MGIEasy Magnetic Beads Genomic DNA Extraction Kit User Manual

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【Product Name】

MGIEasy Magnetic Beads Genomic DNA Extraction Kit

【Package】

48 Preps/Kit

【Applications】

The kit uses a unique, high-binding, super-paramagnetic bead for genomic DNA extraction from blood, saliva from MGI saliva DNA collection kits, fresh saliva, buccal swabs, animal tissues, cells, etc. High quality genomic DNA can be extracted from the above samples quickly and easily. The extracted genomic DNA can be used for various routine operations, including enzyme digestion, PCR, real-time PCR, library construction, chip hybridization, high-throughput sequencing, etc.

【Main Components】

Reagent	Package and amount（48 Preps）
Buffer LS	14.4 mL×1 bottle
Buffer LB	14.4 mL×1 bottle
Buffer W1	12 mL×1 bottle
Buffer W2	13 mL×1 bottle
Buffer EB	9.6 mL×1 bottle
Proteinase K（20 mg/mL）	0.96 mL×1 tube
Magnetic Beads H	0.96 mL×1 tube

【Transportation Conditions】

Room temperature (15℃ to 30℃).

【Storage Conditions】

Different reagents in this kit have different storage conditions. Please store them respectively according to the following conditions:

Proteinase K (20 mg/mL): 2°C to 8 °C

Magnetic Beads H: 2°C to 8 °C.

Others Reagents: Room temperature (15°C to 25°C). The reagents may have some precipitation which

will not affect the function. If the precipitation occurs, please heat the reagent bottle in a 37°C water bath properly for around 10 min until the precipitation disappear, then mix thoroughly for use.

【 Validity Period 】

Refer to the label

【 Required Materials Not Supplied 】

Type	Item name	Note
Instrument	Vortex	/
	Table top centrifuge	Rotation speed not lower than 10,000 rpm/min
	Metal heater	Or instead by water bath
	1.5 mL tube Magnets	/
	Pipette	1mL, 200μL, 20μL
Reagent	Absolute Ethanol	AR
	Isopropanol	AR
	RNase A	Molecular Biology Grade
Consumable	1.5 mL Centrifuge tube	Nonstick, DNase-free
	Tips	1 mL, 200 μL, 10 μL

【 Read before use 】

1. Avoid repeatedly freezing and thawing samples, which may result in low DNA quality.
2. If Buffer LB and Buffer W1 has a precipitate, it can be re-dissolved in a 37 °C water bath. Shake and mix well before use.
3. All reagents and samples need to equilibrate to room temperature (15°C ~25°C) before use.
4. Before use, please make sure to add absolute (100%) ethanol into Buffer W1 and Buffer W2 according to the amount indicated on the reagent bottle label. Buffer W1 requires 18mL of absolute ethanol, and Buffer W2 requires 52 mL of absolute ethanol.
5. After the experiment, make sure the reagent bottle cap is sealed tightly, especially for Buffer W1 and Buffer W2 with absolute ethanol added.
6. The components of Buffer EB are 10 mM Tris-HCl (pH 8.0) and 0.5 mM EDTA (pH 8.0). If required, you can prepare Buffer EB.

【 Procedure 】

1. Perform the following processing according to the sample type.
   A. Blood sample: 200 μL fresh blood sample can be directly added to a 1.5 mL centrifuge tube. If the blood sample volume is less than 200 μL, add Buffer LS up to 200 μL.
   B. Anticoagulant samples for poultry, birds, amphibians, or lower organisms: Since the red

blood cells of such blood samples are nucleated, the recommended sample size is 5 μL~20 μL. Add Buffer LS for a total volume of 200 μL.

C. MGI saliva DNA collection kit for saliva/oral swab samples: directly take 400 μL of saliva/oral swab preservation solution into a 1.5 mL centrifuge tube for the next step.

Note: Mix the sample thoroughly before sampling to ensure DNA yield.

D. Fresh saliva sample: 200 μL of fresh saliva sample can be directly added to a 1.5 mL centrifuge tube.

Note: If fresh saliva does not need to be extracted immediately, you can add 300 μL of Buffer LB, mix well and can be stored at room temperature for 24 h. please follow the *step 2* within 24 h.

E. Cell sample: It is recommended that the cell extraction amount should not exceed 5×10^6 cells/mL, and high concentration cells should be diluted to 5×10^6 cells/mL with Buffer LS and then extracted. For adherent cells, the cells should be treated as a cell suspension, then take 1mL of cell suspension centrifuge at 10,000 rpm for 1 min, discard the supernatant, add 200 μL of Buffer LS, and then shake to completely suspend the mixture.

F. Amniotic fluid sample: It is recommended to take 3-5 mL of amniotic fluid sample, **centrifuge at 6,000 rpm for 2 min,** discard the supernatant, be careful not touching the bottom layer, add Buffer LS to make up 200 μL.

G. Animal tissue samples: Weigh 2~10 mg of fresh animal tissue samples, which should be broken up into cell suspensions, then centrifuged at 10,000 rpm for 1 min. Aspirate the supernatant, add 200 μL Buffer LS, and shake until completely suspended.

