Dextrin Beads Gravity Column

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1. Product Description

Dextrin Beads is a chromatography medium for the isolation of proteins fused to maltose binding protein (MBP-tagged protein). The characteristics of **Dextrin Beads** are summarized in table 1. MBP tag often gives increased expression levels and higher solubility of the target protein. Proper folding of the protein has also been shown to be promoted by the MBP tag. **Dextrin Beads** can purify MBP fusion proteins in one step. The fusion proteins can be eluted gently with 10mM maltose to protect the activity of fusion proteins.

Dextrin Beads Gravity Column is packed with 1ml and 5ml of **Dextrin Beads**. It is easy to operate.

Table 1. Characteristics of **Dextrin Beads**

Item	Description
Matrix	4% agarose
Ligand	Dextrin
Capacity (/ml medium)	>20 mg MBP tagged protein (80 kDa)
Particle size (μm)	45-165
Maxi pressure	0.1 MPa, 1 bar
pH stability	3-12
Storage Solution	1×PBS containing 20% ethanol
Storage Temperature	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 0.22 μm or 0.45 μm filter before use.

Binding /Wash Buffer: 20 mM Tris-HCl, 200 mM NaCl, 1 mM EDTA, pH7.4

Elution Buffer: 20 mM Tris-HCl, 200 mM NaCl, 1 mM EDTA, 10 mM maltose, pH7.4

Note: 1 mM DTT or 10 mM β-mercaptoethanol can be included in the binding /wash buffer or elution buffer

2.2 Sample Preparation

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

2.3 Column Purification

For the use of **Dextrin Beads Gravity Column**, please refer to the following instructions. The amount of each solution is calculated according to the volume of the column (e.g., for 2 CV, the 1 ml size corresponds to 2 ml of solution, and the 5 ml size corresponds to 10 ml of solution). The entire purification process takes about 30 min (depending on the sample volume and the viscosity of the solution). Please refer to Figure 1 for the procedure.

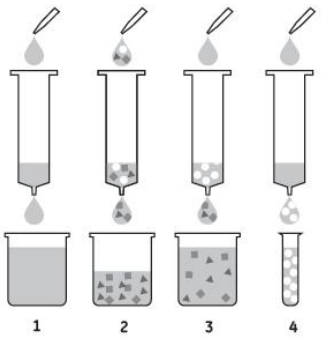

Figure 1. Schematic diagram of the protein purification process using **Dextrin Beads gravity columns**

Step 1: Column equilibration, Step 2: Sample loading, Step 3: Washing, Step 4: Elution

1) Fix **Dextrin Beads Gravity Column** on the iron stand, remove the lower and upper plugs in turn, and drain the buffer from the column. Add 5 column volumes Lysis Buffer onto the column to equilibrate the beads.
2) Apply the sample to the column and drain the flow-through. Collect the flow-through for measuring the binding efficiency to the beads, i.e. by SDS-PAGE.
3) Wash the column with 10-15 column volumes.
4) Elute the sample with 5-10 column volumes Elution Buffer and collect the eluate.
5) Equilibrate the column with 3 column volumes of Lysis Buffer , 5 column volumes of distilled water. Finally store the resin with 1×PBS containing 20% ethanol at 2℃-8℃.

2.4 Analysis

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

3. Cleaning-In-Place

In general, **Dextrin Beads** is well suited for reuse a number of times. When precipitation and protein aggregation cause the loss of velocity and combined loads, you need to clean the medium as follows.

- 3 column volumes of deionized water;
- 3 -5column volumes of 0.1-0.5 M NaOH solution (contact time usually 15-30minutes);
- Re-equilibrate the medium with deionized water until the effluent is at neutral pH.

4. Troubleshooting

Problem	Probable Cause	Solution
Back pressure is too high	Column is clogged	Cleaning in place(part 3)
	Sample solution contains precipitate	Filter the sample solution by passing them through a 0.22 μm or 0.45 μm filter.
No binding	Expression of target protein is very low	Check expression level of protein by estimating the amount in the extract, flow through, elute fraction and pellet upon centrifugation. Or apply large sample volume.
	There are some interference factors in the sample or buffer.	Sample dialysis or diluted with binding buffer.
	Amylase produced by cells affected the protein combined with the	Inhibit the expression of amylase by adding glucose to the culture medium.
	Contact time is too short.	Increase the retention time.
The elute is not pure	Protein degradation	Add some protease inhibitors, such as PMSF, EDTA.
	Wash is not enough	Increase the volume of Wash Buffer.

5. Related Products

Product	Cat. No.	Size
Dextrin Beads Gravity Column	SA077GC01	1 ml
	SA077GC05	5 ml
Dextrin Beads 6FF Gravity Column	SA026GC01	1 ml
	SA026GC05	5 ml