Acrodisc® Units with Mustang® Q and S Membranes

Description

Disposable Chromatography Units with High Binding Capacities and Fast Flow Rates

- Fast flow rates. Recommended flow rates of 1 to 4 mL/minute do not affect recovery rates.
- Mustang Q membrane is a strong anion exchanger that effectively binds plasmid DNA, negatively-charged proteins, and viral particles.
- Mustang S membrane is a strong cation exchanger that effectively binds positively-charged proteins and viral particles.
- Disposable 25 mm units are designed for single laboratory use only.
- Direct scale up to capsules with Mustang Q and S membranes for larger-volume applications.

Application

Mustang Q Membrane

- Provides contaminant removal such as DNA viral particle, host cell proteins, or endotoxin
- Ideal for isolation via capture and release of plasmid DNA, virus, or target protein from a complex mixture
- Offers protein polishing for negatively-charged proteins
- Purifies virus and oligonucleotides

Mustang S Membrane

- Purifies and concentrates positively-charged proteins and viral particles
- Ideal for evaluation, process development, and validation

Specifications

Materials of Construction

- Filter Media: Mustang Q and Mustang S membranes
- Housing: Polypropylene

Pore Size

- 0.8 µm

Membrane Bed Volume

- 0.18 mL

Inlet/Outlet Connections

- Female luer lock inlet, male slip luer outlet

Maximum Operating Pressure

- 5.5 bar (550 kPa, 80 psi) at ambient temperature 21 - 24 ºC (70 - 75 ºF)

Biological Safety

- Passes United States Pharmacopeia (USP) Biological Reactivity Test, In Vivo <88>. Mustang Q membrane testing performed at 72 ºC (161 ºF) and Mustang S membrane at 50 ºC (122 ºF) after preconditioning.

Typical Operating Temperature

- 21 - 24 ºC (70 - 75 ºF)
**Recommended Flow Rate**
- 1 - 4 mL/min; flow rate will vary with type of solutions, concentration of proteins, and other components.

**Typical Mean Dynamic Binding Capacity**

- **Mustang Q Membrane**
  - DNA: 3.6 mg/Acrodisc unit or 30 mg/mL membrane volume (mv)
  - BSA: 10 mg/Acrodisc unit or 70 mg/mL membrane volume (mv)

- **Mustang S Membrane**
  - Lysozyme: 8 mg per Acrodisc unit or 47 mg/mL membrane volume (mv)
  - Human IgG: 11 mg per Acrodisc unit or 60 mg/mL membrane volume (mv)

1. **Note on optimization:** The yield is contingent on type of DNA, size and copy number of plasmid, concentration of protein, ionic strength, and pH of buffer.

**Performance**

**Acrodisc Unit with Mustang Q Membrane:**

- **Resolution with BSA and Goat IgG**

![Resolution Graph](image1)

*The conditions used to generate data for the resolution graph above include buffer: 25mM Tris pH 8.0; salt: 1M NaCl in 25mM Tris pH 8.0; gradient: 0 to 0.5M NaCl in 50 column volume (CV); flow rate: 2.3 mL/min (13 cv/min); sample loading: 4% of total binding capacity.*

**Acrodisc Unit with Mustang Q Membrane:**

- **Dynamic Binding with BSA**

![Dynamic Binding Graph](image2)

*A solution of 0.524 mg/mL BSA was pumped through the Acrodisc unit at 2.3 mL/min. Breakthrough occurred at 8.1 minutes and was calculated as 54 mg/mL using:

\[ \text{flow rate} \times \text{initial protein BSA concentration} \times \text{time (8.1 min)} \]

\[ \text{membrane bed volume of Mustang Q membrane in 25 mm Acrodisc unit (0.18 mL)} \]

**Acrodisc Unit with Mustang S Membrane:**

- **Resolution with Cytochrome C and Lysozyme**
The conditions used to generate data for the graph above include buffer: 10mM MES pH 5.5; salt: 1M NaCl in 10mM MES pH 5.5; gradient: 0 to 1M NaCl in 50 CV; flow rate: 2.3 mL/min (13 cv/min).

**Acrodisc Unit with Mustang S Membrane:**  
Dynamic Binding with Lysozyme

A solution of 0.512 mg/mL Lysozyme was pumped through the Acrodisc unit at 2.3 mL/min. Breakthrough occurred at 8.0 minutes and was calculated as 52 mg/mL using:

\[
\text{flow rate (2.3 mL/min)} \times \text{initial protein Lysozyme concentration (0.512 mg/mL)} \times \text{time (8.0 min)}
\]

\[
\text{membrane bed volume of Mustang S membrane in 25 mm Acrodisc unit (0.18 mL)}
\]

**Related Products**

- AcroPrep™ Advance 96-Well Filter Plates for Protein Purification

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Pkg</th>
<th>Price</th>
<th>Qty</th>
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<td></td>
<td><strong>Acrodisc® Unit with Mustang® Q Membrane</strong></td>
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<td>MSTG25Q6</td>
<td>Acrodisc unit with Mustang Q membrane, 0.8 µm, 25 mm, non-sterile</td>
<td>10/pk</td>
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<td>(blister packs)</td>
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|             | **Acrodisc® Unit with Mustang® S Membrane**                                 |      |        |     |
| MSTG25S6    | Acrodisc unit with Mustang S membrane, 0.8 µm, 25 mm, non-sterile           | 10/pk| NA     | 0   |
|             | (blister packs)                                                            |      |        |     |

|             | **Acrodisc Units with Mustang Membranes Kit**                               |      |        |     |
| MSTG25KIT   | Kit includes: (4) Acrodisc units with Mustang Q membrane (non-sterile); (4) Acrodisc units with Mustang S membrane (non-sterile); (2) Acrodisc units with Mustang E membrane (sterile) | 10/pk| NA     | 0   |
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