INSTRUCTIONS

Streptavidin Magnetic Beads

Catalog Number: AE01001 AE01002

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【Introduction】

EmerTher Streptavidin Magnetic Beads are nano-superparamagnetic beads covalently coated with highly purified streptavidin. The beads can be used for the binding of biotinylated molecules, including DNA, RNA, PCR products, oligonucleotides, antibodies, peptides, and other proteins. The streptavidin-biotin interaction has very high binding affinity (K_d=10^{-15} M). With a fast magnetic response rate, high protein binding capacity and low non-specific binding, EmerTher Streptavidin Magnetic Beads provide a rapid and efficient method to capture biotinylated molecules, which can be subsequently used in a wide variety of applications, including immunopurification, immunoassays, cell isolation, and organelle isolation, etc.

【Product Specifications】

Diameter：500 nm
pH stability：pH 6.5-9.5
Magnetic response rate: >30 emu/g
Solvent: Phosphate buffered saline, 10% glycerol, Proclin 300
Binding capacity: >2000 pmole free biotin per mg magnetic beads

【Product Content】

Catalogue Number	Conc. (mg/ml)	Volume (ml)	Amount of Beads (mg)
AE01001	10	2	20
AE01002	10	10	100

【Protocol】

The following protocol provides general guidelines and may be modified by the user for specific applications. The amount of beads should be optimized for individual application by titration.

A. Note:

1. EmerTher Streptavidin Magnetic Beads can be used to directly bind to the biotinylated molecule. The bead-molecule complex is separated with a magnet and used in downstream experiments.
2. With indirect target capture, the beads are added after mixing the biotinylated molecule with the sample to capture the molecule-target complex. Indirect target capture is preferred when molecule concentration is low, molecule-target kinetics is slow, affinity is weak, or molecule-target binding requires optimal molecule orientation and true liquid-phase kinetics.
3. Free biotin in the sample will reduce the binding capacity of the beads and can be removed by ultrafiltration, dialysis or other clean-up methods.
4. Binding efficiency can be determined by comparing molecule concentrations before and after coupling.
5. Detergents, such as 0.01–0.1% Tween-20, can be added to the Binding/Wash Buffer to reduce non-specific binding.
6. EmerTher Streptavidin Magnetic Beads are compatible with downstream analyses using mass spectrometry (LC-MS/MS).

B. Additional materials recommended:

1. Binding/Wash Buffer **for coupling of proteins**: Tris-buffered saline (or PBS), pH 7.4
2. Binding/Wash Buffer **for coupling of nucleic acids**: 10 mM Tris-HCl，1 mM EDTA, 1 M NaCl, pH 7.4
3. Elution Buffer: 0.1 M glycine-HCl, pH 2.8-3.2
4. Neutralization Buffer: 1 M Tris-HCl, pH 8.5
5. A magnetic stand or a 96-well magnetic bead automation processor

C. Immobilization procedure:

1. Coupling of proteins

1.1 Gently shake to mix the magnetic beads thoroughly before use.

1.2 Place 20 µl of magnetic beads (0.2 mg) into a 1.5 ml microcentrifuge tube.
1.3 Place the tube on a magnetic stand, collect the beads and discard the supernatant.
1.4 Wash the beads once with Binding/Wash Buffer for coupling of proteins (1 ml) by magnetic separation.
1.5 Re-suspend the beads in 1 ml Binding/Wash Buffer for coupling of proteins, add 100–200 µl of biotinylated proteins; incubate for 15-60 min at room temperature on a rotator.
1.6 Collect the beads with a magnet. Wash the coated beads three times with Binding/Wash Buffer for coupling of proteins (1 ml each time). Wash for 2 min each time.
1.7 Re-suspend the beads in a suitable buffer at a desired concentration for downstream applications.

2. Coupling of nucleic acids

2.1 Gently shake to mix the magnetic beads thoroughly before use.
2.2 Place 20 µl of magnetic beads (0.2 mg) into a 1.5ml microcentrifuge tube.
2.3 Place the tube on a magnetic stand, collect the beads and discard the supernatant.
2.4 Wash the beads once with Binding/Wash Buffer for coupling of nucleic acids (1 ml) by magnetic separation.
2.5 Re-suspend the beads in 500 µl Binding/Wash Buffer for coupling of nucleic acids, add 100–200 µl of biotinylated nucleic acids; incubate for 10-15 min at room temperature on a rotator.
2.6 Collect the beads with a magnet. Wash the coated beads three times with Binding/Wash Buffer for coupling of nucleic acids (1 ml each time). Wash for 2 min each time.
2.7 Re-suspend the beads in a suitable buffer at a desired concentration for downstream applications.

Note: To immobilize biotinylated RNA, please add RNase inhibitor in Binding/Wash Buffer for coupling of nucleic acids.

D. Examples of downstream applications

1. Purification of antigen

1.1. After re-suspending biotinylated antibody-coated beads in 100 µl Binding/Wash Buffer; add antigen sample to the tube and incubate for 30 min at room temperature or overnight at 4°C. Incubation conditions may be modified for a specific antigen-antibody reaction.
1.2. Collect the beads with a magnet. Wash the beads three times with Binding/Wash Buffer for coupling of proteins by magnetic separation to remove non-specific binding. Collect the beads with a magnet.
1.3. The antigen can be eluted from beads via incubation with 100 µl of Elution Buffer for 5 min. After the antigen is eluted from beads, transfer the supernatant to a new tube and add 10 µl of Neutralization Buffer to neutralize pH. If the level of target antigen is low, a smaller elution volume is recommended. Perform a second elution if desired.

2. Release of immobilized molecule

The biotin-streptavidin bond can only be disrupted under harsh conditions, e.g. boil the sample for 5 min in 0.1% SDS for protein dissociation, or incubate in 10 mM EDTA (pH 8.2) with 95% formamide at 65°C for 5 min or at 90°C for 2 min for DNA dissociation.

【Storage】

Stored at 2-8°C, 1 year.

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This product is for research use only, and is not for use in diagnostic procedures. Please visit our website at www.avanbio.com for MSDS information and more life science research products from AvanBio. For technical support, please email us: support@avanbio.com.