PAIN MANAGEMENT TESTING UPGRADED

Combine Phenomenex Sample Preparation and Core-Shell HPLC/UHPLC Solutions for:

- Fast Results
- Reproducible High Performance
- Increased Sensitivity
- Excellent Productivity
Guaranteed Solutions

Effective and highly reproducible methodology helps you ensure results and reduce costs. With guaranteed high quality products from Phenomenex, you can easily push your research to the next level.

Solid Phase Extraction (SPE)

Strata™-X-Drug B
- Designed and quality controlled for basic drugs of abuse
- Time and solvent saving polymeric strong cation-exchange SPE sorbent
- No equilibration or condition steps needed

Protein Precipitation (PPT)

Impact™
- Complete in plate removal of proteins (β-glucuronidase)
- Increase throughput 3x
- Leak-free oleophobic membrane
- Easily automated

HPLC/UHPLC Analysis

Kinetex® Biphenyl Core-Shell Technology
- Rugged and reliable core-shell columns
- Incredible performance and efficiencies
- Enhanced polar and basic retention
- Quality controlled for basic drugs of abuse

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Rapid, Simple Cleanup
for Pain Management Drugs and Drugs of Abuse

Skip the method development, significantly reduce your sample preparation time, and save solvent using Strata™-X-Drug B SPE tubes and 96-well plates. One method is all you will need to extract over 41 pain management drugs. Or easily upgrade the throughput of your existing protein precipitation methods with the new Impact™ PPT long drip plates.

### Sample Pretreatment

<table>
<thead>
<tr>
<th>Urine: Acid Hydrolysis</th>
<th>Enzymatic Hydrolysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To 2 mL urine sample, add 500 µL concentrated hydrochloric acid (HCl)</td>
<td></td>
</tr>
<tr>
<td>2. Heat at 90 °C for 2 hours</td>
<td></td>
</tr>
<tr>
<td>3. Add 2 mL of 200 mM Sodium acetate buffer (pH 4.0)</td>
<td></td>
</tr>
<tr>
<td>4. Add 1 mL of 6 N Potassium hydroxide (KOH)</td>
<td></td>
</tr>
<tr>
<td>5. Centrifuge for 5-6 minutes at 5,000-5,500 rpm (20-22 °C)</td>
<td></td>
</tr>
<tr>
<td>6. Verify pH of sample is between 4.0 – 6.0</td>
<td></td>
</tr>
<tr>
<td>7. Load pretreated sample directly onto Strata-X-Drug B sorbent (see procedure below)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Urine: Enzymatic Hydrolysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Dilute 500 µL urine with 100 µL buffer* and 20 µL of 1,000,000 units/mL beta-glucuronidase in a 96-well collection plate</td>
</tr>
<tr>
<td>2. Vortex for 5-6 seconds</td>
</tr>
<tr>
<td>3. Incubate in a water bath at 63 °C for 30 minutes</td>
</tr>
<tr>
<td>4. If performing SPE, transfer sample to a 96-well collection plate or autosampler vial, seal and centrifuge for 10 minutes at 2,000 rpm. Load supernatant onto Strata-X-Drug B sorbent (see procedure below).</td>
</tr>
</tbody>
</table>

For Ultra Clean and Concentrated Samples

**Strata-X-Drug B SPE Steps**

Procedure designed for 60 mg bed mass Strata-X-Drug B and can be adjusted for smaller or larger bed masses.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Equilibrate</th>
<th>Load</th>
<th>Wash 1</th>
<th>Wash 2</th>
<th>Elute</th>
<th>Evaporate</th>
<th>Reconstitute</th>
<th>Inject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not required</td>
<td>Not required</td>
<td>Pretreated sample (see above for pretreatment recommendations)</td>
<td>2 mL of 100 mM Sodium acetate buffer (pH 5.0)</td>
<td>2 mL Methanol</td>
<td>2 mL Ethyl acetate/isopropanol/Ammonium hydroxide (pH 5.0) (7:2:1)</td>
<td>to dryness under a stream of Nitrogen at 50 °C</td>
<td>1 mL 15 % Methanol</td>
<td>5 µL</td>
</tr>
</tbody>
</table>

For Rapid Removal of Proteins (Ex. β-Glucuronidase)

**Impact Protein Precipitation Steps**

1. Load 300 µL Acetonitrile to the wells of an Impact Plate
2. Load 100 µL hydrolyzed sample directly onto the Impact Plate
3. Vortex for 2 minutes at maximum possible speed
4. Apply vacuum at 2-7 inches Hg for 2-3 minutes and collect filtrate in a collection plate

*Buffer prepared by adding 800 mL deionized water and 111 mL glacial acetic acid to a 1 L volumetric flask, adjust final volume to the line with a 50 % KOH solution and mix by inversion.

