



SAMPLE PREP COLUMNS DESIGNED
SPECIFICALLY FOR THE
RACING INDUSTRY



XtrackT® DAU

BGB GC|LC
MS|CE

XtrackT[®] DAU

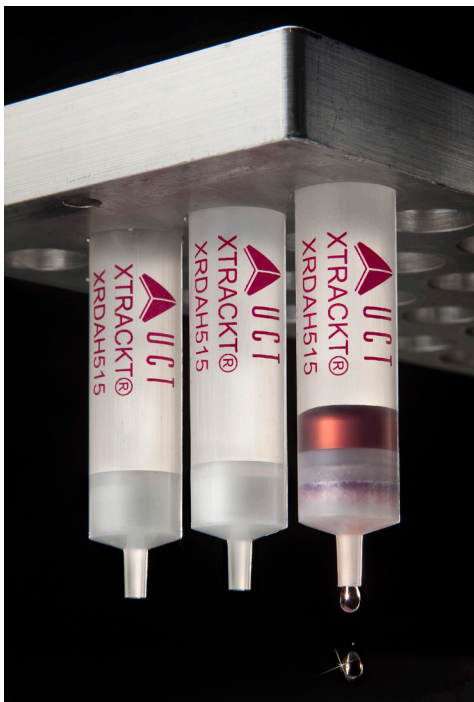
XtrackT[®] DAU is a reproducible copolymerically bonded silica created specially for the screening and confirmation of drugs in dog and horse urine.

The use of new and powerful drugs in sports requires new techniques for the clean extraction of very low levels of compounds. XtrackT[®] offers a simple, easy solution to this extraction problem, whether it's a comprehensive screen or low level quantitation by either GC/MS or LC/MS.

Through original research on the concept and use of copolymeric bonding of silicas for sample preparation, UCT, Inc. has pioneered this generation of hybrid extraction sorbents. XtrackT[®] DAU has both hydrophobic and ion exchange functionalities, thus providing several primary retention mechanisms. The copolymers are used to enhance and improve mixed mechanisms which have been known to exist for sometime. XtrackT[®] utilizes several different chemical characteristics of compounds to produce very clean extracts. The recovery of drugs is at least equivalent to and in most cases significantly better than recovery by liquid-liquid extraction. XtrackT[®] extracts both free and glucuronide bound drugs.

A single column extraction provides broad coverage of drugs, separating extracts into acidic/neutral, steroid and basic fractions. It produces cleaner extracts and eliminates the need for special liquid-liquid extraction procedures for different drug classes. The columns are designed to give uniform flow even with the most viscous of samples.

A SCREENING PROCEDURE FOR ACIDIC, NEUTRAL AND BASIC DOPING AGENTS FROM HUMAN, EQUINE AND CANINE URINE USING XtrackT[®] EXTRACTION COLUMNS



1. Hydrolyze conjugates
2. Adjust sample pH to 6.0
3. Condition column
4. Apply sample to column
5. Wash
6. Dry column
7. Elute acidic and neutral drugs
8. Elute steroids
9. Wash column
10. Elute basic drugs
11. Evaporate and reconstitute

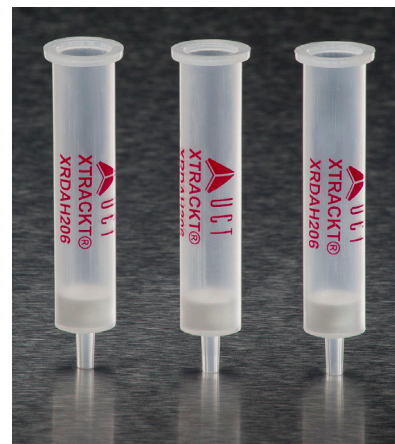
3-HYDROXY LIDOCAINE, 4-HYDROXY GUANABENZ, 4-HYDROXY MEPIVICANE, 4-HYDROXY XYLAZINE, DETOMIDINE, AND O-DESMETHYL TRAMADOL IN EQUINE URINE BY LC/MS

200 mg XtrackT[®] DAU Extraction Column

Part #: XRDAH206

Select pH Buffer Pouches 100 mM Phosphate pH 6.0

Part #: SPHPO6001-10



XtrackT[®]
Solid Phase Extraction
Columns

Procedure:

1. Prepare Sample

- To 1 mL of 100 mM phosphate buffer (pH = 6) add 2 mL of Urine
- Add Internal standards. Add 3 mL of 100 mM phosphate buffer
- Mix/vortex
- Centrifuge as appropriate

2. Condition XtrackT[®] DAU Extraction Column

- 1 x 3 mL CH₃OH
 - 1 x 3 mL D.I. H₂O
 - 1 x 3 mL 100 mM phosphate buffer (pH = 6)
- Note:** Aspirate at full vacuum or pressure

3. Apply Sample

- Load sample at 1 to 2 mL/minute

4. Wash Column

- 1 x 3 mL D.I. H₂O
- 1 x 3 mL CH₃OH/ 2% glacial acetic acid
- Dry column (5 minutes at full vacuum or pressure)

