



FORENSICS



# EtG / EtS Analysis



INNOVATION THROUGH CHEMISTRY

## EtG and EtS Analysis

UCT has developed a rapid solution to combat the significant ion suppression EtG/EtS urine analysis typically suffers from using a standard dilute and shoot approach. By combining UCT's FAST® EtG filter and shoot cartridge with the Selectra® EtG HPLC column, a quick and efficient overall analysis can be executed allowing for clean extracts, low LOD's/LOQ's, and fast analytical run times.

UCT offers these products individually or as part of a kit, combined with EtG/EtS stock standard solutions and deuterated internal stock standard solutions supplied by Lipomed, Inc.

### Benefits

- **Sample matrix interferences are filtered out:**
  - no ion suppression or enhancement effects
  - no matrix material accumulating on the head of the analytical column
- **Polar EtG/EtS compounds are retained and separated**
- **Low LOD/LOQ's**
- **Excellent injection to injection reproducibility and column lifetime**

### CLEAN SCREEN FAST® EtG

Format	Sorbent Amt. (mg)	Units per pack	Part Number
3 mL Tube	200	50	CSFASETG203
96 well plate	100	1	WSH96FASETG11-10LD

### SELECTRA® EtG HPLC COLUMN

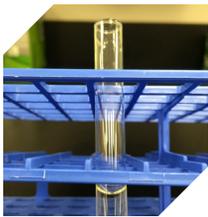
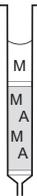
Column Length (mm)	Column i.d. (mm)	Particle Size (µm)	Part Number
100	2.1	3	SLETG100ID21-3UM
<b>Guard Cartridge Column (2/pack)</b>			
10	2.0	3	SLETGGDC20-3UM
<b>HPLC Guard Holder</b>			
HPLC Guard Cartridge Holder		SLGRDHLDR	

### EtG Comprehensive Analytical Toxicology Kit

UCT Part Number: CAT-ETG-KIT

Description	Extended Description	Units	Part Number	
CSFASETG	FAST® EtG 200 mg sorbent / 3 mL Tube	50	CSFASETG203	
SELECTRA® EtG	100 x 2.1 mm; 3 µm HPLC Column	1	SLETG100ID21-3UM	
EtG / EtS Standards	Ethyl-beta-D-glucuronide	1.0 mg/ mL	1 ampoule	EGL-332-1LM
	Ethyl-beta-D-glucuronide-D5	0.1 mg/ mL	1 ampoule	EGL-780-0.1LM
	Ethylsulfate sodium salt	1.0 mg/ mL	1 ampoule	ETS-972-NA-1LM
	Ethylsulfate sodium salt – D5	0.1 mg/ mL	1 ampoule	ETS-979-NA-0.1LM

UCT's innovative FAST<sup>®</sup> EtG utilizes standard size exclusion principles combined with a proprietary sorbent chemistry that adsorbs and removes the primary matrix components found in urine. This additional clean-up allows for a maximum of 0.5 mL of sample to be used upon analysis without compromising on chromatographic peak shape, signal intensity, and analytical column lifetime. The Selectra<sup>®</sup> EtG HPLC column is designed to retain and separate these highly polar compounds away from the ion suppression region providing for effective quantitation.

<p><b>Step 1</b></p> <p>Sample Preparation</p>	<p>Sample Urine + D.I. H<sub>2</sub>O</p> 		<p>Add sample and diluents into appropriately labeled test-tube.</p>
<p><b>Step 2</b></p> <p>Apply Sample to FAST<sup>®</sup> EtG</p>			<p>Pour sample directly onto FAST<sup>®</sup> EtG cartridges.</p>
<p><b>Step 3</b></p> <p>Apply Positive Pressure</p>			<p>Apply positive or negative pressure and elute sample directly into auto-sampler vials.</p>
<p><b>Step 4</b></p> <p>Collect Filtrate &amp; Analyze</p>			<p>Cap vial and put directly onto LC-MS for analysis.</p>

