Dextrin Beads

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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.

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 buffer	1×PBS containing 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 0.22 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 Sample Purification

1) Mix the slurry by gently inverting the bottle several times to completely suspend the **Dextrin Beads.** Close the column outlet leaving the net covered with packing buffer. Transfer the slurry to the column.

2) Allow the resin to settle down and the buffer to drain from the column. Add 5 column volumes Binding Buffer onto the column to equilibrate the beads.

3) Apply the pre-treated 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.

4) Wash the column with 10-15 column volumes Wash Buffer or until the absorbance of the effluent is stable.

5) Elute the sample with 5-10 column volumes Elution Buffer and collect the eluate.

6) Equilibrate the column with 3 column volumes of Binding Buffer , 5 column volumes distilled water and 1XPBS containing 20% ethanol. Finally store the resin with 1XPBS containing 20% ethanol at 2-8℃.

2.4 Analysis

Identify the fractions containing the MBP-tagged 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 6FF	SA026005	5 ml
	SA026025	25 ml
	SA026100	100 ml
	SA026500	500 ml
	SA02601L	1 L
	SA02610L	10 L
PreCap Dextrin	SA026C11	1X1 ml
	SA026C51	5x1 ml
	SA026C15	1X5 ml
	SA026C55	5X5 ml
	SA026CS	3X1 ml+1X5 ml
Dextrin Beads	SA077005	5 ml
	SA077025	25 ml
	SA077100	100 ml
	SA077500	500 ml
	SA07701L	1 L
	SA07710L	10 L