5. Elute

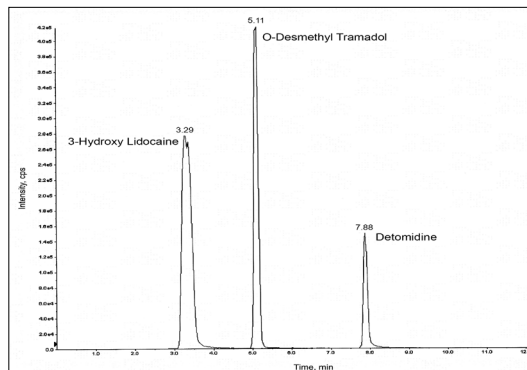
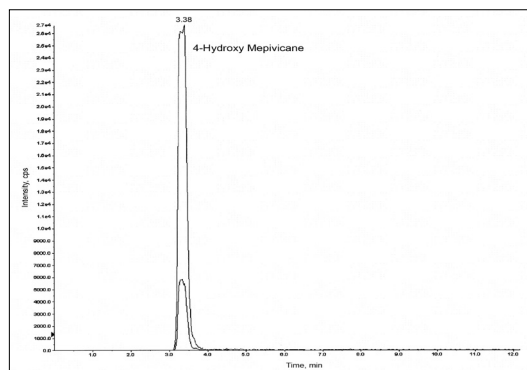
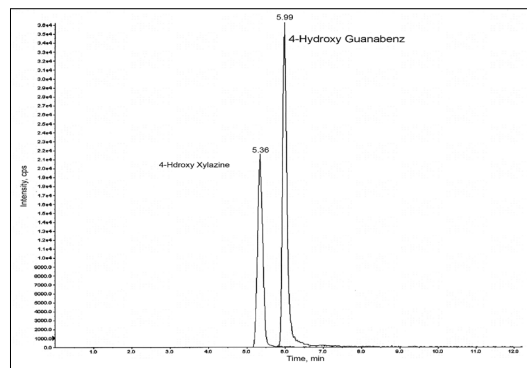
- 1 x 3 mL DCM/IPA/ NH₄OH (78/20/2)
- Collect the eluate at 1-2 mL minute (or gravity)

6. Dry Eluate

- Evaporate to dryness at < 40°C

7. Analysis

- Inject 10 µL sample



Compound	RT	Precursor Ion	Product Ion
3-Hydroxy Lidocaine	3.29	251.5	86.0
4-Hydroxy Mepivacane	3.38	264.1	98.1
O-Desmethyl Tramadol	5.11	250.4	58.0
4-Hydroxy Xylazine	5.36	237.9	137.0
4-Hydroxy Guanabenz	5.99	248.9	189.9
Detomidine	7.88	188.1	81.0

CLENBUTEROL AND SALBUTAMOL IN EQUINE URINE FOR GC/MS CONFIRMATIONS

200 mg XtrackT[®] DAU Extraction Column

Part #: XRDAH206

Select pH Buffer Pouches 100mM Phosphate pH 6.0

Part #: SPHPHO6001-10

BSTFA w/1% TMCS - Part #: SBSTFA-1-1



Select pH Buffer Pouches

Pre-measured salts for sample preparation

Procedure:

1. Prepare Sample

- To 1 mL of 100 mM phosphate buffer (pH = 6) add 1 mL of Urine
- Add Internal standards. Add 3 mL of 100 mM phosphate buffer
- Mix/vortex
- Centrifuge as appropriate

2. Condition XtrackT[®] DAU Extraction Column

- 1 x 3 mL CH₃OH
- 1 x 3 mL D.I. H₂O
- 1 x 3 mL 100 mM phosphate buffer (pH = 6)

Note: Aspirate at full vacuum or pressure

3. Apply Sample

- Load sample at 1 to 2 mL/minute

4. Wash Column

- 1 x 3 mL D.I. H₂O
- 1 x 3 mL CH₃OH
- Dry column (5 minutes at full vacuum or pressure)

5. Elute Clenbuterol / Salbutamol

- 1 x 3 mL CH₃OH containing 4% NH₄OH
- Collect the eluate at 1-2 mL minute (or gravity)

