UltraBio™ DNA Size Selection Magnetic Beads

D751553

Storage： 2-8℃. Do not freeze.

Introduction:

UltraBio™ DNA Size Selection Magnetic Beads utilize Solid Phase Reverse Immobilization (SPRI) technology. These beads are coated with a novel nucleic acid purification medium and combined with an optimized buffer system. At specific bead-to-sample ratios, they enable the isolation and purification of nucleic acid fragments within defined size ranges. This product is designed for DNA fragment size selection and purification during next-generation sequencing (NGS) library preparation, allowing users to obtain DNA libraries of varying sizes by adjusting the sample loading conditions.

Instructions for Use:

I. User-Supplied Reagents and Equipment.

1. 80% Ethanol.
2. Elution Buffer: 10 mM Tris-HCl (pH 8.0) or Nuclease-Free Water.
3. Equipment: Pipettes, Vortex mixer, Magnetic rack, Microcentrifuge tubes (1.5 mL).

II. DNA Fragment Size Selection Procedure.

1. First Binding:

- Transfer the sample to a 1.5 mL microcentrifuge tube.
- Add the specified volume of Bead Suspension according to Table 1 (Bead Suspension Volume = Sample Volume × First Binding Ratio).
- Vortex-mix thoroughly. Incubate at room temperature for 10 minutes.
- Place the tube on the magnetic rack until the solution clears completely.
- Transfer the supernatant to a new 1.5 mL microcentrifuge tube. Discard the beads.

2. Second Binding:

- Add the specified volume of Bead Suspension to the supernatant from Step 1 according to Table 1 (Bead Suspension Volume = Original Sample Volume × Second Binding Ratio).
- Vortex-mix thoroughly. Incubate at room temperature for 10 minutes.
- Place the tube on the magnetic rack until the solution clears completely. Discard the supernatant.

3. Wash 1:

- With the tube on the magnetic rack, add 200 μL of 80% Ethanol. Do NOT resuspend the beads.
- Incubate for 1 minute.
- Carefully aspirate and discard the supernatant while keeping the tube on the magnetic rack.

4. Wash 2:
- Repeat Step 3 once.

5. Ethanol Removal:
- Keep the tube on the magnetic rack. Air-dry the beads at room temperature for 2-5 minutes.
- Note: Avoid over-drying the beads, as this reduces purification efficiency.

6. Elution:
- Remove the tube from the magnetic rack.
- Add 30 μL Elution Buffer. Vortex-mix thoroughly to resuspend the beads.
- Incubate at room temperature for 10 minutes.

7. Nucleic Acid Recovery:
- Place the tube back on the magnetic rack for 2-5 minutes until the solution clears completely.
- Carefully transfer the supernatant (containing the purified DNA) to a new tube.

Table 1: DNA Size Selection Ranges and Bead Suspension Addition Ratios

Size Selection Range	200-300bp	300-400bp	400-500bp	500-600bp	600-800bp
First Binding Ratio	0.80×	0.70×	0.60×	0.55×	0.50×
Second Binding Ratio	0.20×	0.20×	0.20×	0.15×	0.15×

III. PCR Product Purification Procedure.

1. Binding:
- Add an equal volume of Bead Suspension to the PCR product sample.
- Vortex-mix thoroughly. Incubate at room temperature for 5 minutes.
- Place the tube on the magnetic rack until the solution clears completely. Discard the supernatant.

2. Wash 1:
- With the tube on the magnetic rack, add 200 μL of 80% Ethanol. Do NOT resuspend the beads.
- Incubate for 1 minute.
- Carefully aspirate and discard the supernatant while keeping the tube on the magnetic rack.
- Wash 2:
- Repeat Step 2 once.

3. Ethanol Removal:
- Keep the tube on the magnetic rack. Air-dry the beads at room temperature for 2-5 minutes.
- Note: Avoid over-drying the beads, as this reduces purification efficiency.

4. Elution:
- Remove the tube from the magnetic rack.
- Add 20-100μL Elution Buffer (user-defined volume). Vortex-mix thoroughly to resuspend the beads.

- Incubate at room temperature for 5 minutes.

5. Nucleic Acid Recovery:

- Place the tube back on the magnetic rack for 2-5 minutes until the solution clears completely.
- Carefully transfer the supernatant (containing the purified PCR product) to a new tube.

Precautions:

1. Storage & Handling: This reagent is supplied as a Bead Suspension. DO NOT freeze or centrifuge the suspension. Vortex-mix thoroughly before initial use.
2. Sample Volume: Minimum recommended sample volume: ⩾100 μL (to minimize pipetting error). For samples <100 μL, adjust to 100 μL using Nuclease-Free Water.
3. Pre-Use Equilibration: Equilibrate the Bead Suspension to room temperature (RT) for ⩾ 30 minutes before use.
4. Bead Drying: Avoid over-drying the beads during the drying step, as this will significantly reduce elution efficiency.