Mag Beads Blood Clot Genomic DNA Extraction Kit

【Product Name】

Mag Beads Blood Clot Genomic DNA Extraction Kit

【Package Specifications】

50T/box（Art.No.GP112-50）；300T/box（Art.No.GP112-300）；

64T/box（Art.No.GP112-64）；96T/box（Art.No.GP112-96）

【Intended Use】

This product is suitable for extracting genomic DNA from 0.3-3mL blood clots, and the resulting product is intended for clinical in vitro diagnostics.

【Detection Principle】

DNA binds to the surface of mag beads coated with silica under high salt conditions, undergoes multiple washes to remove impurities such as proteins, and is eluted under low salt conditions to obtain high-purity genomic DNA.

【Main Components】

Components	GP112-50	GP112-300	GP112-64	GP112-96
RBC lysate	80mL	480mL	100mL	150mL
Proteinase K	1.4mL*2	16mL	3.5 mL	5mL
Bead suspension	1.6mL	10mL	2mL	3mL
Binding buffer	30mL	180mL	580μL*64	580μL*96
Washing buffer1	65mL	380mL	600μL*64*2	600μL*96*2
Washing buffer2	User-provided	User-provided	600μL*64*2	600μL*96*2
Eluant	11mL	65mL	14mL	20mL

【Storage Conditions and Shelf Life】

Proteinase K should be stored at temperatures below 4°C, while the magnetic bead suspension should be stored at 2-8°C. All other reagents should be stored at room temperature, and they have a shelf life of 12 months. Transportation can be done between 4-37°C for up to 14 days.

【User-provided Equipment and Reagents】

1．Equipment: Nucleic acid extractor, 2.2mL 96 deep-well plates (U-bottom), magnetic rod covers, magnetic racks, vortex oscillators, constant temperature oscillators, etc.;

2．Reagents: 75% ethanol.

【Sample Requirements】

1．Suitable Sample Types: Blood clots, etc.;

2．Sample Storage: Extraction can be performed immediately, or samples can be stored at 2-8°C for testing, with a storage period not exceeding 24 hours. For long-term storage, samples should be stored at -20°C.

【Precautions】

1．Magnetic beads should not be frozen, and the magnetic bead suspension should be thoroughly mixed before use;

2．Check for precipitation in each component before each use. If precipitation is observed, it can be dissolved again at 60°C.

【Manual Extraction Steps Using Centrifuge Tubes】

1．Sample Pre-treatment:

1) Add 0.3-3mL blood clot sample and 2mL red blood cell lysis buffer to a 5mL centrifuge tube. Grind the blood clot using a tissue grinder at room temperature;

2) After grinding, let it stand for 1 minute, then centrifuge at 4000g for 5 minutes, carefully discard the upper layer of liquid, and retain the bottom precipitate;

3) Add 1mL red blood cell lysis buffer to the centrifuge tube again, vortex to resuspend

the precipitate, and use a pipette tip to grind the precipitate as much as possible. Transfer to a 2mL centrifuge tube, let it stand for 1 minute, centrifuge at 12000g for 2 minutes, carefully discard the upper layer of liquid, and retain the bottom precipitate (if the precipitate is still red, the number of lysis steps can be increased);

4) Add 50μL proteinase K to the centrifuge tube, vortex to fully disperse the precipitate, and set aside.

Note: For blood clot samples containing separation gel, do not aspirate the white precipitate at the bottom of the tube immediately after centrifugation (it is the separation gel).

2. Lysis and DNA Binding: Add 30μL magnetic bead suspension and 580μL binding solution to the centrifuge tube, cover the tube, vortex mix, and incubate at 1600rpm, 60°C for 30 minutes.

3. Magnetic Separation: Place the centrifuge tube on a magnetic rack, invert it 2-3 times, let it stand for 40 seconds to allow the magnetic beads to fully adhere to the magnetic rack, and completely remove the supernatant (keep the centrifuge tube fixed on the magnetic rack throughout the process to avoid contact with the magnetic beads).

4. Wash 1: Remove the centrifuge tube from the magnetic rack, add 600μL washing solution 1 to the tube, cover the tube, vortex mix for 2-3 minutes to ensure thorough mixing of the magnetic beads, and perform magnetic separation.

5. Wash 2: Repeat step 4 once.

6. Wash 3: Remove the centrifuge tube from the magnetic rack, add 600μL of 75% ethanol to the tube, cover the tube, vortex oscillate for 1-2 minutes to ensure thorough mixing of the magnetic beads, and perform magnetic separation.

7. Wash 4: Repeat step 6 once.

8. Alcohol Removal: Place the centrifuge tube on the magnetic rack and let it air dry in a fume hood for 5 minutes (until no liquid shine is visible on the surface of the magnetic beads).

9. Elution: Remove the centrifuge tube, add 200μL elution buffer, vortex mix for 20 seconds to ensure thorough mixing of the magnetic beads and elution buffer, and shake at 55°C for 10 minutes.

10. Nucleic Acid Transfer: Place the centrifuge tube on the magnetic rack and let it stand for 1 minute. After the magnetic beads are completely adsorbed, transfer the supernatant to a clean nucleic acid-free centrifuge tube and store at -20°C for later use.

【Automated Operation Steps for 16/32-Channel Nucleic Acid Extractor】

1. Sample preprocessingt

1) Add 0.3-3mL of clot sample and 2mL of red blood cell lysis solution to a 5mL centrifuge tube. Grind the blood clot using a tissue homogenizer at room temperature.

2) After grinding, let it stand for 1 minute, then centrifuge at 4000g for 5 minutes. Carefully discard the supernatant and retain the bottom precipitate.