6. Dry Eluate

- Evaporate to dryness at < 40°C

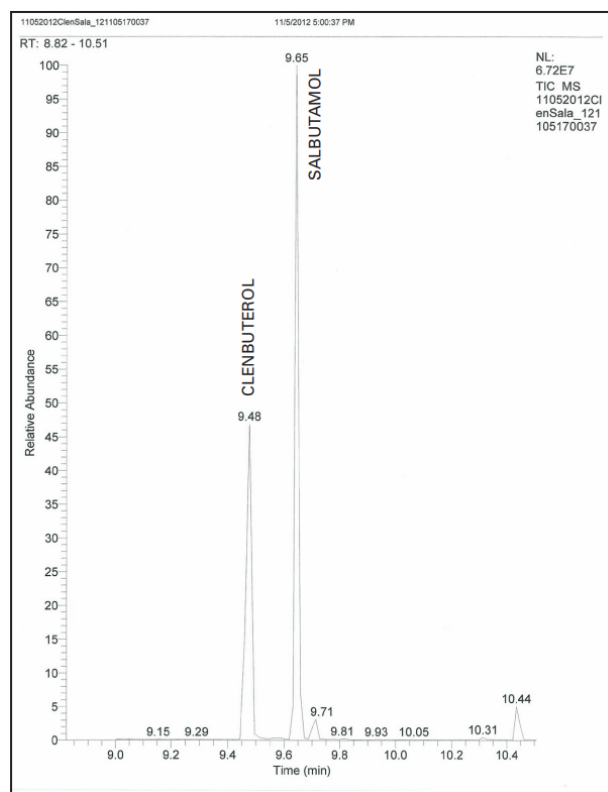
7. Derivatize

- Add 50 µL Ethyl Acetate
- Add 50 µL BSTFA w/1% TMCS
- Heat at 70°C for 30 minutes
- Cool to room temperature

Note: Do not evaporate this solution

8. Analysis

- Inject 1 to 2 µL onto GC/MS



Compound	Primary Ion*	Secondary Ion	Tertiary Ion
Clenbuterol-TMS	86	262	243
Clenbuterol-D3-TMS [†]	95	262	243
Salbutamol-TMS	369	86	207
Salbutamol-D3-TMS [†]	372	86	210

*Quantitation Ion

[†]Suggested internal standard for GC/MS

COCAINE AND METABOLITES IN BLOOD, PLASMA/SERUM, URINE AND TISSUE FOR GC/MS CONFIRMATIONS

200 mg XtrackT[®] DAU Extraction Column

Part #: XRDAH206 with CLEAN-THRU[®] Tips,

without Tips Part #: XCDAH206

CLEAN-THRU[®] Tips Part #: CLTTP050

Select pH Buffer Pouches 100mM Phosphate pH 6.0

Part #: SPHPO6001-10

BSTFA w/1% TMCS - Part #: SBSTFA-1-1



CLEAN-THRU[®] Tips

Minimize sample cross contamination potential

Procedure:

1. Prepare Sample

- To 1 mL of 100 mM phosphate buffer (pH = 6) add internal standards
- Add 2 mL of blood, plasma/ serum, urine or 1 g (1:4) tissue homogenate
- Mix/vortex
- Add 2 mL of 100 mM phosphate buffer (pH = 6). Mix/vortex.

Note: Sample pH should be 6.0 ± 0.5

Adjust pH accordingly with 100 mM monobasic or dibasic sodium phosphate. Centrifuge as appropriate

2. Condition XtrackT[®] DAU Extraction Column

- 1 x 3 mL CH₃OH
- 1 x 3 mL D.I. H₂O
- 1 x 1 mL 100 mM phosphate buffer (pH = 6)

Note: Aspirate at full vacuum or pressure

3. Apply Sample

- Load sample at 1 to 2 mL/minute

4. Wash Column

- 1 x 3 mL D.I. H₂O
- 1 x 2 mL 100 mM HCl
- 1 x 3 mL CH₃OH
- Dry column (5 minutes at full vacuum or pressure)

5. Elute Cocaine and Benzoyllecgonine

- 1 x 3 mL Methylene Chloride/Isopropanol/Ammonium Hydroxide (78:20:2)
- Collect eluate at 1 to 2 mL/minute

Note: Prepare elution solvent daily. Add IPA/NH₄OH, mix, then add CH₂Cl₂ (pH = 11-12)

6. Dry Eluate

- Evaporate to dryness at < 40°C

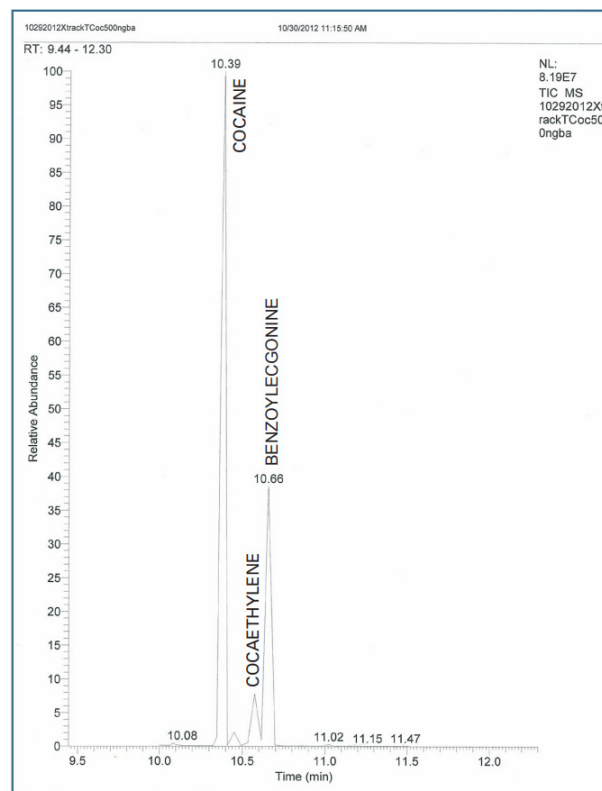
7. Derivatize

- Add 50 µL ethyl acetate and 50 µL BSTFA w/1% TMCS
- Overlay with Nitrogen and cap. Mix/vortex
- React 20 minutes at 70°C
- Remove from heat source to cool