Note: If RNA removal is required, add 5 μL of RNase A (100 mg/mL) solution (customer-supplied) at this step, shake for 15 sec, and let stand for 5 min at room temperature.

2. Add Proteinase K (20 mg/mL) solution, different sample types operate as following:

A. Blood, saliva, and cell samples: add 20 μL of Proteinase K and and mix by vortexing.

B. Amniotic fluid sample and Animal tissue: add 20 μL of Proteinase K and and mix by vortexing, place it on a metal heater, set the temperature to 65°C and the speed to 800 rpm ~ 1000 rpm. Incubate for 30 min ~ 1 h until the tissue dissolves. After brief centrifugation, continue to the next step.

3. Add Buffer LB, different sample types operate as following:

A. Blood, cells, Amniotic fluid sample, Animal tissue and Fresh saliva: **Add 300 μL Buffer LB**, mix well by vortexing, and place the tube on the metal heater. Keep the temperature at 65°C and the speed at 800 rpm~1000 rpm. Incubate for 15 min.

B. MGI saliva DNA collection kit for saliva/oral swab samples: **Add 100 μL Buffer LB**, mix well, and place the tube on the constant temperature mixer. Keep the temperature at 65 °C

and the speed at 800 rpm~1000 rpm. Incubate for 15 min.

C. Fresh saliva preserved with Buffer LB: **No need to add Buffer LB**, directly place the tube on the constant temperature mixer, keep the temperature at 65°C and the speed at 800 rpm~1000 rpm. Incubate for 15 min.

4. Add 350 μL of isopropanol and mix well by vortexing.

   Note: Some of the solution in centrifuge tube will flocculate, which is normal.

5. Vortex the Magnetic Beads H and add 20 μL Magnetic Beads H. Keep at room temperature for 2 min. Mix well 1-2 times during the period.
6. Centrifuge instantaneously and place it on the magnetic stand for 2 min. After the liquid clears, carefully discard the supernatant liquid.
7. Remove the centrifuge tube from the magnetic stand. Add 500 μL Buffer W1 (**ensure that absolute ethanol has been added**), and mix well for 1 min~2 min.

   Note: After adding Buffer W1, ensure it is mixed sufficiently, otherwise the purity of the extracted nucleic acid may be affected.

8. Place the centrifuge tube on the magnetic stand for 1 min. After the liquid is completely clear, carefully discard the supernatant.
9. Remove the centrifuge tube from the magnetic stand. Add 600 μL Buffer W2 (**ensure that anhydrous ethanol has been added**), and mix well for 1 min to 2 min.

   Note: After adding Buffer W2, ensure it is mixed sufficiently, otherwise the purity of the extracted nucleic acid may be affected.

10. Place the centrifuge tube on the magnetic stand for 1 min. After the liquid is completely clear, carefully discard the supernatant.
11. Repeat steps 9-10 once and remove as much liquid as possible from the centrifuge tube.
12. Place the centrifuge tube on the magnetic stand and let dry at room temperature for 5~10 minutes to ensure that the ethanol is completely evaporated.
13. Remove the centrifuge tube from the magnetic stand. Add 50~100 μL Buffer EB, mix by vortexing and place it on a metal heater. Incubate at 56°C, 800 rpm ~ 1000 rpm for 5 min.
14. Place the centrifuge tube on the magnetic stand. After the liquid is completely clear, carefully transfer the 45~90 μL DNA solution to a new 1.5 mL centrifuge tube. Label and store at -20°C.

    Note: The elution volume should not be too small. It is recommended to elute with Buffer EB volume above 50 μL. If the sample input amount is too large, a phenomenon can occur in which the magnetic beads adhere to the transparent mucus when transferring the DNA solution, mainly due to insufficient DNA dissolution. A certain amount of Buffer EB can be added to re-dissolve fully. If the mucus phenomenon persists, make sure not taking any beads when transfer DNA in order not to affect the quality of the extracted

nucleic acids. If high purity nucleic acids are required, centrifuge at 8000 rpm for 1 min, then transfer the DNA from near the top of the tube. Labeled and store at -20 ° C or below.

【 Announcements 】

1. This product is for scientific research purposes only and is not intended for clinical diagnosis. Please read this manual carefully before use.
2. This kit is suitable for whole blood samples treated with EDTA or sodium citrate anticoagulants. Samples using other anticoagulants such as sodium heparin may not be used in this kit.
3. When all reagents are taken out from the specified storage environment, use them as required. Before use, the reagents should be shaken and mixed.
4. All samples and reagents should avoid direct contact with skin and eyes. Do not swallow. If contact or ingestion occurs, rinse immediately with plenty of water and seek medical attention.
5. All samples and wastes should be disposed of in accordance with relevant regulations.

【 Production company information 】

Company: MGI Technology Co., Ltd.
Address:2/F, Building 11, Beishan Industrial Zone, Yantian District, Shenzhen, CHINA, 518083
Email: MGI-service@mgi-tech.com
Website: https://en.mgi-tech.com
Service Hotline: (+86) 4000-966-988