Care and Use Instructions
Ion Exchange Media
YMC-BioPro DA / YMC-BioPro CM

1. Introduction

Thank you for purchasing YMC products for ion exchange media. YMC-BioPro DA/CM are specially designed material for the chromatographic separation of proteins and peptides. They are based on hydrophilic polymethacrylate matrix with spherical, totally porous structure. The rigid, uniform-particle sized matrix enables high speed chromatographic operation with high production efficiency.

YMC-BioPro DA/CM, which are manufactured under highly controlled conditions, must pass a series of stringent tests before being accepted for shipment. To ensure optimal performance and durability of the media, please follow these instructions.

2. Specification

Item	Weak-anion exchanger **YMC-BioPro DA**	Weak-cation exchanger **YMC-BioPro CM**
Matrix	Hydrophilic polymer beads	
Particle size	60 µm	
Functional group	-R-N(CH_3)$_2$	-R-COOH
pH range	Regular use: 3 – 12 Short term: 1 – 13	Regular use: 3 – 12 Short term: 1 – 13
Temp. range (°C)	2 – 45	2 – 45
Shipping solvent	20 mM sodium phosphate in 20% ethanol	
Feature	Designed for highly efficient capture and intermediate purification	

3. Packing Instructions

3-1. Preparation of resin

Recommended solution for slurry preparation: 1 M NaCl

1) Using graduated cylinder, measure a specified quantity of resin and add the solution for slurry preparation 3-4 times volume of the resin.
2) Suspend the resin by gentle stirring using a spatula. Do not use a magnetic stirring bar to avoid breakage of resin.
3) Allow the resin to settle for at least 3 hrs.
4) Decant the supernatant to remove fine particles.
5) Suspension - settlement - decantation steps should be repeated several times until fine particles are removed.

3-2. Packing

Recommended solution for slurry preparation and packing: 1 M NaCl

1) Adjust the slurry composition (volume ratio of resin to slurry) to 50 – 75% by mixing the resin and the solution for slurry preparation.
2) Pump the packing buffer at gradient flow rate. The final flow rate should be at least 2 times of the operating flow rate. Pumping should be started at a low flow rate, then increasing flow rate to the targeted value over 10 – 120 min is recommended.

* Also refer to the instruction manual of empty hardware using for packing protocol.

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

4-1. Conditions

Eluent:	demineralized water
Linear velocity:	100 cm/hr
Detection:	UV 254 nm
Sample:	1% Acetone
Injection:	320 µL for 9 mm I.D.

4-2. Column performance

Once the column is packed, check the number of theoretical plates (N) and asymmetry factor (As).

Theoretical plate number (half peak height method): Targeted value > 3000 N/m*

Asymmetry factor (10% peak height method): Targeted value 0.8 – 1.5*

When the peak is tailing, pack the column faster. When the peak is fronting, 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 DA), or anionic surface-active agents (limited to YMC-BioPro CM) are useful.
- Avoid solvents containing oxidant for the mobile phase.
- Avoid anionic surface-active agents for YMC-BioPro DA, cationic surface-active agents for YMC-BioPro CM.

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.

Regarding 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. Do not freeze the product. 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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