Note: Do not evaporate BSTFA solution

8. Analysis

- Inject 1 to 2 µL onto GC/MS



Compound	Primary Ion*	Secondary Ion	Tertiary Ion
Cocaine	182	198	303
Cocaine-D3 [†]	185	201	306
Cocaethylene	196	317	82
Cocaethylene-D8 [†]	204	325	196
Benzoyllecgonine-TMS	240	256	361
Benzoyllecgonine-D3-TMS [†]	243	259	364

*Quantitation Ion

[†]Suggested internal standard for GC/MS

BARBITURATES IN URINE FOR GC/MS CONFIRMATIONS

200 mg XtrackT[®] DAU Extraction Column
 Part #: XRDAH206 with CLEAN-THRU[®] Tips,
 without Tips Part #: XCDAH206
 CLEAN-THRU[®] Tips Part #: CLTTP050
 OPTIONAL: TMPAH - Part #: STMPAH-0-1

Procedure:

1. Prepare Sample

- To 2 mL of urine add internal standard(s) and 1 mL of 100 mM phosphate buffer (pH = 5)
- Mix/vortex
- Sample pH should be 5.0 ± 0.5
- Adjust pH accordingly with 100 mM monobasic or dibasic sodium phosphate

2. Condition XtrackT[®] DAU Extraction Column

- 1 x 3 mL CH₃OH
 - 1 x 3 mL D.I. H₂O
 - 1 x 1 mL 100 mM phosphate buffer (pH = 5)
- Note:** Aspirate at full vacuum or pressure

3. Apply Sample

- Load sample at 1 to 2 mL/minute

4. Wash Column

- 1 x 3 mL D.I. H₂O
- 1 x 1 mL 100 mM acetic acid
- Dry column (5 minutes at full vacuum or pressure)
- 1 x 2 mL hexane

5. Elute Barbituates

- 1 x 3 mL hexane/ethyl acetate (50:50)
- Collect eluate at 1 to 2 mL/minute

6. Dry Eluate

- Evaporate to dryness at < 40°C
- Reconstitute with 100 µL ethyl acetate

OPTIONAL DERIVATIZATION

- Add 25-50 µL of 0.2 M TMPAH
- Reaction occurs in injection port
- Inject 1 to 2 µL onto GC/MS

7. Analysis

- Add 50 µL of both Ethyl Acetate and BSTFA



Positive Pressure Manifold

Extract up to 48 samples with even flow across all channels

Other Barbituates that can be extracted using this method Underivatized

Compound	Primary Ion*	Secondary Ion	Tertiary Ion
Amobarbital	156	141	157
Butalbital	168	167	181
Pentobarbital	156	141	195
Thiopental	172	157	173

