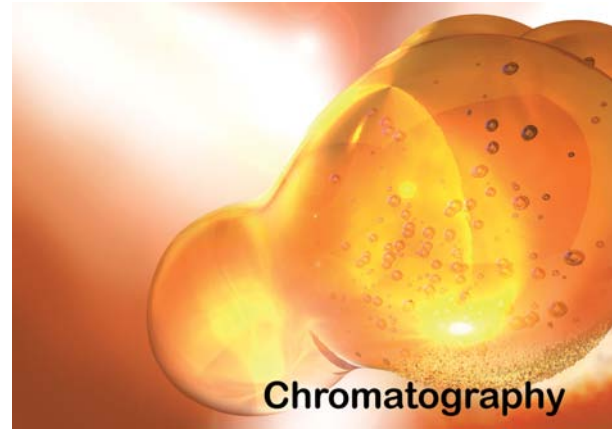


Application Note



Fast Screening of Amphetamines with GCMS

Mark van Lieshout,
Shimadzu Benelux

Introduction

Fast analysis is becoming more and more an important option in modern GCMS. In laboratories with an extremely high sample load, fast GCMS methods increase the efficiency of all GCMS systems and the people who work with it. It will save a lot of time and money using fast GCMS methods on a routine basis.

But the importance is even higher in clinical laboratories where time can be crucial to diagnose a patient. The need to act fast is clear in this field of work. In fact it can save lives when people can rely on highly sophisticated fast GCMS equipment.

In this method a fast screening analysis for amphetamine is described. The specific parameters to fulfil the requirements to perform a fast screening are first of all the high inlet pressure. In this method 784 kPa was used. Furthermore oven temperature ramping rates are 250 °C/min. Also speed of injection, accurate flow control, reliable constant linear velocity are all important parameters which influence the success of a fast method.

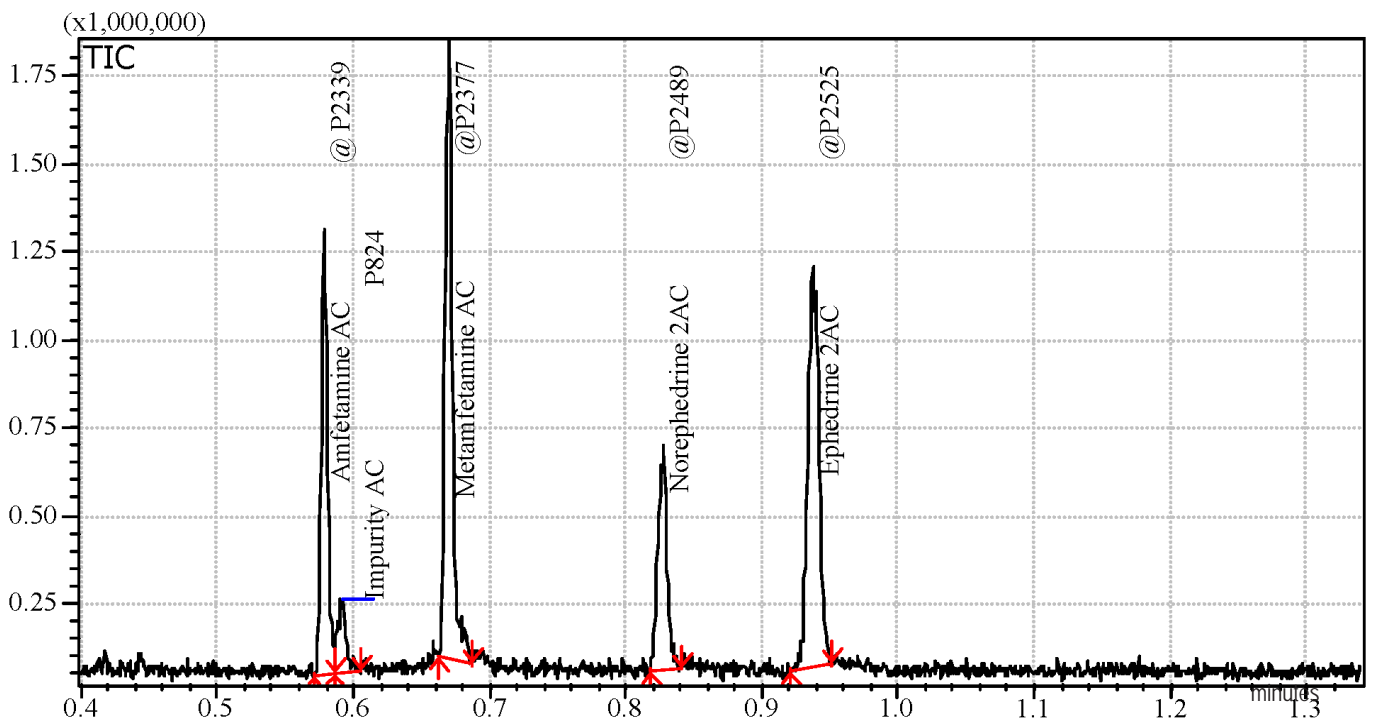


Figure 1: TIC of 10.0 pg/ μ L Amphetamine mixture in full scan

All the above described features are standard on the Shimadzu GCMS-QP2010.



Shimadzu GCMS-QP2010

Instrument Set-up

In this method the Shimadzu GCMS-QP2010 Gas Chromatograph Mass Spectrometer was used. For injection a AOC-5000 auto injector was used.

Method description

Column: Type of column: 100% methylsilicon stationary phase, 15 m X 0.15 mm I.D. X 0.15 µm Film thickness

Equipement:

- Autosampler: AOC-5000 HS for liquid injection and headspace injection
- GCMS: Shimadzu GCMS-QP2010
- Software: Shimadzu Labsolutions/GCMSsolution

Chromatographic conditions:

- Injector temperature: 280 °C
- Interface Temp: 280 °C
- Column oven: initial T 125 °C, **rate 250 °C/min** to 200 °C, 1 minute final time.
- Carrier gas (helium) flow: 6 ml/min, inlet pressure **784 kPa**.
- Injection volume: 1 µl

MS-parameters

- Acquisition mode: full scan range m/z 50 -295, sampling frequency **33 scans/second** (scan speed **10000 amu/sec**).

	Start Time (min)	End Time (min)	Acq. Mode	Interval (sec)	Scan Speed	Start m/z	End m/z	Ch1 m/z
1	0.00	1.34	Scan	0.03	10000	50.00	295.00	
2	0.00	0.00	Scan	0.00	0	0.00	0.00	

Figure 2: details of MS method

Conclusions

Fast scanning is a standard feature on the QP2010, and necessary for fast screening methods. Results are obtained within 1 minute with very good resolution. Due to the use of narrow bore columns which lead to small peak widths also the sensitivity is increased, compared with conventional GCMS methods.

The given specifications serve purely as technical information for the user. No guarantee is given on technical specifications of the described product and/or procedures.