPLC (animal husbandry and fishery)"] lists 16 sulfa drugs and specifies that a quantitative test must be performed by HPLC and a confirmation test must be performed by LC/MS(/MS).

With regard to sulfa drug analysis, a past report (TSKgel Technical Information Sheet No. 118) introduced isolation using a UV detector. The present report measured the above-mentioned 16 sulfa drugs and trimethoprim (synthetic antibacterial agent often co-administered with sulfa drugs) using a MS detector. With all sulfa drugs, sharp peaks without tailing were obtained. For all sulfa drugs, quantification was confirmed within a concentration range of 0.02-1.0mg/L.

**Table 1: Sulfa Drugs**

Drug	m/z
sulfaguanidine	215
sulfacetamide	215
sulfadiazine	251
sulfathiazole	256
sulfapyridine	250
sulfamerazine	265
trimethoprim	291
sulfadimidin	279
sulfamethoxypyridazine	281
sulfamonomethoxine	281
sulfachloropyridazine	285
sulfamethoxazole	254
sulfadoxine	311
sulfadimethoxine	311
sulfabenzamide	277
sulfaquinoxaline	301
sulfanitran	336

**Table 2. Measurement conditions**

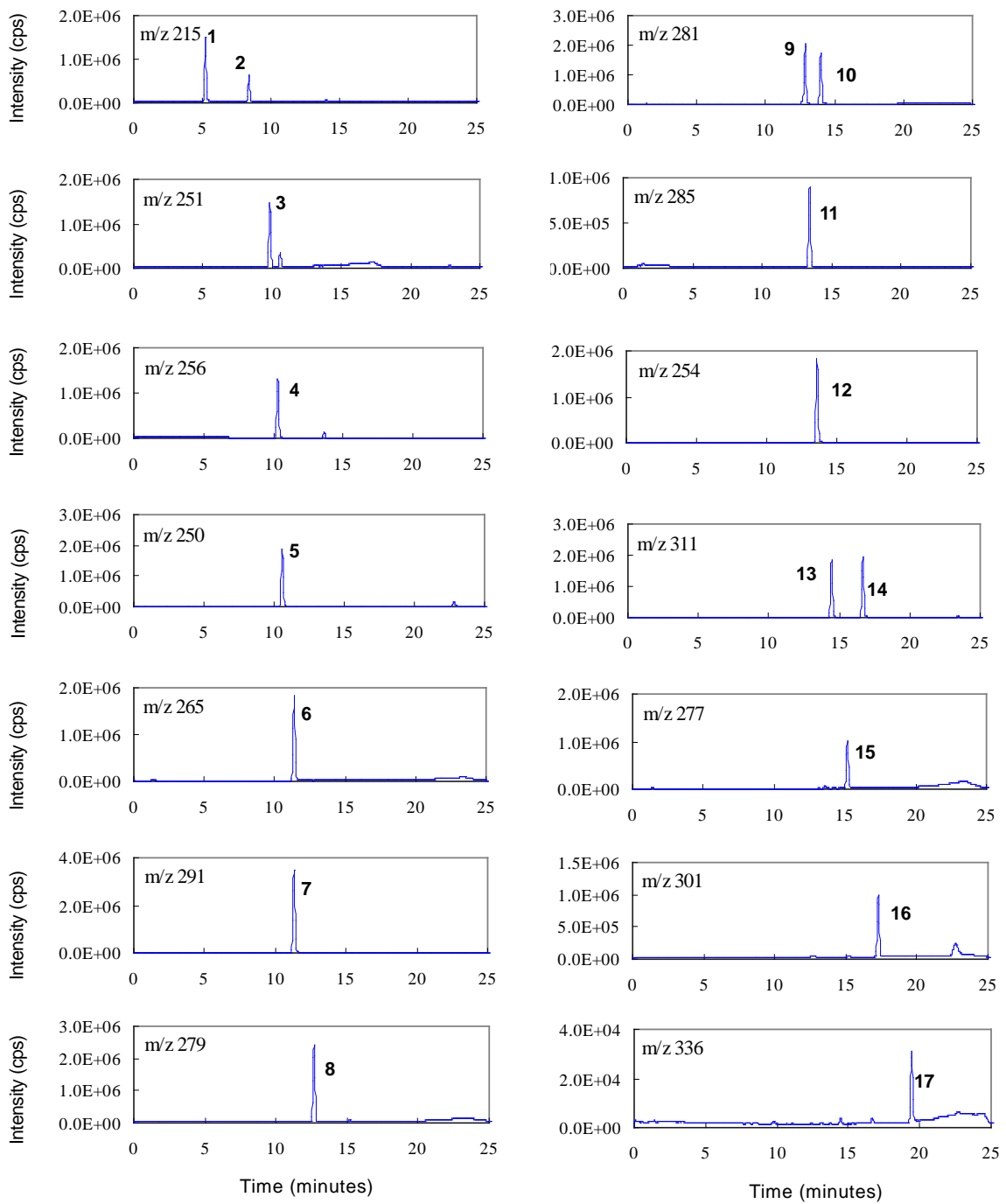
### HPLC Conditions

Column:	TSKgel ODS-100V, 3 $\mu$ m, 2.0mm ID x 15cm
Mobile phase:	A: 0.1% formic acid B: 0.1% formic acid in methanol
Gradient:	0min (0%B) → 20min (70%B) → 22min (70%B) → 23min (0% B)
Flow rate:	0.2mL/min
Temperature:	40°C
Injection vol.:	2 $\mu$ L

### MS Conditions

MS:	QTRAP® (Applied Biosystems)
Ion Source:	ESI positive
Mode:	SIM
Temperature:	500°C
Ionspray voltage:	5000 V

**Figure 1. SIM chromatogram of each sulfa drug (0.5mg/L)**



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- |                            |                           |
|----------------------------|---------------------------|
| Samples: 1. sulfaguanidine | 10. sulfamonomethoxine    |
| 2. sulfacetamide           | 11. sulfachloropyridazine |
| 3. sulfadiazine            | 12. sulfamethoxazole      |
| 4. sulfathiazole           | 13. sulfadoxine           |
| 5. sulfapyridine           | 14. sulfadimethoxine      |
| 6. sulfamerazine           | 15. sulfabenzamide        |
| 7. trimethoprim            | 16. sulfaquinoxaline      |
| 8. sulfadimidin            | 17. sulfanitran           |
| 9. sulfamethoxyipyridazine |                           |
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