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Rapid, Reliable, and High Performance Pain Panel Testing

The new Kinetex® Biphenyl ensures that your comprehensive screens display the needed performance with a ruggedness and reliability that will keep you at ease.

**Conditions for all separations:**

**Column:**
- Kinetex 2.6 µm Biphenyl (50 x 2.1 mm)
- Kinetex 2.6 µm Biphenyl (50 x 3.0 mm)
- Kinetex 5 µm Biphenyl (50 x 3.0 mm)

**Mobile Phase:**
- A: Water with 0.1 % Formic Acid
- B: Methanol with 0.1 % Formic Acid

**Gradient:**

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>%B</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>0.5</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>4.5</td>
<td>80</td>
</tr>
<tr>
<td>4.51</td>
<td>85</td>
</tr>
<tr>
<td>5.5</td>
<td>10</td>
</tr>
<tr>
<td>5.51</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>10</td>
</tr>
</tbody>
</table>

**Flow Rate:** 0.6 mL/min

**Temperature:** 40°C

**Detection:** MS/MS (AB SCIEX API 5000™)

**Samples:**
1. Morphine
2. Oxymorphone
3. Hydromorphone
4. Amphetamine
5. Methamphetamine
6. MDA
7. Naloxone
8. Codeine
9. 6-MAM
10. Oxycodone
11. MDMA
12. Naltrexone
13. Hydrocodone
14. MDEA
15. Norfentanyl
16. Tramadol
17. Benzoylcegonine
18. Meprobamate
19. Normeperidine
20. Meperidine
21. Norbuprenorphine
22. Fentanyl
23. Buprenorphine
24. Flurazepam
25. PCP
26. Carisoprodol
27. Propoxyphene
28. Midazolam
29. Sufentanil
30. Norpropoxyphene
31. EDDP
32. Lorazepam
33. Methadone
34. Clonazepam
35. Oxazepam
36. Hydroxyzaprazolam
37. Nordiazepam
38. Flunitrazepam
39. Temazepam
40. Alprazolam
41. Diazepam
Go Even Faster!

Using the high performance and versatility of the Kinetex® 2.6µm Biphenyl with a ballistic gradient allows you to cut down even more time from your cycles and significantly improve productivity. Imagine what you can do with this solution on your multiplex or dual-stream systems.

![Graph showing retention times for various analytes](image)

**Conditions:**
- **Column:** Kinetex 2.6µm Biphenyl
- **Dimension:** 50 x 3.0 mm
- **Part No.:** 00B-4622-Y0
- **Mobile Phase:**
  - A: Water with 0.1% Formic Acid
  - B: Methanol with 0.1% Formic Acid
- **Gradient:**
  - Time (min) | %B
  - 0 | 10
  - 2.5 | 100
  - 3.5 | 100
  - 5 | 0
- **Flow Rate:** 0.7 mL/min
- **Temperature:** 40°C
- **Detection:** MS/MS (AB SCIEX API 5000™)

**Extended Lifetime with Biological Samples**

**Kinetex Biphenyl Stability in Urine (First 1000 injections)**

<table>
<thead>
<tr>
<th>Injection No.</th>
<th>Retention Time (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.5</td>
</tr>
<tr>
<td>200</td>
<td>1.1</td>
</tr>
<tr>
<td>400</td>
<td>1.6</td>
</tr>
<tr>
<td>600</td>
<td>2.2</td>
</tr>
<tr>
<td>800</td>
<td>2.8</td>
</tr>
<tr>
<td>1000</td>
<td>3.3</td>
</tr>
</tbody>
</table>

**Analyte**
- Morphine
- Oxymorphone
- Hydromorphone
- Amphetamine
- Naloxone
- Methamphetamine
- Codeine
- MDA
- Oxycodone
- MDEA
- Norfentanyl
- 7-Aminoclonazepam
- 7-Aminoflunitrazepam
- Alprazolam
- Benzoylcygonine
- Buprenorphine
- Clonazepam
- Codeine
- Estazolam
- Flunitrazepam
- Hydrocodone
- Hydromorphone
- Nordiazepam
- Norhydrocodone
- Oxazepam
- Propoxyphene
- Sufentanil
- Temazepam
- Triazolam
- 6-MAM
- Lorazepam
- Norbuprenorphine
- Norpropoxyphene
- Oxazepam
- Hydroxyalprazolam
- MICRODIZPAM
- Flunitrazepam
- Temazepam
- Alprazolam
- Diazepam
- 7-Aminoflunitrazepam
- 7-Aminoclonazepam
- Lorazepam
- MDEA
- Alprazolam
- Methadone
- Chlorpromazine
- Hydroxyalprazolam
- Flunitrazepam
- Temazepam
- Alprazolam
- Diazepam

