

Application Note No. 066

Trace Analysis of Drugs by AT-Column Concentrating Large Volume Injection - GC/MS

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- **Improved sensitivity with large volume injection**
- **Very little optimisation is required**
- **A sensitive and user-friendly system for the trace analysis of drugs**

Instrumentation

- ATAS Optic 2-200
- AT-Column concentrating injection kit
- Agilent 6890 GC with 5973 MSD

Compounds

Amphetamine	Methamphetamine	MDA	MDMA	MDE	Benzoyllecgonine
Cocaine	Cocaethylene	Codeine	DAM	MAM	Morphine

Principles

- Inject 100 μ l of sample under AT-Column conditions
- Vent the solvent and concentrate the analytes
- Transfer the sample onto the head of the capillary column under cool conditions
- Start the GC/MS analysis

Chromatogram

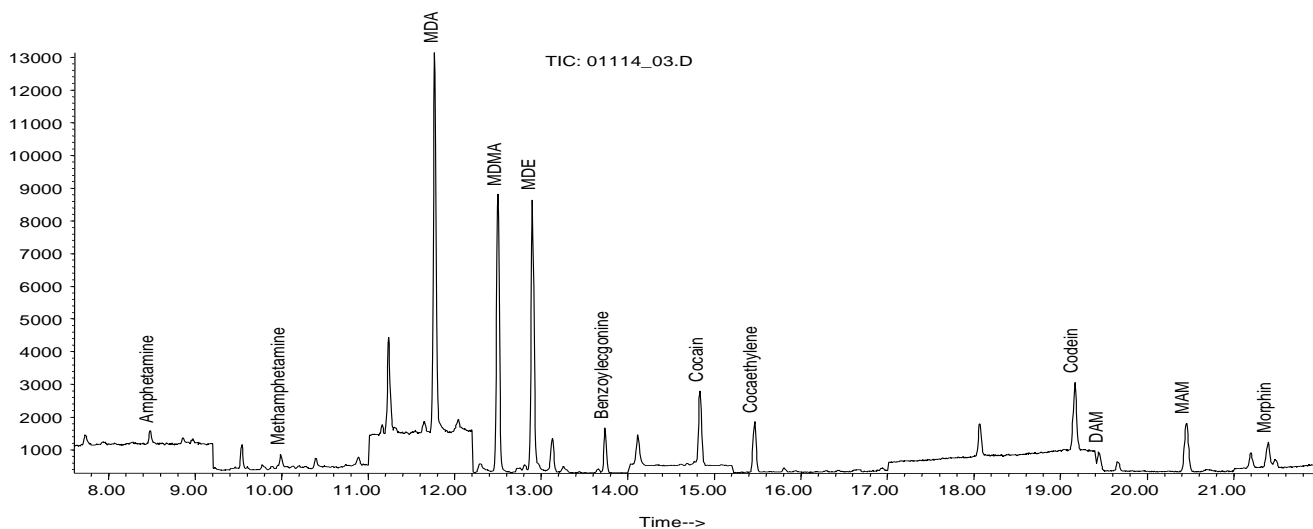


Figure 1: 100 μ l AT-Column concentrating large volume injection of 5 pg/ μ L drugs in EtOAc in SIM mode

**Bottom: 3.8 cm;
Footer: 1.25 cm**

Appendix

Optic Conditions:

- Liner: AT-Column
- Mode: Large Volume
- Injection volume: 100 μ l
- Gas Flows: Split: 20 ml/min
Vent: 75 ml/min
- Equilibration time: 0:00 m:s
- Initial temperature: 81 $^{\circ}$ C
- Vent time: auto
- Ramp rate: 7 $^{\circ}$ C/s
- Final temperature: 280 $^{\circ}$ C
- End time: 24:15 m:s
- Split open time: 2:30 m:s
- Purge pressure: 25 kPa
- Transfer time: 0:00 m:s
- Initial pressure: 40 kPa
- Final pressure: 40 kPa
- Solvent threshold: 15

GC conditions:

- Column: HP1 12m x 0.2mm I.D. $d_f=0.33\mu$ m
- Initial temperature: 94 $^{\circ}$ C
- Initial time: 2.00 min
- Ramp rate: 12 $^{\circ}$ C/min
- Final temperature: 200 $^{\circ}$ C
- Final time: 0.00 min
- Ramp rate 2: 7 $^{\circ}$ C/min
- Final temperature 2: 280 $^{\circ}$ C
- Final time 2: 2.00 min

MSD conditions:

Quad temperature: 106 $^{\circ}$ C
Source temperature: 230 $^{\circ}$ C
Interface temperature: 280 $^{\circ}$ C
Solvent delay time: 5.00 min
Single ion mode

Amphetamine	44, 100, 118
Methamphetamine	58, 114, 91
MDA	162, 44, 135
MDMA	58, 162, 114
MDE	72, 162, 128
Benzoylcegonine	300, 105, 421
Cocaine	182, 105, 303
Cocaethylene	196, 105, 317
Codeine	355, 282, 229
DAM	327, 268, 369
MAM	327, 268, 383
Morphine	341, 268, 397