Still Using SPE for Bioanalysis?

There’s an Easier, Better Way.

Improve Your LC/MS Analysis with Phree Phospholipid Removal Solutions

- Double Your Productivity
- Skip the Method Development
- Achieve Clean Samples
SPE requires multiple methods to achieve acceptable recoveries for acids, bases, and neutrals. With Phree™ Phospholipid Removal products, one method is all you will need to analyze a variety of acids, bases, and neutrals.

- Reduce the amount of time spent performing method development
- Eliminate the need to train technicians on multiple methods
- Analyze more compounds at once

**SPE cannot produce consistent recoveries for acids, bases, and neutrals using a single extraction method; Phree can.**

>70% Recovery

N=5 for all cleanup techniques. Generic reversed phase methods which were included with the Waters® Oasis® HLB and Biotage® Evolute® ABN products were used.

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Phree™ Phospholipid Removal products can selectively remove >99% of phospholipids from bioanalytical samples, including lysophosphatidyl cholines and phosphatidyl cholines.

Presence of 2 Major Phospholipid Classes in SPE vs. Phree Extracted Plasma

Phospholipids can drastically reduce MS sensitivity and column lifetime. Reversed phase SPE does not completely remove phospholipids without extensive method development.

HPLC/UHPLC Column Sensitivity after 250 Injections of Phree Extracted vs. Unclean Plasma

To assess the effect of phospholipid build up, repetitive 20 µL injections of diclofenac in protein precipitated plasma versus diclofenac in Phree extracted plasma were made.

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Lyso-1 : Palmitoyl-2-OH-sn-glycero-phosphocholine, 496>184 m/z
Lyso-2 : 1-Oleoyl-2-OH-glycero-phosphocholine, 522>184 m/z
PC-1 : 1-Palmitoyl-2-Oleoyl-sn-glycerol-phosphocholine, 760>184 m/z
PC-2 : 1-Stearoyl-2-Linoleoyl-sn-glycerol-phosphocholine, 786>184 m/z
PC-3 : 1-Oleoyl-2-Linoleoyl-sn-glycerol-phosphocholine, 784>184 m/z
The Phree™ Phospholipid Removal method is rapid and simple to perform. With 3-7 minutes of time savings per sample plus 5-10 minutes of time savings for solvent preparation, your lab will instantly become more productive.

<table>
<thead>
<tr>
<th>Cleanup Method</th>
<th>Cleanup Time per Sample</th>
<th>Solvent Preparation Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPE Method using Waters® Oasis® HLB</strong></td>
<td>~10 minutes</td>
<td>6-10 minutes</td>
</tr>
<tr>
<td><strong>SPE Method using Biotage® Evolute® ABN</strong></td>
<td>~15 minutes</td>
<td>6-10 minutes</td>
</tr>
<tr>
<td><strong>Phree Phospholipid Removal Method</strong></td>
<td>5 minutes</td>
<td>3 minutes</td>
</tr>
</tbody>
</table>

**Condition**
- 1 mL Methanol
- 1 mL Water
- 100 µL Plasma diluted with 300 µL Water
- 1 mL 5 % Methanol in Water
- 500 µL Methanol

**Dispense**
1) 100 µL Plasma
2) 300 µL 1 % Formic Acid in Acetonitrile

**Equilibrate**
- 1 mL Methanol
- 1 mL 0.1 % Formic Acid in Water
- 100 µL Plasma diluted with 300 µL 2 % Formic Acid in Water
- 1 mL 5 % Methanol in Water

**Load**
- 100 µL Plasma diluted with 300 µL Water
- 1 mL 5 % Methanol in Water
- 500 µL Methanol

**Mix**
- by aspiration or vortex

**Filter**
- via vacuum, positive pressure, or centrifugation

See how easy the Phree Phospholipid Removal Protocol is at www.phenomenex.com/Phree

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SPE and Phree Phospholipid Removal procedures were performed manually using single tubes. Time required per sample may vary based on automation capabilities.
## Ordering Information

### Phree™ Phospholipid Removal Products

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>8B-S133-TAK</td>
<td>Phree Phospholipid Removal Tabbed 1 mL Tube</td>
<td>100/pk</td>
</tr>
<tr>
<td>8E-S133-TGB</td>
<td>Phree Phospholipid Removal 96-Well Plates</td>
<td>2/pk</td>
</tr>
</tbody>
</table>

#### Accessories

**Collection Plates (deep well, polypropylene)**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>AH0-7192</td>
<td>96-Well Collection Plate, 350 µL/well</td>
<td>50/pk</td>
</tr>
<tr>
<td>AH0-7193</td>
<td>96-Well Collection Plate, 1 mL/well</td>
<td>50/pk</td>
</tr>
<tr>
<td>AH0-7194</td>
<td>96-Well Collection Plate, 2 mL/well</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>
<tr>
<td>AH0-7279</td>
<td>96-Well Collection Plate, 1 mL Well Round, 7 mm</td>
<td>50/pk</td>
</tr>
</tbody>
</table>

**Sealing Mats**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Unit</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>AH0-8598</td>
<td>Sealing Mats, Pre-Slit, 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>AH0-8632</td>
<td>Sealing Mats, Pre-Slit, 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>AH0-8634</td>
<td>Sealing Mats, Pre-Slit, 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>

**Vacuum Manifolds**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>AH0-6023*</td>
<td>SPE 12-Position Vacuum Manifold Set, for tubes</td>
<td>ea</td>
</tr>
<tr>
<td>AH0-6024*</td>
<td>SPE 24-Position Vacuum Manifold Set, for tubes</td>
<td>ea</td>
</tr>
<tr>
<td>AH0-8950</td>
<td>96-Well Plate Manifold, Universal with Vacuum Gauge</td>
<td>ea</td>
</tr>
</tbody>
</table>

*Manifolds include: Vacuum-tight glass chamber, vacuum gauge assembly, polypropylene lid with gasket, male and female luers and yellow end plugs, stopcock valves, collection rack assemblies, polypropylene needles, lid support legs. Waste container included with 12-position manifold.

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**Access videos, trainings, technical notes, and more at**

www.phenomenex.com/Phree.

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

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**Improve Your LC/MS Analysis With Phree Phospholipid Removal Solutions**

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- Skip the Method Development
- Achieve Clean Samples

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