**Phenomenex**
- WEB: www.phenomenex.com
It’s Time to Upgrade to Kinetex® Biphenyl

Easily adjust your current fully porous methodology to get performance benefits:

The Kinetex Upgrade

Faster run time, higher sensitivity

Excellent retention, sensitivity, and low pressure

Restek 3 µm Ultra Biphenyl

Kinetex 2.6 µm Biphenyl (50 x 3.0 mm)

Kinetex 2.6 µm Biphenyl (50 x 2.1 mm)

Conditions for all separations:

- **Column:**
  - Restek 3 µm Ultra Biphenyl (50 x 2.1 mm)
  - Kinetex 2.6 µm Biphenyl (50 x 2.1 mm)
  - Kinetex 2.6 µm Biphenyl (50 x 3.0 mm)

- **Mobile Phase:**
  - A: Water with 0.1 % Formic Acid
  - B: Methanol with 0.1 % Formic Acid

- **Gradient:**
  - Time (min)  %B
  - 0  10
  - 0.5  10
  - 2  25
  - 4.5  80
  - 4.51  85
  - 5.5  85
  - 5.51  10
  - 7  10

- **Flow Rate:** 0.6 mL/min

- **Temperature:** 40°C

- **Detection:** MS/MS (AB SCIEX API 5000™)

Restek is a registered trademark of Restek Corporation. Phenomenex is not affiliated with Restek Corporation. Comparative separations may not be representative of all applications.

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### Ordering Information

#### Strata-X-Drug B

**STRATA-X-DRUG B**

<table>
<thead>
<tr>
<th>Format</th>
<th>Sorbent Mass</th>
<th>Part Number</th>
<th>Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tube</td>
<td>10 mg</td>
<td>8B-S128-AAK</td>
<td>1 mL (100/box)</td>
</tr>
<tr>
<td></td>
<td>30 mg</td>
<td>8B-S128-TAK</td>
<td>1 mL (100/box)</td>
</tr>
<tr>
<td></td>
<td>30 mg</td>
<td>8L-S128-TAK</td>
<td>1 mL (100/box)</td>
</tr>
<tr>
<td></td>
<td>30 mg</td>
<td>8B-S128-TBJ</td>
<td>3 mL (50/box)</td>
</tr>
<tr>
<td></td>
<td>60 mg</td>
<td>8B-S128-UBJ</td>
<td>3 mL (50/box)</td>
</tr>
<tr>
<td></td>
<td>60 mg</td>
<td>8B-S128-UCL</td>
<td>6 mL (30/box)</td>
</tr>
<tr>
<td></td>
<td>60 mg</td>
<td>8B-S128-UCL</td>
<td>6 mL (200/box)</td>
</tr>
</tbody>
</table>

**96-Well Plate**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>10A-S128-AGB</td>
<td>2 Plates/box</td>
<td></td>
</tr>
<tr>
<td>30A-S128-TGB</td>
<td>2 Plates/box</td>
<td></td>
</tr>
<tr>
<td>60A-S128-UGB</td>
<td>2 Plates/box</td>
<td></td>
</tr>
</tbody>
</table>

† Tab-less tube

### Impact Protein Precipitation

**96-Well Plate**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEO-7565</td>
<td>Impact Protein Precipitation 2 mL Square Well Filter Plate</td>
<td>2/Box</td>
</tr>
<tr>
<td>CEO-7566</td>
<td>Impact Protein Precipitation Long Drip 2 mL Square Well Filter Plate</td>
<td>2/Box</td>
</tr>
</tbody>
</table>

### Kinetex 2.6 µm Columns (mm)

**Phases**

<table>
<thead>
<tr>
<th>Phases</th>
<th>50 x 2.1</th>
<th>100 x 2.1</th>
<th>50 x 3.0</th>
<th>50 x 4.6</th>
<th>100 x 4.6</th>
<th>150 x 4.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biphenyl</td>
<td>00B-4622-AN</td>
<td>00D-4622-AN</td>
<td>00B-4622-YO</td>
<td>00B-4622-EO</td>
<td>00D-4622-EO</td>
<td>00F-4622-EO</td>
</tr>
</tbody>
</table>