*Quantitation Ion

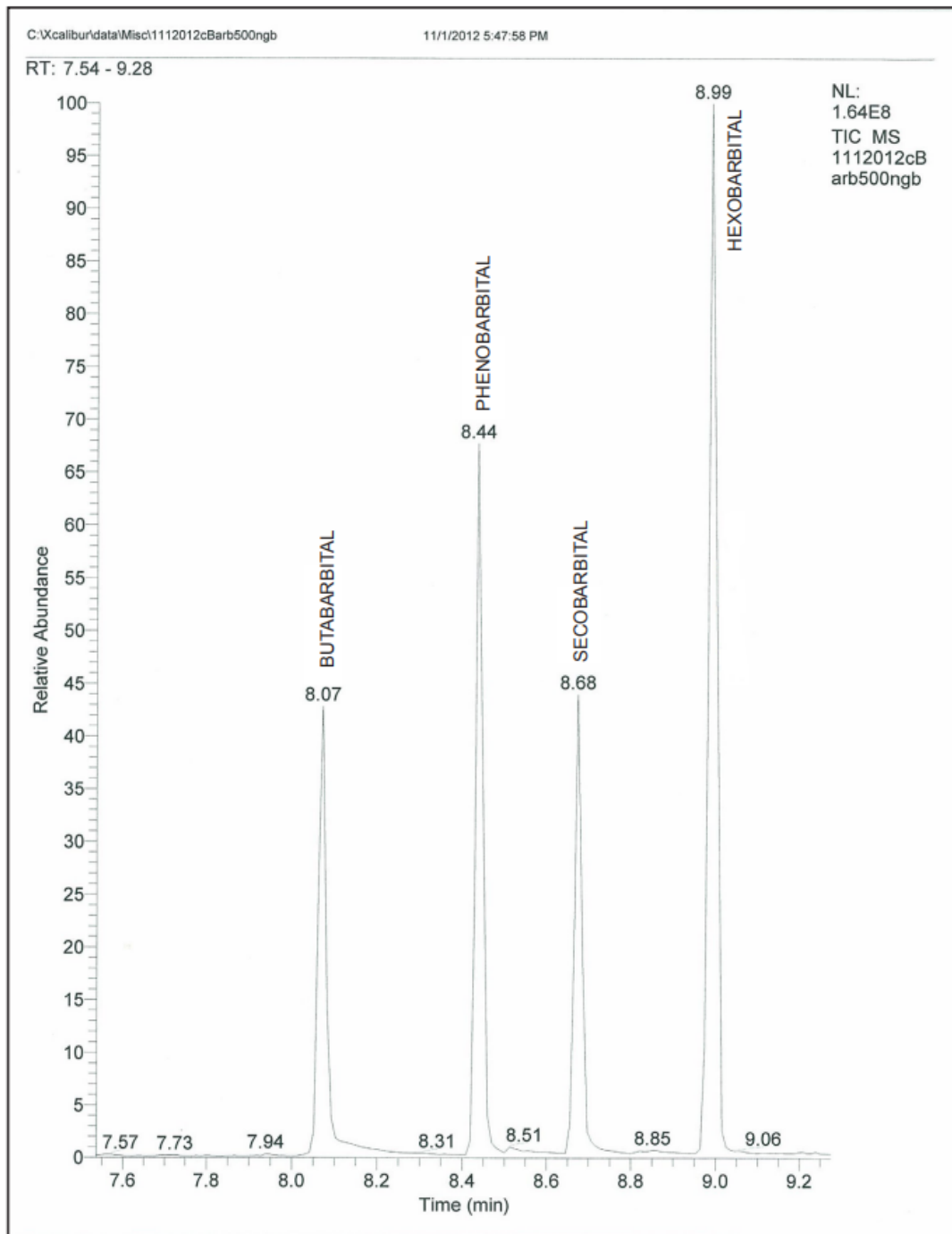
Derivatized

Compound	Primary Ion*	Secondary Ion	Tertiary Ion
Butalbital	196	195	209
Butalbital-D5 [†]	201	214	-
Amobarbital	169	184	185
Pentobarbital	169	184	112
Secobarbital	196	195	181
¹³ C ₄ Secobarbital [†]	200	185	-
Phenobarbital	232	146	175
Phenobarbital-D5 [†]	237	151	-

*Quantitation Ion

[†]Suggested internal standard for GC/MS

BARBITURATES IN URINE SPECTRA - UNDERIVATIZED



Underivatized

Compound	Primary Ion*	Secondary Ion	Tertiary Ion
Butalbital	156	141	157
Phenobarbital	204	232	117
Secobarbital	168	167	195
Hexobarbital [†]	221	157	236

*Quantitation Ion

[†]Suggested internal standard for GC/MS

THC, THC-OH, AND CARBOXY-THC IN URINE FOR GC/MS CONFIRMATIONS

200 mg XtrackT[®] DAU Extraction Column - Part #: XRDAH206

Select pH Buffer Pouches 1M Acetate pH 5.0 - Part #: SPHACE5010-10

BSTFA w/1% TMCS - Part #: SBSTFA-1-1

Abalonase[™] Ultra β - Glucuronidase - Part #: UASBETA-GLUC-10

Procedure:

1. Prepare Sample

- To 1 mL of urine, add internal standard(s)
- Enzyme hydrolysis - add 1 mL of Abalonase[™] Ultra working stock solution (30,000 units/mL). Mix/vortex. Hydrolyze for 15 mins - 2 hours at 70°C
- Allow samples to cool
- Centrifuge if necessary

2. Condition XtrackT[®] DAU Extraction Column

- 1 x 3 mL CH₃OH
 - 1 x 3 mL D.I. H₂O
 - 1 x 1 mL Acetate buffer (pH = 3.0)
- Note:** Aspirate at full vacuum or pressure

3. Apply Sample

- Load sample at 1 to 2 mL/minute

4. Wash Column

- 1 x 2 mL D.I. H₂O
- 1 x 2 mL 100 mM HCl/acetonitrile (95:5)
- Dry column (5-10 minutes at full vacuum or pressure)

5. Elute Cannabinoids

- 1 x 3 mL hexane/ethyl acetate/ glacial acetic acid (49:49:2)
- Collect eluate at 1 to 2 mL/minute

Note: Before proceeding, insure there are no water droplets at the bottom of the collection tube. This may increase drying time and decrease BSTFA derivatizing efficiency

