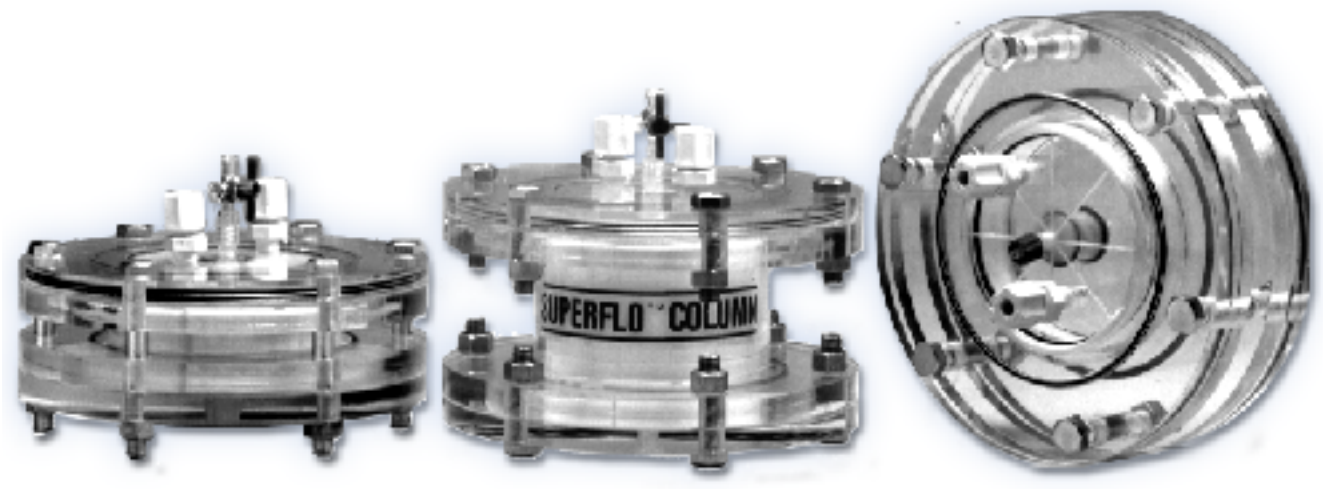
LAB PREP SUPERFLO® COLUMNS

A New Generation of Easy-Pack Radial Flow Columns !



Laboratory columns are available in sizes from 50 ml to 1500 ml. They have a 3.5 cm bed depth and are ideal for preparative separations in the laboratory for process development applications.

THE BENEFITS

- Fast Ion Exchange and Affinity Chromatography
- High Flow-Rate Without Gel Compression
- Easy Linear Scale-Up
- Your Choice of Packing Media
- Quick Packing, Unpacking and Operation
- Bench-Top Use Eliminating Cold Room Need

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"INNOVATORS IN SEPARATION TECHNOLOGIES"
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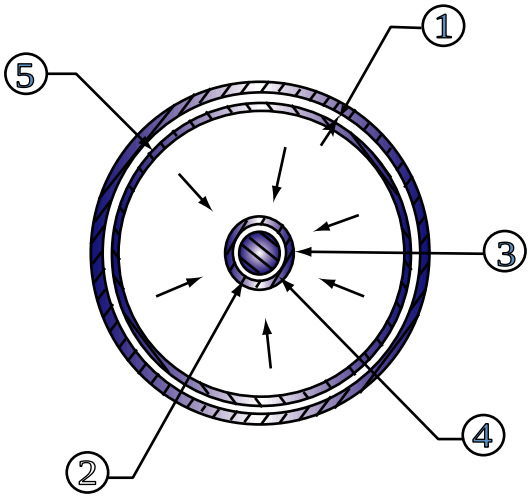
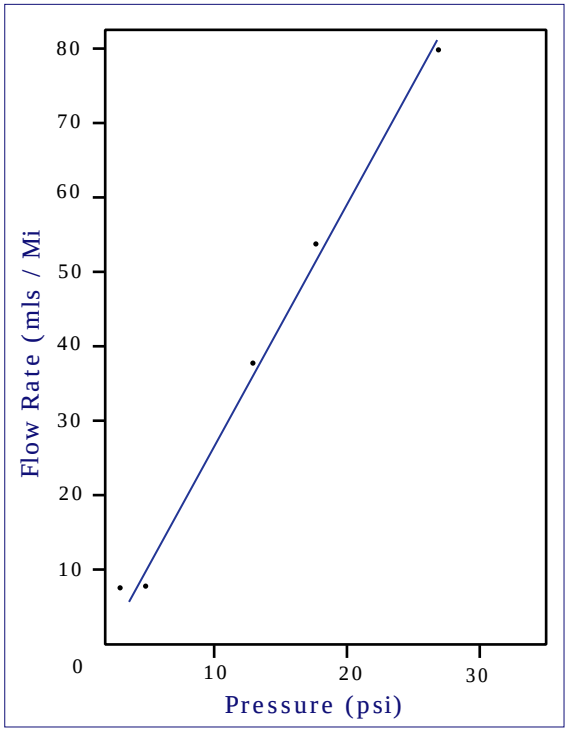
ADVANTAGES OF RADIAL FLOW CHROMATOGRAPHY

