HiPur Smac Q 40

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1. Product Description

Ion exchange resins are widely used in biomedical and bioengineering for separation and purification of proteins, nucleic acids and polypeptides.**Smac Q 40** based on a highly rigid agarose base matrix that offers outstanding pressure/flow properties, optimized pore structure,and very high chemical stability to support CIP procedures. The high binding capacity and small particle size of the resin make it a reliable and ideal choice for industrial purification.

HiPur Smac Q 40 is prepacked ready to use column. It is packed with 20 ml **Smac Q 40**. The arrow on the column label indicates the recommended flow direction. **HiPur Smac Q 40** can be adapted to all kinds of chromatography system. It is easy to operate.

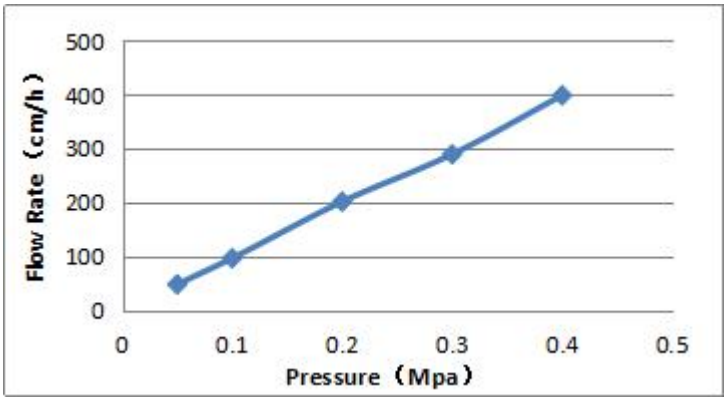


Fig.1. A typical pressure/flow rate curve

Smac Q 40 is a strong anion exchange resin. The ion exchange group is a quaternary amine group.see below.

-O-$CH_2CHOHCH_2OCH_2CHOHCH_2N^+(CH_3)_3$

Table 1. Characteristics of **Smac Q 40**

Item	Description
Size	20 ml
Column size	1.6×10 cm
Matrix	Highly cross-linked agarose
Ion exchange type	Strong anion
Ion exchange capacity	0.15-0.19 mmol Cl^-/ml medium
Particle Size	40 μm
Flow rate	< 220 cm/h
pH stability	2-12
Storage buffer	20% ethanol
Storage	2-8℃

2. Purification Procedure

2.1 Buffer Preparation

Water and chemicals used for buffer preparation should be high purity. It is recommended to filter the buffers by passing them through a 0.22μm or 0.45μm filter before use.

2.2 Sample Preparation

It is recommended to filter the sample solution by passing them through a 0.22μm or 0.45μm filter before use.

2.3 Sample Purification

1) Fill the pump tubing with binding buffer. Connect the column to purification system, “drop to drop” to avoid introducing air into the column.
2) Wash the column with 10 column volumes of binding buffer.
3) Apply the sample, using a syringe fitted to the connector or by pumping it onto the column.
4) Wash with 5 to 10 column volumes of binding buffer or until no material appears in the effluent.
5) Elute with Elution Buffer using a stepwise or linear gradient. For one-step elution, 5 column volumes are usually enough. Other volumes may be required if the interaction is difficult to break. Linear gradient elution can be used to separate proteins of different binding strengths with a small gradient, such as 20 column volumes or more.

2.4 Analysis

Identify the fractions containing the target protein. using UV absorbance, SDS-PAGE, or western blot.

3. Clean-in-Place

After each separation, elute any reversibly bound material either with a high ionic strength solution (e.g. 1M NaCl in buffer) or by increasing pH. Regenerate the media by washing with at least 5 bed volumes of buffer, or until the column effluent shows stable conductivity and pH values.
Cleaning-in-place (CIP) is a cleaning procedure that removes contaminants such as lipids, precipitates, or denatured proteins that may remain in the packed column after regeneration. Regular CIP also prevents the build-up of these contaminants in the media bed and helps to maintain the capacity, flow properties and general performance of the media.
A specific CIP protocol should be designed for each process according to the type of contaminants present. CIP cycle is generally recommended every 1-5 separation cycles.

Remove the ionically bound proteins

Wash with 3-4 column volumes of 2M NaCl. Contact time 10-15min.

Remove the precipitation or hydrophobically bound proteins or lipoproteins

Wash with at least 2 column volumes of 1M NaOH . Contact time 1-2h.

Remove lipids and very hydrophobic proteins

Wash with 2-4 column volumes of 0.5% non-ionic detergent,70% ethanol or 30% isopropanol. Contact time 1-2h.

4. Troubleshooting

Problem	Probable Cause	Solution
Back pressure is too high	Column is clogged	Cleaning in place(part 3).
	Sample solution contains precipitate	Filtering the sample solution by passing them through a 0.22μm or 0.45μm filter.
Eluate is not pure	The medium repeat too much times.	Cleaning in place(part 3).
	Wash is not enough.	Increase the volume of Wash Buffer.

5. Related Products

Product	Cat. No.	Size
HiSelect Smac Q 40	SI035C47	4.7 ml
HiPur Smac Q 40	SI035C20	20 ml