3) Add 1mL of red blood cell lysis solution again to the centrifuge tube, resuspend the precipitate by vortexing, use a pipette tip to crush the precipitate as much as possible, transfer to a 2mL centrifuge tube, let it stand for 1 minute, centrifuge at 12000g for 2 minutes, carefully discard the supernatant and retain the bottom precipitate (if the precipitate is still red, increase the number of lysis steps if necessary).

4) Add 50μL of proteinase K to the centrifuge tube, vortex mix well to disperse the precipitate evenly, and set aside.

Note: If the clot sample contains separation gel, do not aspirate the white precipitate at the bottom of the tube after centrifugation (which is the separation gel).

2. Sample Preparation

Add the specified amounts listed in the table to each corresponding well of a 96-well plate, which can simultaneously process 16/32 samples.

Sample position	1、7	2、8	3、9	4、10	5、11	6、12
Reagent	Binding buffer（580μL）	Washing buffer（600μL）	Washing buffer（600μL）	75% Ethanol（600μL）	75% Ethanol（600μL）	Eluant（200μL）

Note: Product code GP102-64, with 64 tests per box, contains pre-packaged reagents and does not require sample preparation. Proceed directly to step 3.

3. Adding Samples and Magnetic Bead Suspension

If using pre-packaged reagents, place the sealed reagent plate in a 96-well plate centrifuge and centrifuge for a few seconds, then carefully peel off the aluminum foil. Add the prepared aliquot and 30μL of magnetic bead suspension to the first column (or seventh column) of the 96-well plate.

4. Automated Extraction:

Place the prepared 96-well sample plate into the QP-AUT-32 nucleic acid extractor or a similar type of extractor, and insert the magnetic rod sleeve. Open the instrument's operating program, select the "Blood Clot" program, and run the program.

5. Nucleic Acid Transfer:

After the automated program completes, transfer the eluate from the wells in the 6th or 12th column to clean centrifuge tubes without nucleases, and store at -20°C for future use.

The parameters for the 32-channel nucleic acid extractor (QP-AUT-32) program are set as follows

Step	Site	Name	Waiting time（min）	Mixing time (sec)	Suction time (min)	Volume (μL)	Temperature
1	1	Lysis and binding	30	60	0	860	65°C
2	2	Washing 1	4	60	0	600	—
3	3	Washing 1	3	60	0	600	—
4	4	Washing 2	2	60	0	600	—
5	5	Washing 2	1	60	3	600	—
6	6	Elution	20	0	0	200	37°C
7	6	Elution	8	120	0	200	60°C
8	5	Abandon beads	1	0	0	600	—

【Automated Operation Steps for 96-Channel Nucleic Acid Extractor】

1. Sample Pretreatment:

1) Add 0.3-3 mL of clot sample and 2 mL of red blood cell lysis solution to a 5 mL centrifuge tube. Grind the blood clot using a tissue homogenizer at room temperature.

2) After grinding, let it stand for 1 minute, then centrifuge at 4000g for 5 minutes. Carefully discard the supernatant and retain the bottom precipitate.

3) Add 1 mL of red blood cell lysis solution again to the centrifuge tube, resuspend the precipitate by vortexing, use a pipette tip to crush the precipitate as much as possible, transfer to a 2 mL centrifuge tube, let it stand for 1 minute, centrifuge at 12000g for 2 minutes, carefully discard the supernatant and retain the bottom precipitate (if the precipitate is still red, increase the number of lysis steps if necessary).

4) Add 50μL of proteinase K to the centrifuge tube, vortex mix well to disperse the precipitate evenly, and set aside.

Note: If the clot sample contains separation gel, do not aspirate the white precipitate at

the bottom of the tube after centrifugation (which is the separation gel).

2. Sample Preparation:

Add the specified amounts listed in the table to each corresponding well of a 96-well plate, which can simultaneously process 96 samples.

Sosition	1	2	3	4	5	6
Reagent	Binding buffer（580μL）	Washing buffer（600μL）	Washing buffer（600μL）	75% Ethanol（600μL）	75% Ethanol（600μL）	Eluant（200μL）

Note: Product code GP102-96, with 96 tests per box, contains pre-packaged reagents and does not require sample preparation. Proceed directly to step 3.

3. Adding Samples and Magnetic Bead Suspension:

If using pre-packaged reagents, place the sealed reagent plate in a 96-well plate centrifuge and centrifuge for a few seconds, then carefully peel off the aluminum foil. Add the prepared aliquot and 30μL of magnetic bead suspension to the first column (or seventh column) of the 96-well plate.

4. Automated Extraction:

Place the prepared 96-well sample plate into the QP-AUT-32 nucleic acid extractor or a similar type of extractor, and insert the magnetic rod sleeve. Open the instrument's operating program, select the "Blood Clot" program, and run the program.

5. Nucleic Acid Transfer:

After the automated program completes, transfer the eluate from the wells in the 6th column to clean centrifuge tubes without nucleases, and store at -20°C for future use.

The parameters for the 96-channel nucleic acid extractor (QP-AUT-96) program are set as follows

Station	1	2	3	4	5	6	6	5
Waiting time	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:02:00	00:00:00	00:00:00
Mixed model	3	3	3	3	3	3	3	3
Mixing time	00:30:00	00:04:00	00:03:00	00:02:00	00:01:00	00:20:00	00:08:00	00:00:30
Suspend	No	No	No	No	No	No	No	No
Suction time	00:02:00	00:01:00	00:01:00	00:01:00	00:01:00	00:00:00	00:02:00	00:00:00
Volume	860μL	600μL	600μL	600μL	600μL	200μL	200μL	600μL
Temperature	65℃	—	—	—	—	37℃	60℃	—

【Basic Information】

Version Number: 1.1

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