Product Information		YMC EUROPE GMBH
forensic drugs immunosuppressants YMC-Triart	**Shimadzu recommends YMC columns**	Date: 05.05.2017 Author: Anna Bergmann

YMC in the pharmaceutical and forensic sector

Analysis of forensic drugs and immunosuppressants using YMC-Triart

Shimadzu provides the application collection *Clinical, Forensic and Pharmaceutical Applications* which comprises 17 applications for the pharmaceutical, clinical and forensic sector. Two of these applications use YMC-Triart C18.

To see the full application collection, follow the link:
https://www.shimadzu.eu/sites/default/files/2234_PS_ASMS_2014-Clinical.pdf

The two articles using YMC-Triart C18 UHPLC material are

1. Simultaneous analysis for forensic drugs in human blood and urine using ultra-high speed LC-MS/MS (p. 23-27)

2. Accelerated and robust monitoring for immunosuppressants using triple quadrupole mass spectrometry (p. 60-64)

and they show

YMC is your partner in the pharmaceutical and forensic sector!

forensic drugs
immunosuppressants
YMC-Triart

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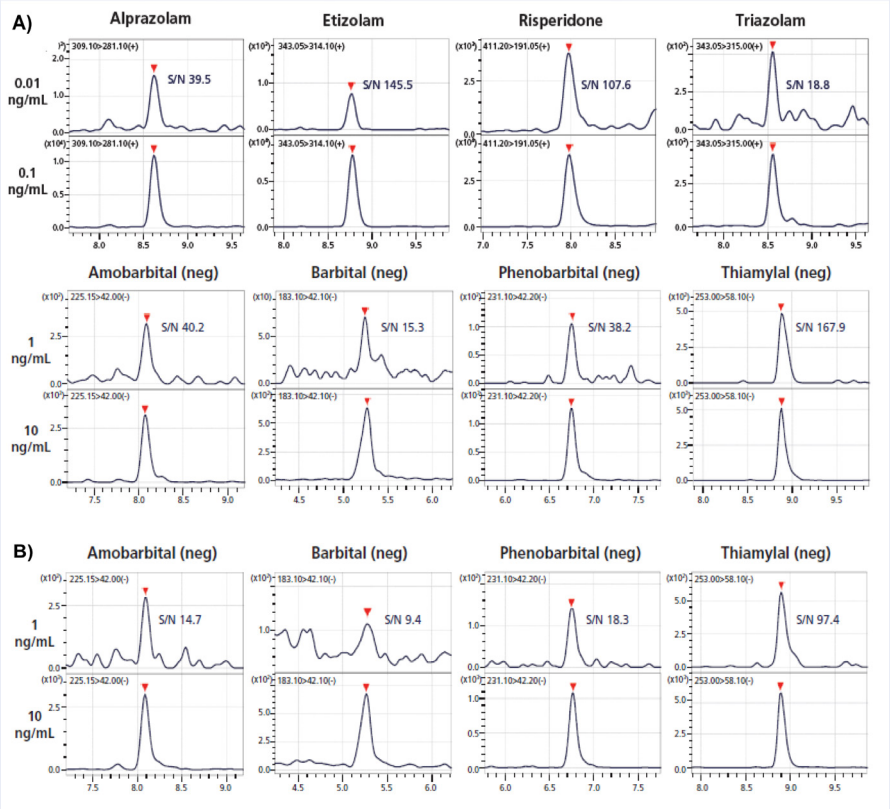
1 Simultaneous analysis of forensic drugs in human blood and urine using ultra-high speed LC-MS/MS



The determination of the different forensic drugs was performed using a YMC-Triart C18 UHPLC column (100 × 2.0 mm ID, 1.9 µm particles). The two samples involve complex matrices, human whole blood and human urine. The blood samples were pre-treated using an extraction step before LC-MS analysis.

The results for the two sample types, human blood and urine, are shown on the left.

Figure 1: Analysis of (A) human whole blood by spiking 8 drugs and (B) human urine by spiking 4 drugs.

Table 1: Analytical conditions

Column	YMC-Triart C18 (100 × 2.0 mm ID), 1.9 µm particle size, 12 nm pore size
Part No.	TA12SP9-1002PT
Eluents	A: 10 mM ammonium formate in water B: methanol
Gradient	5% B (0 min) → 95% B (10 – 13 min) → 5% B (13.1 – 20 min)
Flow rate	0.3 mL/min
Temperature	40°C
Detection	ESI positive and negative mode
Injection	5 µL

With YMC-Triart C18 it is possible to analyse different forensic drugs simultaneously in complex matrices such as human whole blood and urine!

2 Accelerated and robust monitoring of immunosuppressants using triple quadrupole mass spectrometry

The second application describes a method to analyse immunosuppressants in human blood. Six different immunosuppressive drugs were investigated:

- Tacrolimus
- Rapamycin
- Everolimus
- Cyclosporin A
- Ascomycin
- Cyclosporin D

The analysis was performed using a YMC-Triart C18 UHPLC column. The results are shown below.

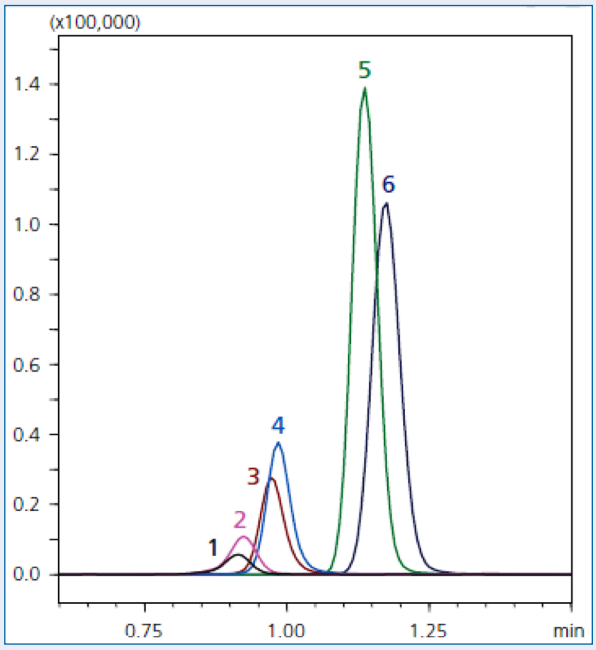


Figure 2: Determination of six immunosuppressants in human blood.

Table 2: Analytical conditions

Column	YMC-Triart C18 (30 × 2.0 mm ID), 1.9 µm particle size, 12 nm pore size
Part No.	TA12SP9-0302PT
Eluents	A: 1 mM ammonium formate in water B: 1 mM ammonium formate in methanol
Gradient	60% B (0 min) → 75% B (0.10 min) → 95% B (0.7 – 0.9 min) → 60% B (0.91 – 1.80 min)
Flow rate	0.45 mL/min
Temperature	65°C
Detection	ESI negative mode
Injection	1.5 µL

The results further enforce the conclusion for the first application:

With YMC-Triart C18, complex matrices such as blood and urine are no longer a challenge!