

## 4.9 Analysis of Drugs Using Fast-GC/MS (1) - GCMS

### •Explanation

Demands are being placed on analysis laboratories to shorten analysis time and increase productivity in analysis with a higher throughput of samples at a lower cost. Fast-GC/MS uses a column with slender inner diameter to realize high separation and, what is more, analysis time can be shortened without sacrificing separation. Fig. 4.9.1 shows analysis results for 0.1 $\mu$ L standard sample analyzed at 1:80 split ratio. This would have required approximately 14 min with a conventional analysis column but Fast-GC/MS analyzed this sample in 3 min. Fig. 4.9.2 shows the analysis results of a typical drug.

### •Analytical Conditions

Instrument	: GCMS-QP5050A(Fast-GC/MS type)
– GC –	
Column	: CP-SIL5(10m $\times$ 0.10mm i.d. df=0.12 $\mu$ m)
Column Temp.	: 80°C(1min) – 40°C/min – 320°C(5min)
Injector Temp.	: 280°C
Carrier gas	: He 500kPa
Injection Method	: Split (80:1)
Injection Volume	: 0.1 $\mu$ L
– MS –	
Interface Temp.	: 320°C
Ionization Method	: EI
Scan Range	: m/z 55-499
Scan Interval	: 0.1sec

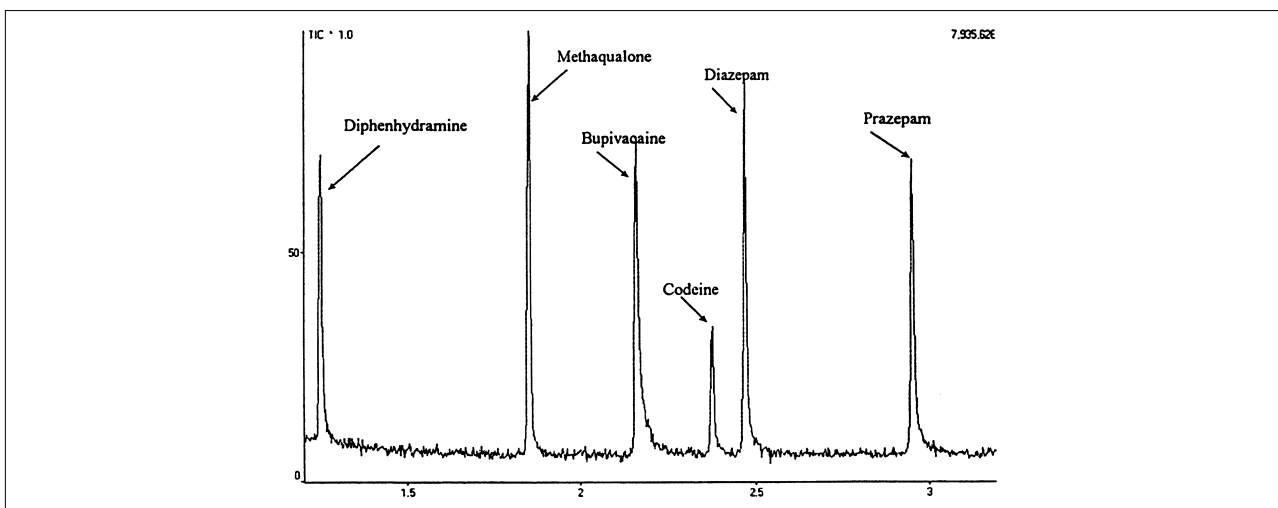


Fig. 4.9.1 Total ion chromatogram of standard sample analyzed using Fast-GC/MS

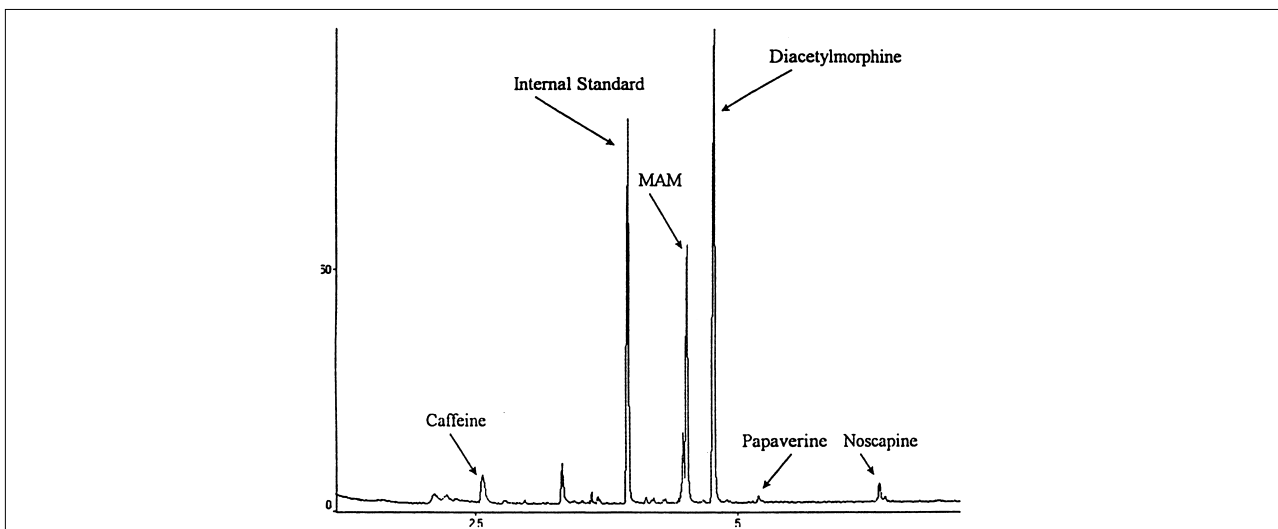
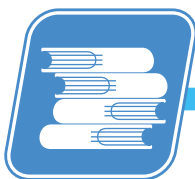


Fig. 4.9.2 Total ion chromatogram of typical drug analyzed using Fast-GC/MS