Sample Dilution Ratio	Sample Volume	Dilution Volume*
1:1	500 µL	500 µL
1:4	200 µL	800 µL
1:9	100 µL	900 µL

\* Diluent is 0.1% Formic Acid in D.I. H<sub>2</sub>O due to the polar nature of these compounds

# EtG and EtS Analysis

## LC-MS/MS method:

**Instrument:** Agilent 1200 Binary Pump SL

**Detector:** AB Sciex API 4000 Q Trap MS/MS

**Column:** UCT Selectra® EtG HPLC column, 100 x 2.1 mm, 3 µm

**Guard Column:** UCT Selectra® EtG, 10 x 2.0 mm, 3 µm

**Column Temperature:** 30 °C

**Column Flow Rate:** 0.3 mL/min

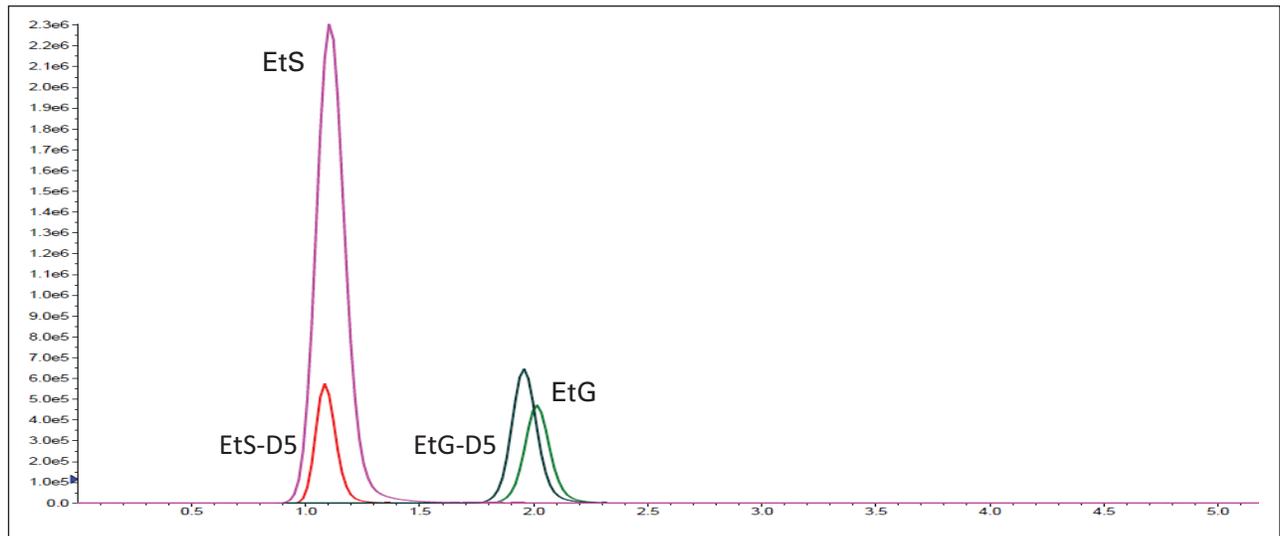
**Injection Volume:** 10 µL

**Mobile Phase A:** 0.1% formic acid in D.I. H<sub>2</sub>O

**Mobile Phase B:** 0.1% formic acid in ACN

## Gradient:

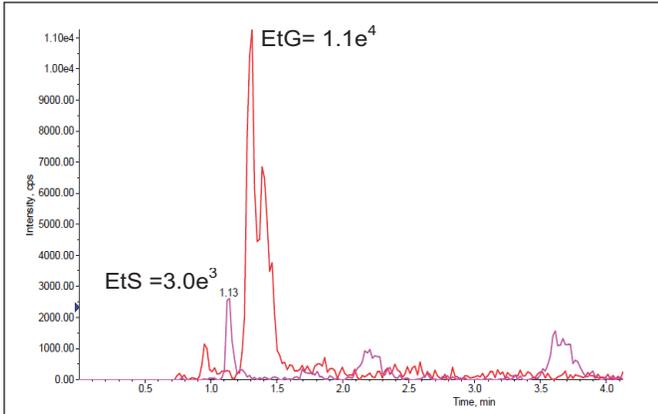
Time	%A	%B
0	100	0
1.5	100	0
1.7	0	100
2.7	0	100
3.0	100	0
6.0	100	0