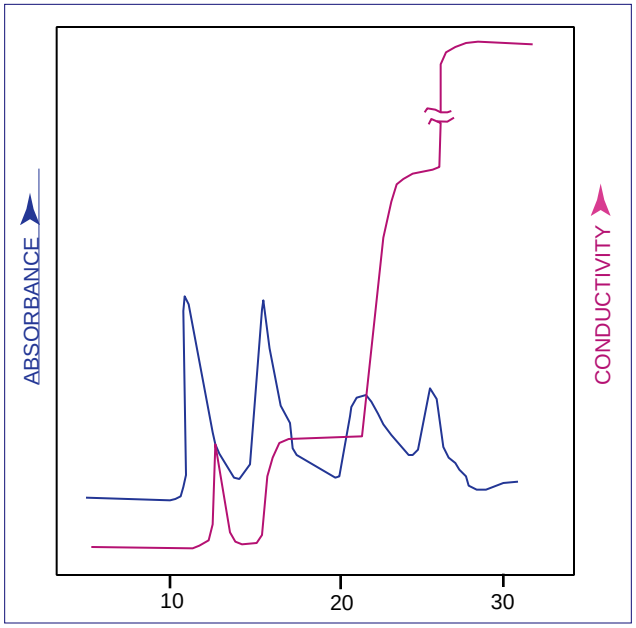


The figure to the left shows a graphic illustration of the principle of Radial Flow Chromatography. The sample is introduced into the column through the inlet port at the top of the column. It is evenly distributed to the outer channel (1) through a radial distributor. The inner wall of this outer channel is a porous tube (5) that allows the sample to pass radialy into the chromatographic packing (3). The sample constituents are differently bound and eluted radially inward by the passage of eluant through the bed. The inner wall of the bed is another porous tube (4). The sample passes through this tube into the inner channel (2) to the column outlet.

With this design, the sample is applied to the chromatographic bed over the entire surface area of the outer porous tube. The effective "bed height" of the column is the distance between the outer and inner porous tubes. Due to the large surface area of the outer porous tube and the relatively small "bed height", separations can be preformed at high flow rates with extremely low backpressure. To scale up, the column is simply made longer. The "bed-height" remains the same. This allows for a linear scale-up of all parameters.

PURIFICATION OF IgG FROM CELL CULTURE SUPERNATE





Packing: DEAE Cellulose

Load: 10mL Cell Culture Fluid (Murine IgG)

Flowrate: 10mL/min.