## 4.9 Analysis of Drugs Using Fast-GC/MS (2) - GCMS

### •Explanation

Demands are being placed on analysis laboratories to shorten analysis time and increase productivity in analysis with a higher throughput of samples at a lower cost. Fast-GC/MS uses a column with slender inner diameter to realize high separation and, what is more, analysis time can be shortened without sacrificing separation. Fig. 4.9.3 shows a comparison of total ion chromatograms from measurements of drug in urine made using Fast-GC/MS and conventional GC/MS methods. Fig. 4.9.4 shows a mass chromatogram from results of measurement of drug in urine using Fast-GC/MS.

Injector Temp.	: 280°C
Carrier gas	: He
– Normal GC –	
Column	: DB-5MS (30m × 0.25mm i.d. df=0.25µm)
Column Temp.	: 70°C (2min) – 20°C/min – 200°C – 7°C/min – 300°C (3min) min – 25°C/min – 320°C (2.5min)
Injection Method	: Splitless (Sampling time=1min)
Injection Volume	: 1µL
Injector Temp.	: 280°C
Carrier gas	: He
– MS –	
Interface Temp.	: 320°C
Ionization Method	: EI
Scan Range	: m/z 55-499
Scan Interval	: 0.1sec

### •Analytical Conditions

Instrument	: GCMS-QP5050A
– Fast GC –	
Column	: CP-SIL5 (10m × 0.10mm i.d. df=0.12µm)
Column Temp.	: 80°C (1min) – 40°C/min – 320°C (5min)
Injection Method	: Splitless (Sampling time=0.5min)
Injection Volume	: 0.5µL

