Cellulose DE-32

Cat: D8900

V02

Introduction

DEAE-cellulose uses a particle-type hydrophilic polymer with an average particle size of 50μm, and its surface is grafted with large molecular sugar chains, which gives it a higher specific surface area and better biocompatibility, maintaining a higher loading capacity while also providing better resolution. Due to the large specific surface area, the equilibrium and elution time are also shorter. It can graft even purified viruses, plasmids and other large molecular substances, and the load capacity remains basically unchanged.

Characteristics of filler material

Features	High capacity, good resolution, and ease of use.
Characteristics	White or light yellow fiber agglomeration
Matrix	Highly cross-linked cellulose
Ligand	Diethylaminoethyl (DEAE)
Ligand Density	40μmol /ml
Adsorption Capacity	110mg HSA/ml
Particle Size	50μm
Maximum Flow Rate	100cm/h
pH Range	3-10, CIP (Clean-In-Place) up to 2-11
Chemical Stability	Various buffers, salts, acetic acid, etc.
Physical Stability	0.1M neutral buffer, 120℃ for 30 minutes
Storage Temperature	4℃

Treatment method:

1.Immerse the dry cellulose powder in distilled water for approximately one hour to remove impurities, and it is advisable to drain it afterwards.

2.Soak it in a 0.1mol/l acetic acid solution for 2 hours, rinse thoroughly with deionized water until the pH reaches neutrality, and then drain it.

3.Soak the drained cellulose in a 0.1mol/l NaOH solution for 2 hours, wash with deionized water until neutral, and drain it. It is now ready for use.

Instructions for use:

1. Chromatographic column filling

(1) The temperature of the materials required should be the same as the temperature of the chromatography operation, and it is best to degas the liquid. The packing material can be directly weighed and dissolved in buffer solution for one hour before being loaded into the column. If it does not swell well, it can be heated appropriately.

(2) Add 20% ethanol at the lower end of the column to remove air from the column, close the column outlet, and leave a small amount of 20% ethanol inside the column. 20% ethanol is prone to generating bubbles, which can be avoided by adding 1% Tween to it. It can also be replaced with pure water, but 20% ethanol in the packing needs to be replaced with pure water. The specific method is to take the required volume of packing and place it on a suction funnel. Alternatively, carefully pour off the 20% ethanol on the packing and replace it with 5 times the volume of pure water. Repeat the precipitation process to remove the supernatant, and after about 5 times, it can be used for packing.

(3) The filler particles are relatively fine, so it is important to choose a suitable sieve for the column without any leaks. You can also try adding some filler to the sieve. If there are no problems, when pouring the filler into the column continuously, use a glass rod to drain the liquid close to the inner wall of the column to reduce the generation of bubbles. Let the filler settle naturally until the volume of the filler does not change anymore, and the filler and the liquid above are well stratified, with the upper solution completely clarified. Then you can turn on the pump and press the column with a suitable flow rate. After the volume of the filler does not change anymore, tighten the conversion head on the filler to balance the use of the column. The flow rate used should be less than that of the column.

(4) Before installing the column, the packing material should be taken out of the refrigerator and left at room temperature for at least 2-3 hours to avoid bubbles in the column due to temperature changes during installation.

2. Protein Binding

The salt concentration and pH of the sample should be as consistent as possible with the buffer solution used to balance the column. Excessively high salt concentration or low pH may prevent the protein from binding, so adjustments should be made according to the specific sample.

3. Protein Elution

If this packing material is used with a linear gradient elution, the optimal ratio of column diameter to height should be greater than 10. A higher numerical value is more conducive to separation. It is also recommended not to load too much sample, aiming for approximately 10mg/ml. If a step elution method is used, a short and thick column can be used, and there is no limit on the sample loading volume. Step elution is easy to scale up and has good repeatability. With good elution conditions, results comparable or even better than linear gradient elution can be achieved. The choice of method depends entirely on individual needs.

4. Regeneration and Cleaning

(1) After use, wash the column with 0.1M acetic acid for 5 column volumes, then with 2M NaCl for 5 bed volumes, followed by water until neutral, and finally store in 20% ethanol.

(2) Mixing organic solvents with water can easily generate bubbles. To avoid this, allow the prepared organic solvent to stand at room temperature overnight before use. This can prevent bubbles from entering the column and causing malfunctions.

Special Note:

Before loading the sample, it should be filtered through a 0.45-micron membrane to remove as much pigment as possible. Otherwise, the pigment may be adsorbed onto the packing material, affecting its normal use.

During use, strong acids and bases should not be used, and the concentration of acids and bases should be kept below 0.15 moles.