Start Buffer: 10mM Phosphate pH 8.5

Step Gradient: 60mM, 250mM,700mM NaCl in start buffer

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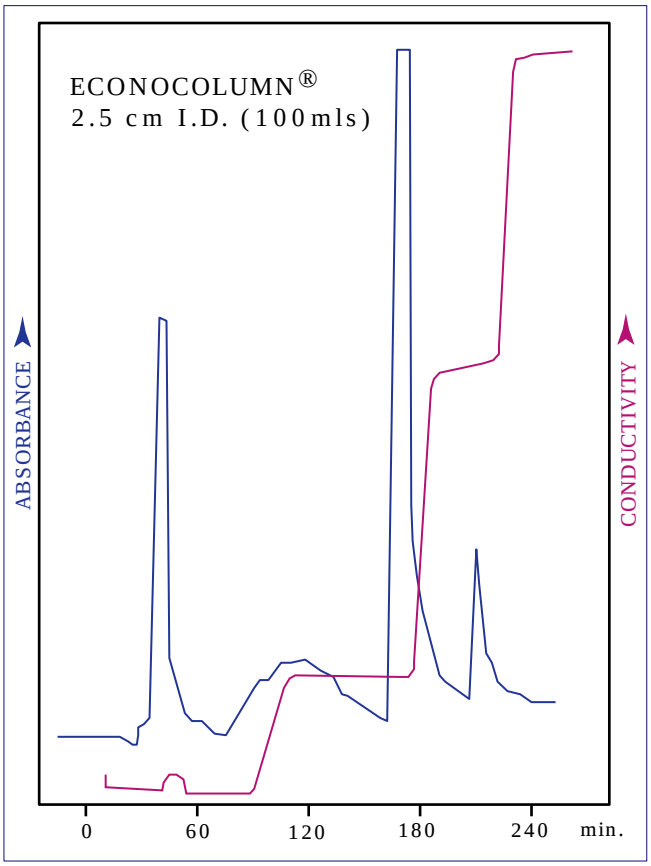
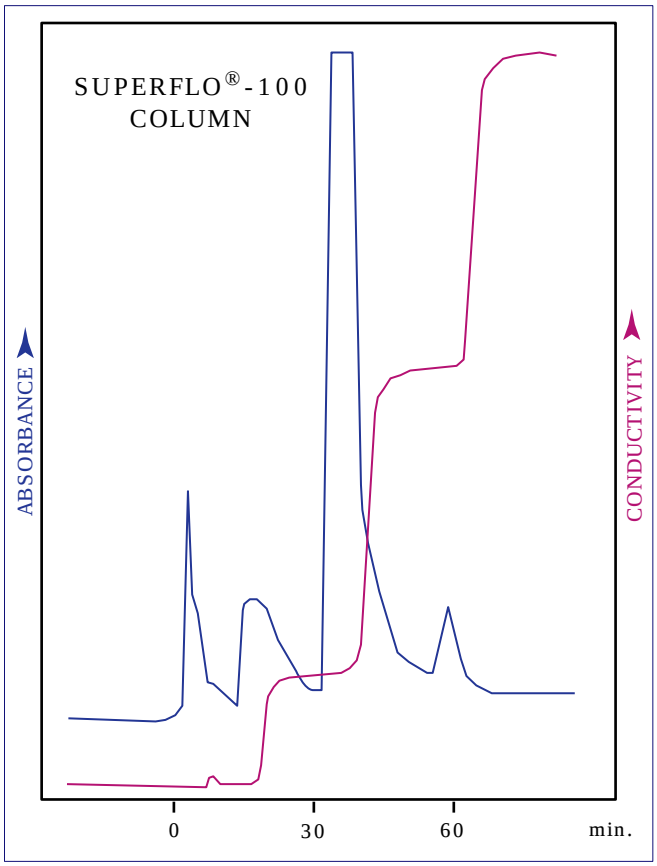
COMPARISON OF PERFORMANCE BETWEEN CONVENTIONAL AXIAL-FLOW DESIGN AND SUPERFLO® DESIGN



Packing: QAE Cellulose
Load: 10mL Ascites Fluid
Flowrate: 8mL/min.
Start Buffer: 10mM Phosphate pH 8.5
Step Gradient: 60mM, 250mM NaCl in start buffer