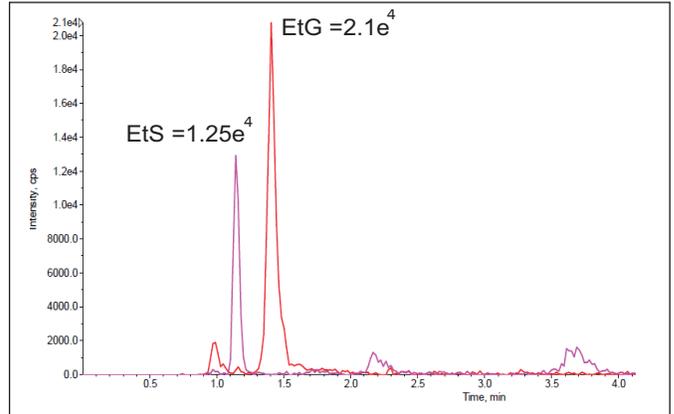
MRM transitions (ESI-, 50 ms dwell time)				
Compound	Rt (min)	Q1 ion	Q3 ion 1	Q3 ion 2
EtS-D5	1.02	130.1	97.8	79.7
EtS	1.03	125.1	95.8	96.9
EtG-D5	1.60	226.1	85.1	74.9
EtG	1.64	220.9	85.1	75.1