6. Dry Eluate

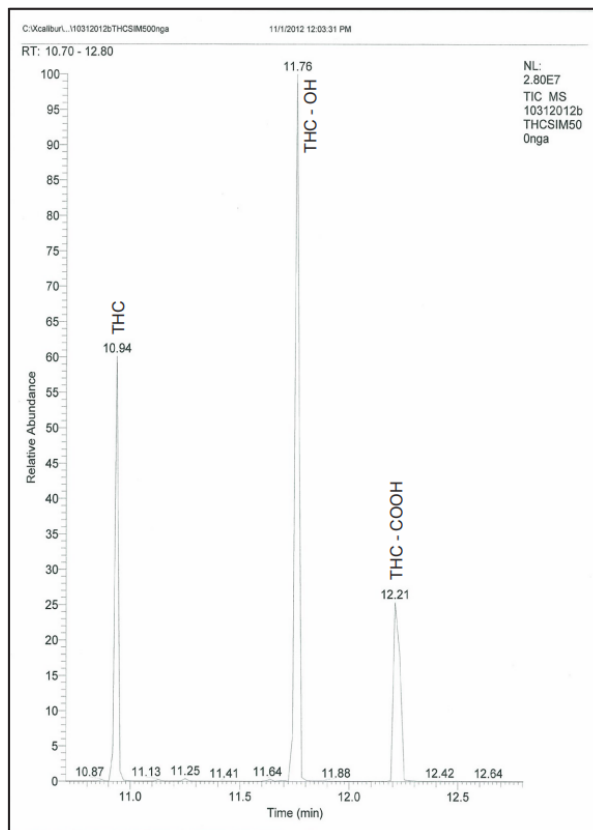
- Evaporate to dryness at < 40°C

7. Derivatize

- Add 50 μ L ethyl acetate and 50 μ L BSTFA w/1% TMCS
 - Mix/vortex
 - React 20 minutes at 70°C
 - Remove from heat source to cool
- Note:** Do not evaporate BSTFA

8. Analysis

- Inject 1 to 2 μ L onto gas chromatograph



Compound	Primary Ion*	Secondary Ion	Tertiary Ion
THC-TMS	371	343	366
THC-D3-TMS [†]	374	346	889
THC-OH-TMS	371	459	474
THC-OH-D3-TMS [†]	374	462	471
THC-COOH-TMS	371	473	488
THC-COOH-D3-TMS [†]	374	476	491

*Quantitation Ion

[†]Suggested internal standard for GC/MS

BENZODIAZEPINES IN URINE FOR GC/MS CONFIRMATIONS

200 mg XtrackT[®] DAU Extraction Column - Part #: XRDAH206

Select pH Buffer Pouches 100mM Phosphate pH 6.0

Part #: SPHPHO6001-10

BSTFA w/1% TMCS - Part #: SBSTFA-1-1

Abalonnase[™] Ultra β - Glucuronidase - Part #: UASBETA-GLUC-10

Procedure:

1. Prepare Sample

- To 1 mL of urine, add internal standard(s)
- Enzyme hydrolysis - add 1 mL of Abalonnase[™] Ultra working stock solution (30,000 units/mL). Mix/vortex. Hydrolyze for 15 mins - 2 hours at 70°C
- Allow samples to cool
- Centrifuge if necessary

2. Condition XtrackT[®] DAU Extraction Column

- 1 x 3 mL CH₃OH
 - 1 x 3 mL D.I. H₂O
 - 1 x 1 mL 100 mM phosphate buffer (pH = 6)
- Note:** Aspirate at full vacuum or pressure

3. Apply Sample

- Load sample at 1 mL/minute

4. Wash Column

- 1 x 2 mL D.I. H₂O
- 1 x 2 mL 20% acetonitrile in 100 mM phosphate buffer (pH = 6.0)
- Dry column (5 minutes at full vacuum or pressure)
- 1 x 2 mL hexane

5. Elute Benzodiazepines

- 1 x 3 mL ethyl acetate containing 4% ammonium hydroxide
- Collect eluate at 1 to 2 mL/minute

6. Dry Eluate

- Evaporate to dryness at < 40°C

7. Derivatize

- Add 50 μ L ethyl acetate and 50 μ L BSTFA w/1% TMCS
- Overlay with Nitrogen and cap. Mix/vortex
- React 20 minutes at 70°C. Remove from heat source to cool

