



SAMPLE PREPARATION

Aurum™ Ion Exchange Mini Kits and Columns

- Powerful separation capabilities
- Patented UNOsphere™ technology
- Easy, flexible format

Simplified Purification of Target Proteins

Fractionation of Complex Mixtures

Fractionation of proteins in a sample is a crucial step in a variety of research fields, including protein discovery. Ion exchange is a chromatographic technique that allows selective enrichment of either acidic or basic proteins. Easy-to-use Aurum ion exchange mini kits offer the power of ion exchange chromatography without the need for expensive chromatography systems or a sophisticated knowledge of chromatographic techniques. These kits can be used with many starting samples, such as serum, bacteria, yeast, or cultured cells, and include columns for cation exchange (CEX) or anion exchange (AEX) chromatography. Aurum ion exchange mini kits simplify protein discovery with streamlined protocols and flexible column and buffer options. They are suitable for routine prefractionation and purification as well as sample screening. Isolated proteins are suitable for most downstream proteomic applications, including 2-D gel analysis and mass spectrometry.

Ion Exchange Chromatography

Ion exchange chromatography can be used to concentrate and purify proteins based on their ionic character. Both a protein's charge at a given pH and its isoelectric point (pI), the pH at which its net charge is zero, can be exploited for purification.

When an ion is applied to an ion exchanger carrying the opposite charge, it is adsorbed to the resin, while uncharged molecules and ions of the same charge do not bind to the ion exchanger and pass through the column. Because binding of ions is competitive and reversible, adsorbed proteins or other large ions are commonly eluted by a salt or pH gradient. Cation exchangers contain negatively charged functional groups covalently bound to a solid support matrix, while anion exchangers contain positively charged functional groups. Generally, the type of exchanger to use will depend on whether your protein of interest is basic or acidic.

| Support Type | Protein of Interest |
|--------------|---------------------|
| CEX | Basic |
| AEX | Acidic |



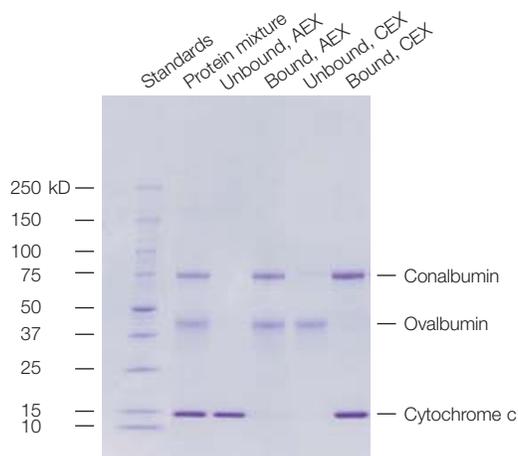
BIO-RAD

Media and Buffers

Aurum ion exchange mini kits are packed with UNOsphere S and Q media, a new generation of hydrophilic polymers developed using Bio-Rad's patented* polymerization technology. UNOsphere ion exchange media are specially developed to deliver efficient protein capture and ultrahigh protein binding capacity.

Protein Prefractionation With Aurum Ion Exchange Mini Columns

A mixture of three proteins differing in pI and molecular weight was fractionated on Aurum AEX and CEX columns (see figure below). The complementary fractionation patterns obtained for AEX and CEX columns demonstrate both the principles of ion exchange chromatography and the effectiveness of these mini columns.



Comparison of protein fractionation characteristics of Aurum AEX and CEX columns. A mixture of three proteins, ovalbumin (pI 4.6, MW 45,000), conalbumin (pI 6.9, MW 77,000), and cytochrome c (pI 10.7, MW 12,000), was run on a Criterion™ Tris-HCl precast gel, 4–20% linear gradient (catalog #345-0033) in Tris/glycine/SDS buffer at 200 V for 60 min. Standards used were Precision Protein™ standards.

Properties of Aurum ion exchange columns.

| | Aurum CEX | Aurum AEX |
|-------------------|------------------------------|-----------------------------|
| Type of support | UNOsphere S | UNOsphere Q |
| Binding capacity | 12 mg protein/column* | 36 mg protein/column* |
| Column bed volume | 0.2 ml | 0.2 ml |
| Binding buffer | 20 mM sodium acetate, pH 5.0 | 20 mM Tris, pH 8.3 |
| Elution buffer | Binding buffer + 1.0 M NaCl | Binding buffer + 1.0 M NaCl |

* Binding capacity determined using IgG (CEX) and BSA (AEX). Capacity will differ slightly depending on the protein.

Ordering Information

| Description | Kits* | | Columns (Bulk)* | |
|-----------------------------|----------------------------|----------|-----------------|----------|
| | 2 pack | 10 pack | 25 pack | 100 pack |
| Aurum AEX mini | 732-6710 | 732-6705 | 732-6706 | 732-6707 |
| Aurum CEX mini | 732-6711 | 732-6702 | 732-6703 | 732-6704 |
| Aurum Affi-Gel® Blue mini** | 732-6712 | — | 732-6708 | 732-6709 |
| Aurum serum protein mini** | 732-6713 | 732-6701 | — | — |
| Catalog # | Description | | | |
| 156-0101 | UNOsphere Q Support, 25 ml | | | |
| 156-0111 | UNOsphere S Support, 25 ml | | | |

* Kits include columns, buffers, collection tubes, instructions; columns include columns and instructions only.

** Aurum Affi-Gel Blue and serum protein mini affinity purification products are especially useful for removal of albumin and IgG prior to 2-D gel analysis.



Aurum ion exchange mini kits and columns are components of the ProteomeWorks system, the global alliance between Bio-Rad Laboratories, Inc. and Waters Corporation (Micromass MS Technologies), dedicated to furthering proteomics research.

* US patent 6,423,666

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**Bio-Rad
Laboratories, Inc.**

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