# Comparison of Chromatography

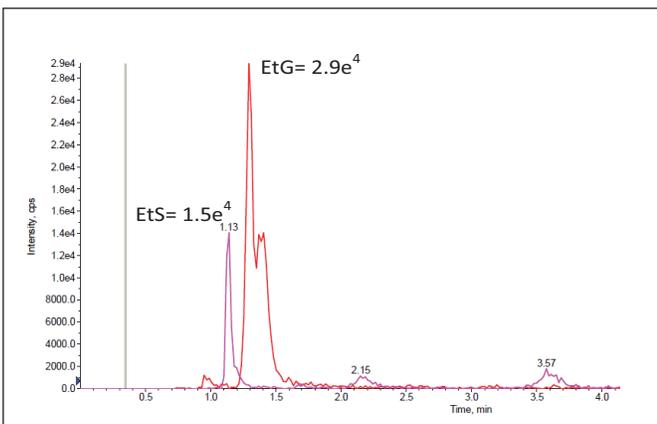
**Dilute & Shoot 1:1 50 ng/mL**



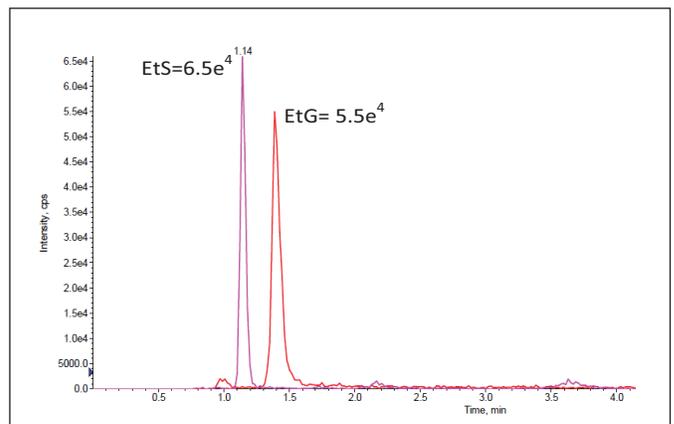
**FASt® EtG 1:1 50 ng/mL**



**Dilute & Shoot 1:1 750 ng/mL**

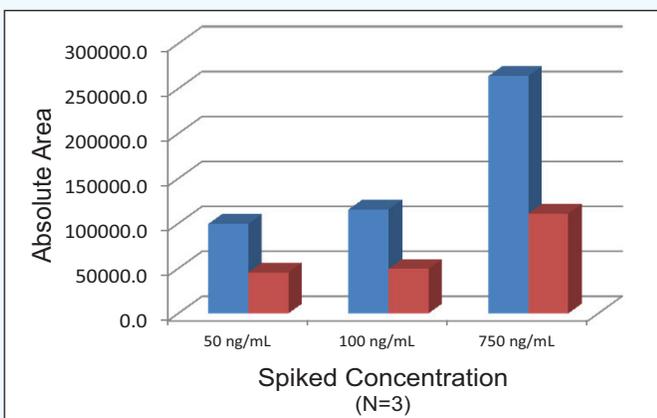


**FASt® EtG 1:1 750 ng/mL**

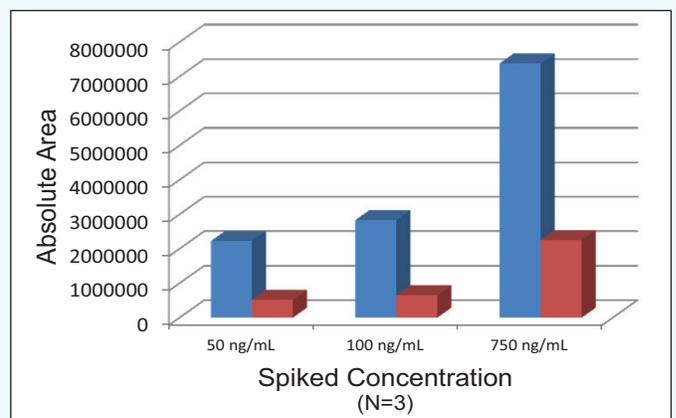


# Comparison of Analyte Response

**EtG 1:1 Dilution**



**EtS 1:1 Dilution**



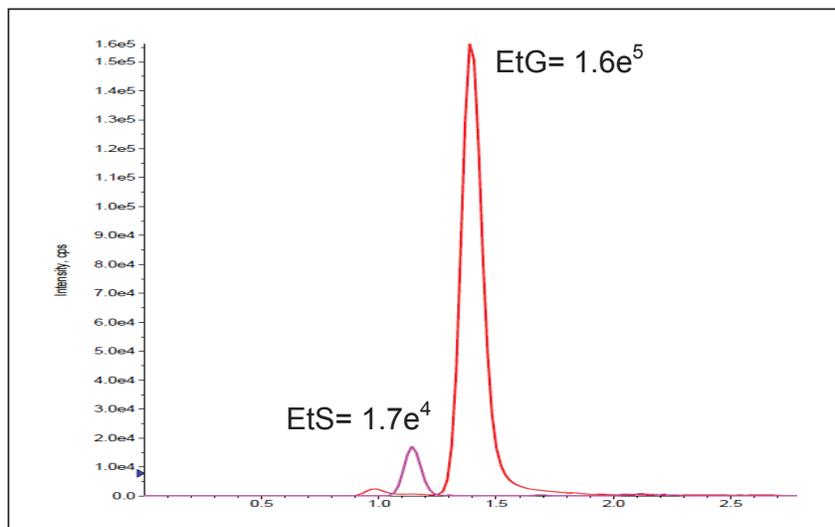
FASt® Dilute & Shoot

FASt® Dilute & Shoot

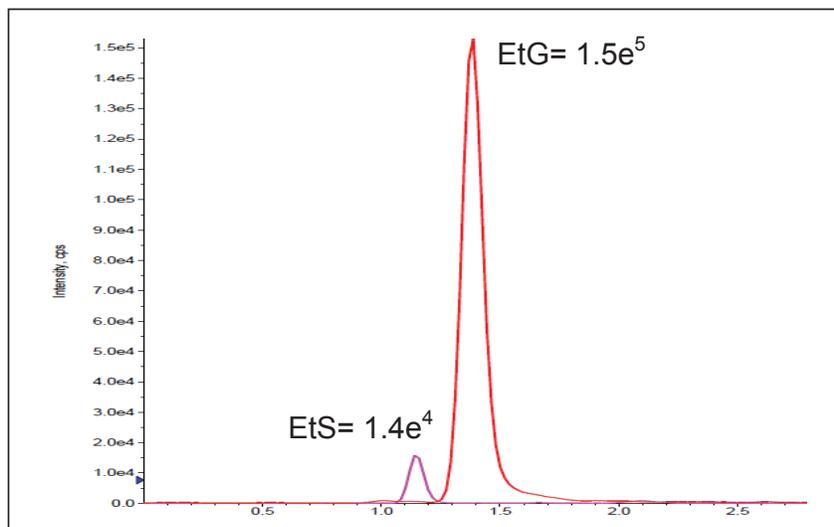
One of the main problems associated with the analysis of EtG/EtS is the deterioration of signal response over time due to matrix buildup on the analytical column and instrument source. To assess the efficiency of UCT's FAS<sup>t</sup>® EtG column and method, a patient sample was monitored over the course of 50 injections. The below chromatograms compare the absolute peak heights of EtG & EtS on the initial injection versus the 50th, illustrating no significant loss in signal.

## Reproducibility: FAS<sup>t</sup>® EtG 1:1 (spiked urine sample)

### Injection 1



### Injection 50





## PRICES AND TERMS

Our prices are subject to change without notice. The price in effect when we receive your order will apply. All prices are in US Dollars and are F.O.B. Lewistown, PA 17044. Terms of payment are net 30 days.

## MINIMUM ORDERS

We welcome all orders, therefore, we do not have a minimum order requirement. When ordering, please include your purchase order number, complete "Ship To" and "Bill To" address, catalog number, quantity, and description of product(s). Also include your name and a phone number where you can be reached should we have any questions concerning your order.

## SHIPMENTS

Normal processing is within 24 hours after receipt of an order. Unless special shipping requests have been made, our trained staff will send all orders by UPS Ground service. The appropriate shipping charges (freight & insurance costs) will be added to the invoice, unless otherwise instructed by the customer.