Note: Do not evaporate BSTFA solution

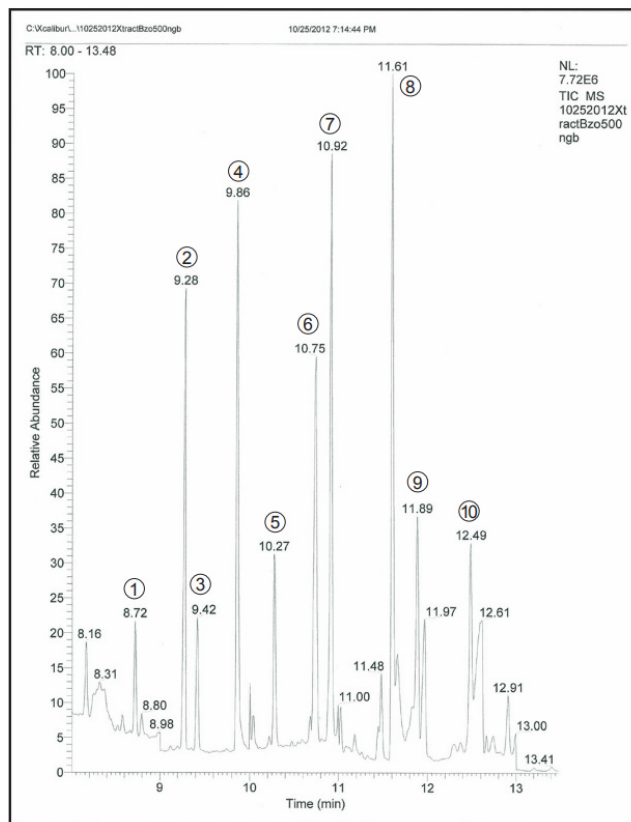
8. Analysis

- Inject 1 to 2 μ L onto GC/MS



Derivatizing Reagents

High Purity Reagents in a variety of package sizes; derivatize extracts prior to GC/MS analysis



Compound	Primary Ion*	Secondary Ion	Tertiary Ion
Diazepam	256	283	221
Nordazepam TBDMS	327	383	369
Midazepam	310	325	297
Oxazepam - 2TBDMS	457	513	383
Oxazepam - D5 2TBDMS†	462	519	
Temazepam	357	283	385
7-aminoclonazepam TBDMS	342	399	328
Lorazepam 2TBDMS	491	513	533
Clonazepam	372	326	429
Alprazolam	279	204	308
Alprazolam - D5†	284	313	
Alphahydroxyl alprazolam TBDMS	381	423	346

*Quantitation Ion

†Suggested internal standard for GC/MS

CARISOPRODOL/MEPROBAMATE IN URINE FOR GC/MS CONFIRMATIONS

200 mg XtrackT[®] DAU Extraction Column - Part #: XRDAH206

Select pH Buffer Pouches 100mM Phosphate pH 6.0 -

Part #: SPHPHO6001-10

BSTFA w/1% TMCS - Part #: SBSTFA-1-1

Elution Profile – (1) Carisoprodol, (2) Meprobamate, (3) Hexobarbital (Internal Standard)

Procedure:

1. Prepare Sample

- To 2 mL of urine add internal standard(s) and 1 mL of 100 mM phosphate buffer (pH = 6)
- Mix/vortex
- Sample pH should be 6.0 ± 0.5
- Adjust pH accordingly with 100 mM monobasic or dibasic sodium phosphate
- Centrifuge at 3000 RPM for 10 minutes

2. Condition XtrackT[®] DAU Extraction Column

- 1 x 3 mL CH₃OH
 - 1 x 3 mL D.I. H₂O
 - 1 x 1 mL 100 mM phosphate buffer (pH = 6.0)
- Note:** Aspirate at full vacuum or pressure

3. Apply Sample

- Load sample at 1 to 2 mL/minute

4. Wash Column

- 1 x 3 mL D.I. H₂O
- 1 x 1 mL 100 mM acetic acid
- Dry column (5 minutes at full vacuum or pressure)
- 1 x 2 mL hexane

5. Elute Barbituates

- 1 x 3 mL hexane/ethyl acetate (50:50); Collect eluate at 1 to 2 mL / minute

6. Dry Eluate

- Evaporate to dryness at $< 40^{\circ}\text{C}$
- Reconstitute with 100 μL ethyl acetate

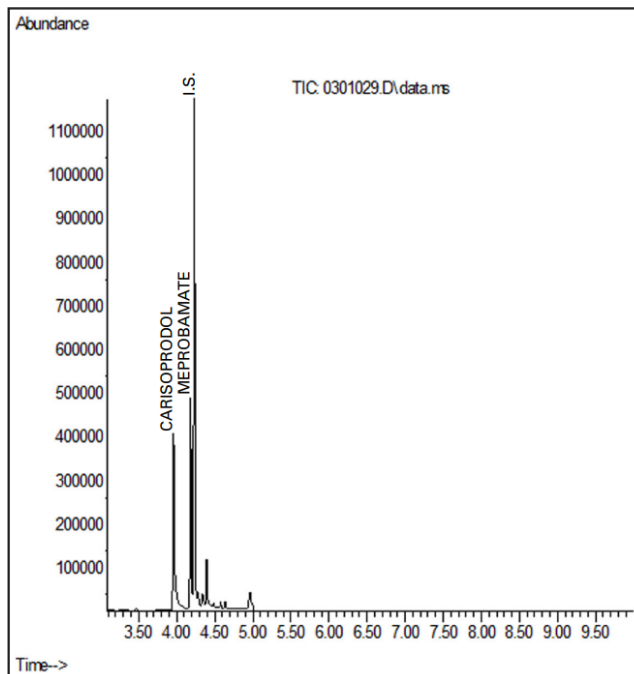
7. Derivatize

- Add 50 μL ethyl acetate and 50 μL BSTFA w/1% TMCS
- Mix/vortex
- React 20 minutes at 70°C . Remove from heat source to cool

