Dextrin Sepharose High Performance MBP-tagged protein purification resin

Product Information

Cat#No#	De-389C

Product Overview

Dextrin Sepharose High Performance is a robust and stable affinity resin for purification of proteins tagged with maltose binding protein (MBP).
Fast, one-step purification of MBP-tagged proteins.
High-resolution purification and elution in narrow peaks, minimizing the need for further concentration steps.
Can be used for repeated purification: can be easily regenerated using 0.5 M NaOH.
Physiological conditions and mild elution preserve target protein activity.

Description

Dextrin Sepharose High Performance is a chromatography medium for purifying recombinant proteins tagged with maltose binding protein (MBP). The chromatography medium is available in 25 ml and 100 ml lab packs and prepacked in 1 ml and 5 ml MBPTrap HP columns.
Tagging proteins with MBP often gives increased expression levels and higher solubility of the target protein. Proper folding of the attached protein has also been shown to be promoted by the MBP tag. Since MBP increases solubility, the tag is particularly useful for recombinant proteins accumulated in an insoluble form (inclusion bodies).

Characteristic

Highly pure MBP-tagged recombinant proteins eluted in concentrated form and small volumes.
Physiological conditions and mild elution preserve target protein activity.
Compatible with commonly used aqueous buffers and easily regenerated using 0.5 M NaOH.
Easy scale-up.
Prepacked MBPTrap HP 1 ml and 5 ml columns offer convenience, save time, and ensure reproducible results.

Sample preparation

Adjust the sample to the composition of the binding buffer. For example, dilute the sample with binding buffer or buffer exchange using HiTrap Desalting, HiPrep 26/10 Desalting or Desalting PD10 column.
To avoid clogging the column when loading large sample volumes, filter the sample through a 0.45 µm filter

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or centrifuge it immediately before application.

Packing Column

Dextrin High Performance is supplied preswollen in 20% ethanol. Prepare a slurry by decanting the 20% ethanol solution and replacing it with distilled water in a ratio of 75% settled medium to 25% distilled water. Water is used as packing solution.

Matrix

Highly cross-linked agarose, 6%

Average particle size

~34 µm

Ligand

Dextrin

Dynamic binding capacity

Approx. 7 mg MBP- ΔSal/ml resin Approx. 16 mg MBP- βGal/ml resin

Recommended flow rate

≤ 150 cm/h

Chemical stability

Stable in commonly used aqueous buffers, 0.5 M NaOH (regeneration and cleaning).

pH working range

> 7

CIP stability

2–13

Storage

2 to 8°C, 20% Ethanol

Binding buffer

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20 mM Tris-HCl, 200 mM NaCl, 1 mM EDTA, pH 7.4 Optional: 1 mM DTT.

Elution buffer

10 mM maltose in binding buffer.

Regeneration

Repeated purifications run on the same MBPTrap HP column without regeneration may gradually decrease recovery. Regular regeneration, however, allows the same column to be run many times with retained performance, thus promoting cost-effective use. Regenerating MBPTrap HP with 0.5 M NaOH is highly effective, as the following study demonstrates. MBP2*-b-galactosidase in E. coli lysate was purified six times on the same MBPTrap HP 1 ml. Regeneration following each purification was performed using 1.5 M NaCl and 0.5 M NaOH (note that sodium chloride is often not necessary and may be omitted).

Scaling up

Scale-up can be achieved by increasing the bed volume while keeping the residence time constant. This approach maintains chromatographic performance during scale-up.
MBP2*-b-galactosidase (Mr ~158 000), a recombinant tagged multimer, was purified on an MBPTrap HP 1 ml column on ÄKTAexplorer. The purification was scaled up to an MBPTrap HP 5 ml column followed by further scale-up to an XK 26/20 column packed with Dextrin Sepharose High Performance. The protein load was increased five-fold in each step (~10, ~50, and ~250 mg, respectively) and the residence time was ~2 min for all three columns.

Purification procedures

1.Remove the stoppers and connect the column to the system. Avoid introducing air into the column.
2.If the column has been stored in 20% ethanol, wash out the ethanol with at least 5 column volumes (CV) of distilled water or binding buffer at a linear flow rate of 50-100 cm/h.
3.Equilibrate the column with at least 5 CV of binding buffer.
4.Apply the pretreated sample. A lower flow rate can be used during sample application to optimize performance.
5.Wash with 5 to 10 CV of binding buffer or until no material appears in the effluent.
6.Elute with 5 CV of elution buffer. The eluted fractions can be buffer exchanged using a prepacked desalting column.

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Pack size
25 mL
Maximum flow velocity
< 300 cm/h
Maximum operating backpressure
0.3 MPa, 3 bar, 43.5 psi
Dimensions
0.7 × 2.5 cm (1 ml), 1.6 × 2.5 cm (5 ml)
Column volume
1 ml or 5 ml
Column hardware pressure limit
0.5 MPa, 5 bar, 70 psi

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