## SPECIAL PRICING

We offer special pricing for volume purchases and standing orders. These discounts apply to bonded phase extraction column purchases only. Please call a sales representative for more information on special pricing qualifications.

## RETURN POLICY

Our Quality Manager will handle all returns. Before returning merchandise, please call to obtain a return authorization number from the quality manager. We will need to know the reason for the return, date of purchase, purchase order number and invoice number in order to issue a return authorization number. Return merchandise must be received before a credit can be issued. Returns will not be accepted after 90 days. A restocking fee of 25% of the price paid, or a minimum of \$25.00 (whichever is greater) will be charged on all returns.

## WARRANTY

All products manufactured by UCT are guaranteed against defects in materials and workmanship for a period of 90 days after shipment. UCT will replace any items that prove to be defective during this time period. The exclusive remedy requires the end user to first advise UCT of the defective product by phone or in writing and must include order number, the lot number and the shipping date.

To initiate this action, photographs of the product, including packaging and labeling of the containers, must be submitted to the UCT Representative for approval. With approval a return authorization can be initiated, and must be received within 30 days. Once the materials arrive at UCT a further inspection of the materials must be completed and accepted by our Quality Manager prior to further action of credits or replacement. UCT's total liability is limited to the replacement cost of UCT products.

This warranty does not apply to damage resulting from misuse.

## Contact Us

Phone: 215.781.9255  
800.385.3153  
Fax: 215.785.1226

UCT, Inc.  
2731 Bartram Rd.  
Bristol, PA 19007

Email: [info@unitedchem.com](mailto:info@unitedchem.com)  
Web: [www.unitedchem.com](http://www.unitedchem.com)

## To order additional drug standards please contact Lipomed Inc. directly

Phone: 617.577.7222  
Fax: 617.577.1776

Lipomed, Inc.  
One Broadway  
Cambridge, MA 02142

Email: [ussales@lipomed.com](mailto:ussales@lipomed.com)  
Web: [www.lipomed.com](http://www.lipomed.com)

