Care and Use Instructions
YMC-BioPro Ion Exchange Media

1. Introduction

Thank you for purchasing YMC products for ion exchange media. YMC-BioPro Ion Exchange media are based on newly developed hydrophilic polymer beads with a strong-anion exchanger (quaternary ammonium group) or a strong-cation exchanger (sulfobutyl group), and are most suitable for capture and intermediate purification.

YMC-BioPro Ion Exchange media, which are manufactured under highly controlled conditions, must pass a series of stringent tests before being accepted for shipment (Please refer to the inspection report). To ensure optimal performance and durability of the media, please follow these instructions.

2. Specification

Item	Strong-anion exchanger **YMC-BioPro Q**	Strong-cation exchanger **YMC-BioPro S**
Matrix	Hydrophilic polymer beads	
Functional group	$-CH_2N^+(CH_3)_3$	$-CH_2CH_2\ CH_2CH_2SO_3^-$
pH range	2 – 12	2 – 12
Temp. range (°C)	4 – 40	4 – 40
Shipping solvent	20% ethanol aqueous solution	
Feature	Highly efficient intermediate purification from an early stage	

3. Packing Instructions

3-1 Amount of media required

The amount of media required is 1.1 – 1.4 times the column volume. When packing the media using slurry techniques, adjust the quantity of the sedimented media to the column volume to be packed.

3-2 Washing the media

Mount the media on a glass filter and wash with 0.2 – 0.5 M sodium sulfate or 0.5 M sodium chloride solutions. The recommended amount of solution is three times that of the media. The media should be protected from drying.

3-3 Preparing the packing slurry and packing procedure

0.2 – 0.5 M sodium sulfate or 0.5 M sodium chloride solution is recommended for both for slurrying and packing. Add the solvent to obtain 20 – 50% slurry concentration. Pack the column at a mild constant pressure (0.1 – 0.3 MPa) or a flow rate of about two times higher than the flow rate to be used.

4. Testing the packed column (Evaluation of column packing)

Once the column is packed, check the number of theoretical plates (N) and asymmetry factor (As). If the asymmetry factor is not between 0.7 and 1.4, the column must be re-packed*. When the peak is tailing, pack the column faster. When the peak is leading, pack the column more slowly.

*Please consider the evaluation criteria above as a guide. The criteria for ascertaining successful packing are often application-dependent. A packed column that is out of the criteria might perform to meet your expectations.

5. Equilibration and elution

- Equilibrate with about 5 – 10 column volumes of initial mobile phase before using a column for chromatographic separations.
- Generally, samples are adsorbed onto the top of the column with 20 – 50 mM of buffer as the first mobile phase, then eluted with a salt-concentration gradient method (sodium chloride concentration commonly adjusted between 0 to 0.5 M) or pH gradient method. It is recommended to flush the column with buffer containing about 1 M of sodium chloride for each run to remove residual impurities from the column with the final mobile phase .
- Water-soluble organic solvent (maximum of 30%), can be added to the mobile phase. Before adding such solvent, make sure that salt in the buffer will not precipitate. Other additives such as urea (≤ 8 M) or guanidine hydrochloride (≤ 6 M), which are commonly used as protein denaturants, nonionic surface-active agents, cationic surface-active agents (limited to YMC-BioPro Q), or anionic surface-active agents (limited to YMC-BioPro S) are useful.
- Avoid solvents containing oxidant for the mobile phase.
- Avoid anionic surface-active agents for YMC-BioPro Q, cationic surface-active agents for YMC-BioPro S.

6. Cleaning and regeneration

A change of retention time or peak shape and/or pressure increase might result from the adsorption of fat-soluble substances or precipitated impurities in a sample. In such cases, follow these steps for column cleaning and regeneration. If these procedures will not solve the problem, then we recommend that you use new media.

Batch method: Soak and agitate the media in washing solution about 3 – 5 times of the media volume. After leaving it stationary, remove the supernatant fluid by decantation. Repeat the process 2 – 3 times.

Column method: Flush the column with washing solution of about 3 – 5 times the media volume (Disconnecting the column from the detector is recommended). After the process, perform sufficient equilibration with the mobile phase. The state of contamination or type of washing solution (high viscosity, etc.) can cause a pressure increase. In such cases, reduce the flow rate for flushing.

Regardung a washing solution, highly concentrated sodium chloride solution (For example, about 1 – 2 M concentration) is recommended instead of flushing buffer processing for each run. If performance does not recover, wash with sodium hydroxide (about 0.1 – 0.5 M) at first, then flush with sodium chloride (about 0.1 – 0.5 M) and replace with mobile phase.

7. Storage

Store the packed or bulk media in 20% ethanol aqueous solution. Store the bulk media in the original container at a temperature of 4 – 35°C. Keep the container closed tightly.

Please keep away from fire or an ignition source because the 20% ethanol aqueous solution is a flammable liquid.

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