LT BIOTECH LTD.
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Aether DEAE-650

1. Basic product information

Aether DEAE-650 chromatographic resin is based on polyacrylate; the surface has been hydrophilically modified then bonded with weak basic ion-exchange groups. It has high loading capacity, good chemical stability and strong mechanical strength. With small non-specific adsorption, excellent biocompatibility and column bed stability, it can provide a faster flow rate and is especially suitable for large-scale preparation applications. It significantly improves the production efficiency of downstream purification processes, and can reduce costs thus create better economic benefits. It is widely used in capture, intermediate purification and final polishing of antibodies, proteins, peptides, nucleic acids (oligonucleotides), viruses, insulins and other biomolecules.

2. Chromatography resin parameters

Matrix	Polymethylmethacrylate
Functional group	Diethylaminoethyl
Median particle size	80 µm
Pore size	1000 Å
Total ionic capacity	0.08–0.12 mmol/ml
Dynamic binding capacity	≥ 90 mg BSA/ml
Pressure-resistant flow rate	300–1000 cm/h
Maximum working pressure	8 bar

3. Chemical resistance

Chemical stability	Insoluble in methanol, ethanol, toluene, DMSO, DMF, n-heptane and other organic solvents. Acid and alkali resistant.

4. Method of use

4.1 Equilibration
Equilibrate the column with an appropriate 5–10 CV buffer until the conductivity and pH of the eluent remain unchanged (consistent with the equilibrium buffer). For example, equilibration buffer could be 20 mM PBS, pH 7.0. Screening and optimisation should be carried out according to the stability and isoelectric point of the target protein, and the type of ion-exchange resin.
4.2 Sample loading
Solid samples can be prepared by dissolving in equilibration buffer. Low-concentration sample solutions can be concentrated and dialysed with equilibration buffer; high-concentration sample solutions can be diluted with equilibration buffer. To avoid column clogging, samples should be centrifuged or membrane filtered (preferably 0.45 or 0.22 µm). The amount of feed is calculated according to the loading capacity of the resin and the content of the target protein in the feed solution. Before loading the sample, ensure that the sample buffer should be as consistent as possible with the equilibrium buffer.
4.6 Elution

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After loading the sample, continue to rinse with the equilibration buffer until the baseline is stable. According to the situation, the method of increasing the salt concentration or changing the pH of the mobile phase can be used to elute the samples adsorbed on the chromatographic resin in sequence.

4.7 Regeneration

After each chromatography, the column should be washed with 0.5–2M NaCl to remove proteins strongly bound to the chromatography resin.

5. Cleaning and regeneration

Contaminants (e.g. lipids, endotoxins and proteins) accumulate on the column as the number of uses of the chromatography resin increases. Determine the frequency of CIP according to the degree of contamination of the chromatography resin (if the contamination is considerable, CIP is recommended after each use to ensure repeatability of results and to prolong the working life of the chromatography resin). For different types of impurities and contaminants, the recommended cleaning conditions are as follows:

• Removal of strongly binding proteins: wash with 5 CV of 2M NaCl solution, or use a high salt buffer not lower than pH 2, such as 1M NaAc solution.

• Removal of strongly hydrophobic proteins and precipitated proteins: first wash with 5 CV of 0.2–0.5M NaOH solution (contact time 1-2 hours), then wash the lye with 5–10 CV of ultra pure or pure water.

• Removal of lipoproteins and lipids: first wash with 5 CV of 50% ethanol or 30% isopropanol (contact time 0.5-1 hour), then rinse with 5–10 CV of ultra pure or pure water. It can also be cleaned with alkaline or acidic solution containing non-ionic surfactant, such as 0.1~0.5% Triton X 100 + 0.1M acetic acid for 12 hours, and rinsed with 50% ethanol above 5 CV to remove the detergent. Rinse with 5 CV of ultrapure or pure water as above (when using high-concentration organic solvents to avoid air bubbles, the method of gradually increasing the concentration of organic solvents should be adopted).

Note: 50% ethanol or 30% isopropanol should be degassed before use; the flow rate should be 30–60 cm/h during CIP. Reverse cleaning should be used when the clogging is severe.

To reduce the microbial load, it is recommended that 0.5~1M NaOH solution is used to treat the chromatographic resin.

6. Storage

Keep the unopened chromatography resin in the original container and store at 4~30°C in a well-ventilated, dry and clean place. Do not freeze. Wash the used column with 2–3 CV of 20% ethanol solution and store at 2~8°C.

7. Destruction and recycling

Since chromatography resin is difficult to degrade in nature, it is recommended that the waste chromatography resin is incinerated to protect the environment. For chromatography resin that has been in contact with biologically active samples such as viruses and blood, please follow the local biosafety requirements before destroying or disposing of it.

8. Packing method

Detailed information on resin packaging is available on request. Please contact your local distributor.

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9. Ordering information

Product name: Aether DEAE-650

Product Cat. No	Package
225-00025	25 ml
225-00100	100 ml
225-00500	500 ml
225-01000	1 L
225-05000	5 L
225-10000	10 L