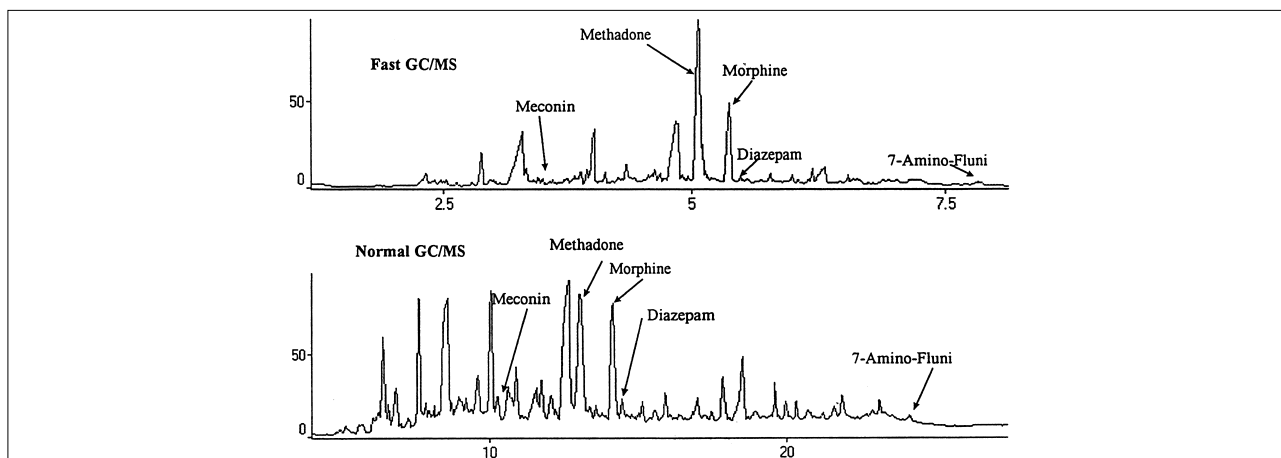


Fig. 4.9.3 Total ion chromatogram of drug in urine (upper: Fast-GC/MS, lower: conventional GC/MS)

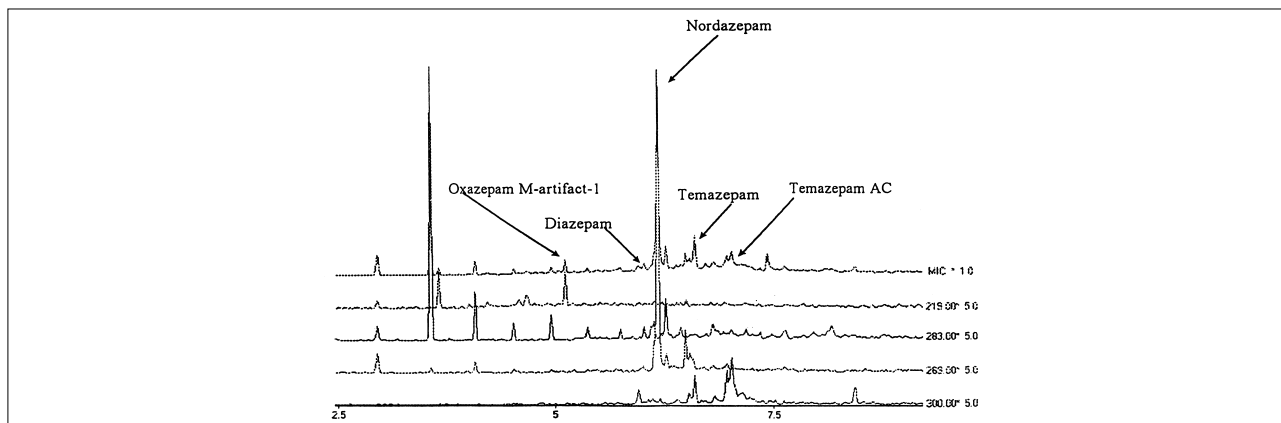


Fig. 4.9.4 Mass Chromatogram of analyzed drug in urine using Fast-GC/MS