Packing: QAE Cellulose
Load: 10mL Ascites Fluid
Flowrate: 20mL/min.
Start Buffer: 10mM Phosphate pH 8.5
Step Gradient: 60mM, 250mM NaCl in start buffer

Discussion

To demonstrate the advantages of the Superflo® Columns over conventional columns, crude ascites fluid was purified on a Superflo®-100 Column (100 mls) and a conventional column. Both columns were packed with 100 mls of QAE cellulose. The Superflo® Column was packed with a 25% slurry (0.5M NaC1) pumped into the two packing ports at a flow rate of 30 ml per minute. The cellulose was packed to a density of 6 mls of cellulose per dry gram cellulose. The packing was completed in less than 20 minutes. The column was cycled at 20 ml/minute with water, 0.5M NaCl Solution and then equilibrated with buffer over 30 minutes. The column was then ready to run. The conventional column was packed with a 50% slurry (in 0.5M NaCl) poured into the top. As the bed settled and liquid drained out the bottom, additional slurry was added until a 100 ml bed was obtained. This took over an hour to achieve. The column was cycled as before at 8 mls a minute (the maximum flow rate without bed compression). It took 3 hours before the column was ready to run.

A sample of 10 mls of crude ascites fluid was loaded on each column and the NaCl gradient steps were introduced when peaks reached near baseline. The Superflo® Column was run at 20 mls/min. The total run time was slightly over an hour. The conventional column was run at 8 mls a minute and the total run time was well over 3 hours.

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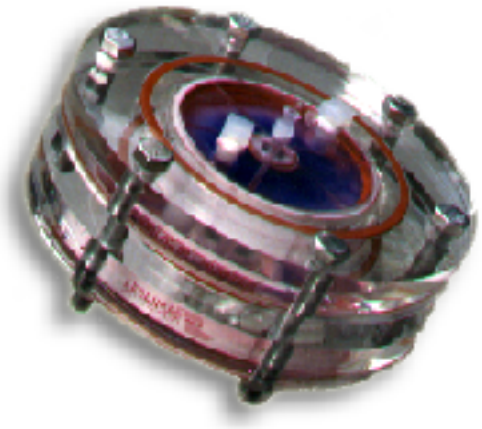
Column	Volume (ml)	Effective "Bed Height" (cm)	Part Number
Superflo® 50	50	3.5	10-0050-00
Superflo® 100	100	3.5	10-0100-00
Superflo® 250	250	3.5	10-0250-00
Superflo® 500	250	3.5	10-0250-00
Superflo® 1000	250	3.5	10-0250-00
Superflo® 1500	250	3.5	10-0250-00
Column Stand 1500	≤ 1500		10-1500-10



Q: Why do the new Superflo® columns work?

A:

- *The channels for sample distribution are no longer blocked by the frit, which caused an obstruction and hence uneven packing of column.*
- *No vapor locks which caused uneven distribution of sample.*
- *Frits are hydrophilic as opposed to earlier hydrophobic frits.*

Notes

1. The preceding separations demonstrate antibody purifications. Lab-Prep Superflo® Columns are also suitable for separations of proteins, peptides, and other bio-molecules using ion exchange, affinity, or hydrophobic interaction chromatographies.

   The columns are easily packed with the media of your choice in an assembled mode.

2. All Lab-Prep Superflo® Columns are rated for 50 psi. All wetted parts are constructed of biocompatible acrylic, polyethylene, polypropylene, Teflon coated stainless steel, and ethylene propylene. The columns should be used in a pH range of 2-12. They may be used with up to 20% lower alcohols. Do not use organic solvents, strong organic acids, or sodium and potassium hydroxides in concentration in excess of 2 molar.
   All columns are steralizable with ethylene oxide or 5% formalin. Stainless steel columns with solvent resistant components are also available. Stands designed for Superflo® Columns are recommended accessory.

3. The Lab-Scale Superflo® Columns listed above are standard. Variations of sized configurations, or materials of construction are available to meet such needs as autoclavability and solvent compatibility. Contact the experts at Sepragen concerning your particular process requirements.

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