**SecurityGuard ULTRA Cartridges**

<table>
<thead>
<tr>
<th>3/pk</th>
<th>3/pk</th>
<th>3/pk</th>
</tr>
</thead>
<tbody>
<tr>
<td>AJ0-9209</td>
<td>AJ0-9208</td>
<td>AJ0-9207</td>
</tr>
</tbody>
</table>

for 2.1 mm ID for 3.0 mm ID for 4.6 mm ID

### Kinetex 5 µm Columns (mm)

**Phases**

<table>
<thead>
<tr>
<th>Phases</th>
<th>50 x 2.1</th>
<th>50 x 3.0</th>
<th>50 x 4.6</th>
<th>100 x 4.6</th>
<th>150 x 4.6</th>
<th>250 x 4.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biphenyl</td>
<td>00B-4627-AN</td>
<td>00B-4627-YO</td>
<td>00B-4627-EO</td>
<td>00D-4627-EO</td>
<td>00F-4627-EO</td>
<td>00G-4627-EO</td>
</tr>
</tbody>
</table>

**SecurityGuard ULTRA Cartridges**

<table>
<thead>
<tr>
<th>3/pk</th>
<th>3/pk</th>
<th>3/pk</th>
</tr>
</thead>
<tbody>
<tr>
<td>AJ0-9209</td>
<td>AJ0-9208</td>
<td>AJ0-9207</td>
</tr>
</tbody>
</table>

for 2.1 mm ID for 3.0 mm ID for 4.6 mm ID

---

**Terms and Conditions**

Subject to Phenomenex Standard Terms & Conditions, which may be viewed at www.phenomenex.com/TermsAndConditions.

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Strata-X is patented by Phenomenex. U.S. Patent No. 7,119,145

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**ACCESSORIES FOR SPE TUBES**

<table>
<thead>
<tr>
<th>Manifolds</th>
<th>Description</th>
<th>Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AH0-6023</td>
<td>SPE 12-Position Vacuum Manifold Set, complete assembly</td>
<td>ea</td>
</tr>
<tr>
<td>AH0-6024</td>
<td>SPE 24-Position Vacuum Manifold Set, complete assembly</td>
<td>ea</td>
</tr>
</tbody>
</table>

**ACCESSORIES FOR 96-Well PLATES**

<table>
<thead>
<tr>
<th>Manifold</th>
<th>Description</th>
<th>Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AH0-8950</td>
<td>96-Well Plate Manifold, Universal w/vacuum gauge</td>
<td>ea</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Collection Plates (deep well, polypropylene)</th>
<th>Description</th>
<th>Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AH0-7192</td>
<td>96-Well Collection Plate, 350 µL/Conical</td>
<td>50/pk</td>
</tr>
<tr>
<td>AH0-7193</td>
<td>96-Well Collection Plate, 1 mL/Conical</td>
<td>50/pk</td>
</tr>
<tr>
<td>AH0-7279</td>
<td>96-Well Collectin Plate, 1 mL, Round, 7 mm</td>
<td>50/pk</td>
</tr>
<tr>
<td>AH0-8635</td>
<td>96-Well Collection Plate, 2 mL Square/ Round-Conical</td>
<td>50/pk</td>
</tr>
<tr>
<td>AH0-8636</td>
<td>96-Well Collection Plate, 2 mL Round/Round, 8 mm</td>
<td>50/pk</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sealing Mats</th>
<th>Description</th>
<th>Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AH0-8597</td>
<td>Sealing Mats, Pierceable, 96-Square Well, Silicone</td>
<td>50/pk</td>
</tr>
<tr>
<td>AH0-8631</td>
<td>Sealing Mats, Pierceable, 96-Round Well 7 mm, Silicone</td>
<td>50/pk</td>
</tr>
<tr>
<td>AH0-8633</td>
<td>Sealing Mats, Pierceable, 96-Round Well 8 mm, Silicone</td>
<td>50/pk</td>
</tr>
<tr>
<td>AH0-7362</td>
<td>Sealing Tape Pad</td>
<td>10/pk</td>
</tr>
</tbody>
</table>

---

Kinetex core-shell columns come in a variety of phases, dimensions, and particle sizes. Visit www.phenomenex.com/kinetex for more info.

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We guarantee that if Phenomenex products in this guide do not provide at least an equivalent separation as compared to other products of the same phase and dimensions, return the product with comparative data within 45 days for a FULL REFUND.
www.phenomenex.com/clinicalapps