Heparin Magnetic Particles
PRODUCT DATA SHEET

Heparin Magnetic Particles

Description

Heparin beads have the characteristics of fast magnetic response, rich heparin density and high physicochemical stability. On the one hand, it can be used as a ligand of affinity chromatography, and can bind specifically to biological molecules such as growth factors and antithrombin ATⅢ. On the other hand, due to the large number of negative sulfate ion groups on the surface, it can be used as a cation exchange medium and has strong binding ability with positively charged proteins under certain pH conditions.

Compared with traditional column chromatography purification methods, Heparin beads do not require pretreatment of crude protein samples (such as repeated and cumbersome centrifugation, time-consuming and laborious filtration operations), in addition, there is no need to control the flow rate and column pressure, and there is no need for expensive chromatography equipment. For skilled operators, the extraction of high-purity target proteins can be completed in a very short time, and the parallel processing of multiple samples can be easily achieved to achieve high-throughput protein purification.

It is suitable for the separation and purification of biological macromolecules such as anticoagulation factor III, coagulation factor, nucleic acid binding protein, lipoprotein, interferon, steroid receptor, thrombin and thrombinoid.

For custom sizes, formulations or bulk quantities please contact our customer service department.

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Characteristics

Particle size: 30~150 μm

Surface group content: ~3 mg Heparin/mL Gel

Protein binding capacity: 2~3 mg antithrombin Ⅲ /mL Gel

Preservation solution: 20% ethanol

Concentration: 10% (V/V)

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Storage temperature: 2~30°C (long-term storage, 2~ 8°C recommended)

Binding Buffer: 50 mM Tris-HCl, pH 8.0

Elution Buffer: 50 mM Tris-HCl, 1~2 M NaCl, pH 8.0

Quality guarantee period: Stable storage at 2-8°C, shelf life of 2 years

Note: 1. The amount of protein binding is related to the properties of the target protein, and the value here is only for reference; 2. 1 mL magnetic bead suspension contains 100 µL magnetic beads.

Advantages

1. Abundant binding sites enhance specific binding to ligands
2. Fast magnetic response, reduce operation time
3. Magnetic beads have good dispersion and resuspension, improving the ease of operation
4. The ligand has good physical and chemical stability, which improves the reliability and repeatability of experimental results

Operation process (Taking the purification of antithrombin III from human plasma as an example)

1. **Sample treatment**: Take 1 ml of human plasma and add it into 1.5 mL EP tube, then add 500 µL Binding Buffer and mix thoroughly.
2. **Magnetic bead pretreatment**: The Heparin magnetic bead vortex oscillates for 30 s, so that the magnetic bead is fully suspended; Take 1 mL 10% (V/V) magnetic bead suspension and place it in another new 1.5 mL EP tube. Magnetic separation was performed on the magnetic bead suspension, and the supernatant was discarded and washed twice with 1 mL Binding Buffer for magnetic separation. The magnetic bead in the tube could be directly used for antibody separation.
3. **Protein adsorption**: Add the sample solution treated in Step 1 to the pre-treated magnetic bead tube in Step 2, swirl and oscillate evenly, place the EP tube in the vertical mixer at room temperature (about 25°C) and mix for 15-30 min, so that the sample and magnetic bead are fully in contact and adsorbed, and then magnetic separation is carried out, and the superserum is removed.
4. **Magnetic bead washing**: Add 1 mL Binding Buffer to the EP tube, and the magnetic bead will be magnetically separated and the supernatant removed after 1 min of whirlpool oscillation. Repeat this operation three times.

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Note: According to the SDS-PAGE profile of eluated proteins, a certain concentration of NaCl can be appropriately added into the Binding Buffer, which can effectively remove the specific adsorption proteins and enable the operator to obtain a higher concentration of target proteins.

5. **Protein elution**: Add 0.2 mL Elution Buffer to the EP tube that has completed the magnetic bead washing, and quickly resuspend it with pipette blowing or vortex oscillation, and then place the EP tube in a vertical mixer at room temperature (about 25°C) for 10~15 min for magnetic separation. Collect the supernatant into the new EP tube.

