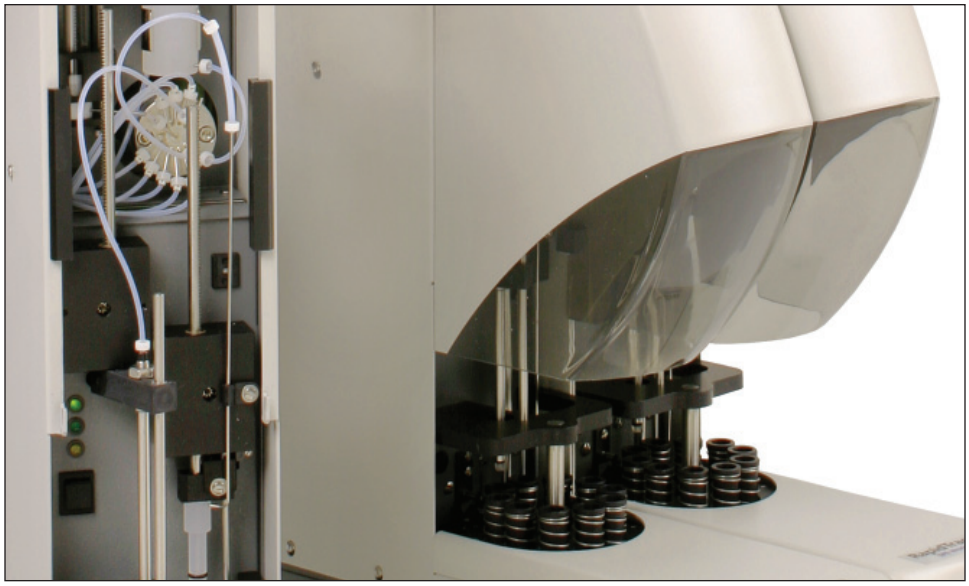

RapidTrace | SPE Workstation

Automated SPE Extraction of Benzoylecgnonine (BZE) from Urine for Confirmation by GC/MS

- 56 Samples per Hour
- 97+% Recovery
- 0.99999 Linearity (r^2)
- CV of 2.9% at Regulatory Cut-off

When analyzing human urine for drugs of abuse, one of the most common tests is for the cocaine metabolite Benzoylecgonine (BZE). A contract laboratory has automated this labor intensive procedure using the RapidTrace.

Before loading the specimen onto the RapidTrace, 1mL of urine is pipetted into a 13 x 100 mm test tube. This is diluted with 1 mL water, 2 mL phosphate buffer, 0.1 mL internal standard solution (D3-Benzoylecgonine) and mixed using a vortex mixer. The prepared samples were extracted using the rapidTrace and 3 mL SPE columns with the following automated procedure:

Step	Source	Destination	Volume (ml)	Flow (ml/sec)
Condition	Methanol	Waste 2	3.0	0.30
Condition	Water	Waste1	3.0	0.30
Condition	Buffer	Waste1	3.0	0.30
Load	Sample	Waste1	40	0.04
Pause		Time =	0.1 minute	
Purge-Cannula	Water	Cannula	4.0	0.40
Rinse	Water	Waste1	3.0	0.15
Rinse	Buffer	Waste1	3.0	0.15
Rinse	Methanol	Waste2	3.0	0.15
Rinse	Vent	Waste3	5.0	0.30
Collect	MIXED	Fraction1	3.0	0.20
Rinse	MIXED	Waste2	2.5	0.20
Rinse	Methanol	Waste2	2.5	0.20
Purge-Cannula	Methanol	Cannula	3.0	0.40
Purge-Cannula	Water	Cannula	3.0	0.40

Sample Run Time

This procedure has a run time of approximately 11 minutes which translates to approximately 56 samples per hour assuming a full 10 module workstation. That's 100 samples processed in less than 2 hours.

Within a single run, the following data was generated demonstrating the excellent recoveries and strong sample-to-sample consistency:

CONTROL TARGET VALUE (NG/ML)	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 5	MEAN	C.V. (%)	AVERAGE RECOVERY (%)
120	113	118	120	119	113	117	2.9	97.5
180	182	176	186	176	174	179	2.8	99.4

Five runs were performed on different days, also yielding good day-to-day reproducibility:

CONTROL TARGET VALUE (NG/ML)	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 5	SAMPLE 6	MEAN	C.V. (%)	AVERAGE RECOVERY (%)
113	117	117	119	122	124	122	120	2.4	106.2
150	161	152	163	175	162	192	168	8.4	112.0
188	201	201	209	258	202	201	212	10.7	112.8

Standards of known quantities were extracted, analyzed and the instrumental response plotted. For this method linearity was measured over the range of 75 - 100 ng/mL. A perfect correlation coefficient (r^2) is 1.0 - the Rapid Trace data yielded r2 = 0.99999.

Blank and spiked samples were extracted and analyzed along with actual specimens to insure that there is no sample-to-sample contamination. After extracting a 100,000 ng/mL spiked sample, a blank was extracted. This blank was shown to have less than 0.04% carryover from the previous sample, significantly below the regulatory cutoff.

For more detailed information, please contact Biotage

Biotage | IST

www.biotage.com

Europe
Main: +46 18 56 5900
Fax: +46 18 59 1922
Order Tel: +46 18 56 57 10
Order Fax: +46 18 56 57 05
order@biotage.com

Japan
Main: +81 422 28 1233
Fax: +81 422 28 1236
jp_order@biotage.com

North America
Main: +1 704 654 4900
Toll Free: +1 800 446 4752
Fax: +1 704 654 4917
Order Tel: +1 704 654 8544
Order Fax: +1 434 296 8217
ordermailbox@biotage.com