Note: Do not evaporate BSTFA

8. Analysis

- Inject 1 to 2 μL onto GC/MS



Compound	Primary Ion
Carisoprodol	221
Meprobamate	157
Hexobarbital	236

BUPRENORPHINE AND NORBUPRENORPHINE IN EQUINE URINE FOR GC/MS CONFIRMATIONS

200 mg XtrackT[®] DAU Extraction Column - Part #: XRDAH206

Select pH Buffer Pouches 100mM Acetate pH 5.00 -

Part #: SPHACE5001-10

BSTFA w/1% TMCS - Part #: SBSTFA-1-1

Abalonnase[™] Ultra β - Glucuronidase - Part #: UASBETA-GLUC-10

Procedure:

1. Prepare Sample

- To 1 mL of urine, add internal standard(s)
- Enzyme hydrolysis - add 1 mL of Abalonnase[™] Ultra working stock solution (30,000 units/mL). Mix/vortex. Hydrolyze for 15 mins - 2 hours at 70°C
- Allow samples to cool
- Centrifuge if necessary

2. Condition XtrackT[®] DAU Extraction Column

- 1 x 3 mL CH₃OH
 - 1 x 3 mL D.I. H₂O
 - 1 x 1 mL 100 mM acetate buffer (pH = 5)
- Note:** Aspirate at < 3 Inches Hg to prevent sorbent drying

3. Apply Sample

- Load sample at 1 to 2 mL/minute

4. Wash Column

- 1 x 2 mL D.I. H₂O
- 1 x 3 mL 100 mM acetate buffer (pH = 5)
- Dry column (5-10 minutes at full vacuum or pressure)

5. Elute Buprenorphine / Norbuprenorphine

- 1 x 3 mL methylene chloride / iso-propano / ammonium hydroxide (78/20/12). (Make elution solvent fresh)
 - Collect eluate at 1 to 2 mL/minute
- Note:** Before proceeding, insure there are no water droplets at the bottom of the collection tube. This may increase drying time and decrease BSTFA derivitizing efficiency

6. Dry Eluate

- Evaporate to dryness at < 40°C

7. Derivatize

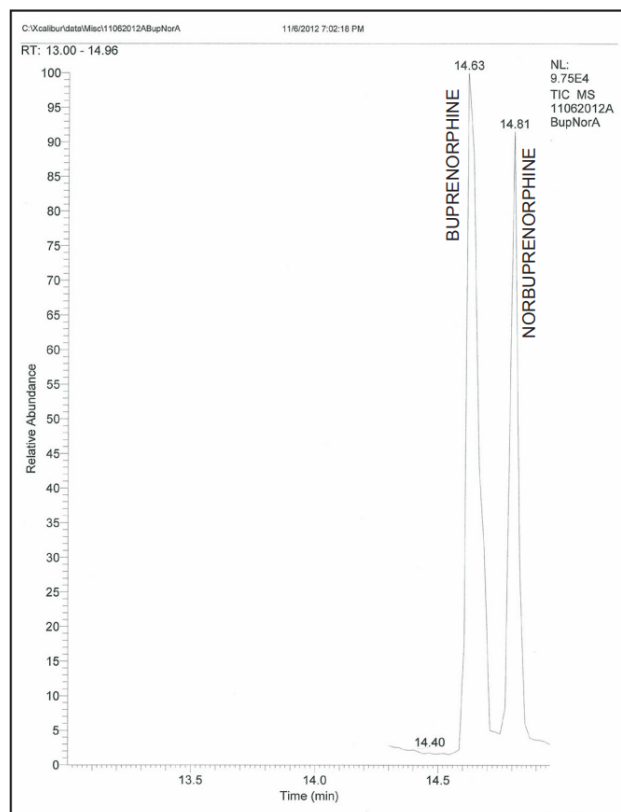
- Add 50 μ L ethyl acetate and 50 μ L BSTFA w/1% TMCS
 - React 20 minutes at 70°C
 - Remove from heat source to cool
- Note:** Do not evaporate BSTFA

8. Analysis

- Inject 1 to 2 μ L onto GC/MS



XtrackT[®]
Solid Phase Extraction
Columns



Compound	Primary Ion*	Secondary Ion	Tertiary Ion
Buprenorphine-TMS	452	467	487
Buprenorphine-D4-TMS [†]	455	470	489
Norbuprenorphine-TMS	468	500	510
Norbuprenorphine-D5-TMS [†]	503	525	542

*Quantitation Ion

[†]Suggested internal standard for GC/MS

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.

Select Bibliography of XtrackT[®] publications from the racing industry

1. D.W. Hill, W. G. Hyde, A. J. Kind, D. Greulich and S. Hopkins; Journal of Analytical Toxicology 24: 281-288 (2000).
2. M.C.Dumasia, L.Grainger, and E.Houghton; Xenobiotica 32: 795-802 (2002).
3. M.C.Dumasia, A.Ginn, W.Hyde, J.Peterson, and E.Houghton J.Chromatography B. 788: 297-307 (2003).
4. C.E.Uboh, J.A.Rudy, F.A.Railing, J.A.Enright, J.M. Schoemaker et al.; Journal of Analytical Toxicology 19: 307-315 (1995)

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.



FORENSICS