6. **Regeneration of magnetic beads**: Add 1 mL of purified water to the EP tube, and perform magnetic separation after swirling oscillation and re-suspension of magnetic beads, remove the supernatant, and repeat the operation for 3 times; Then use Binding Buffer to wash magnetic beads 3 times. After repeated use of magnetic beads, precipitated proteins, strong hydrophobic proteins, lipoproteins and other impurities will be non-specific adsorbed to magnetic beads, in order to ensure the efficiency of magnetic beads, it is recommended to carry out in-place cleaning (CIP).

7. **In-place cleaning (CIP)**: 0.1 M NaOH, 8 M urea, purified water and Binding Bufdfer were used to wash magnetic beads twice in sequence; Finally, 1 mL Storage Buffer(20% ethanol) was added and the magnetic beads were stored at 2~8°C.

Product application example

The following figure shows that Heparin magnetic beads can specifically bind nucleic acid-related proteins, and with DEAE ion exchange chromatography, high purity target proteins can be obtained (lane 8), and the purification recovery is higher, which is significantly higher than that of nucleic acid-related proteins obtained by heat treatment (lane 4).

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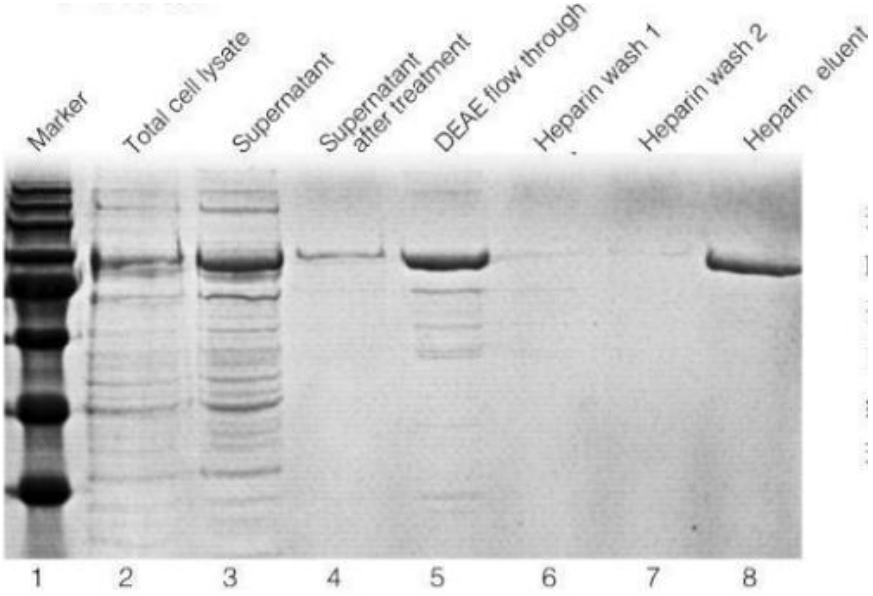

SDS-PAGE of Heparin Purified nucleic acid-associated Proteins (two-step purification method)

Notes

1. This product should not be frozen, dried or centrifuged. Freezing, drying and centrifugation will cause agglomeration of magnetic beads, which is not easy to be resuspended and dispersed, and affect the chemical activity of functional groups on the surface of magnetic beads.

2. Before using this product, be sure to fully oscillate or ultrasonic to keep the magnetic beads in uniform suspension.

3. In the process of use, the magnetic beads can be washed 2 to 3 times with purified water or buffer solution according to the needs to remove the alcohol in the storage solution.

4. This product should be used with magnetic separation equipment.

5. Salt concentration and pH value will affect the binding and elution of specific proteins. Customers need to explore the binding and elution conditions of different proteins by themselves to ensure the amount and purity of protein purification.

6. This product is for research use only.

Ordering Information

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