VAMNE Magnetic Stool/Soil DNA Extraction Kit (Prepackaged)

DMA5102

Vazyme

Instruction for Use

Version 25.1

Contents

For Research Use Only. Not for use in diagnostic procedures.

01/Product Description

This kit is applicable for extracting DNA from various samples such as soil, stool, intestinal contents, fermentation products, and water filtration membranes. The kit combines chemical and mechanical methods, enabling efficient lysis of bacteria and fungi with thick cell walls in the samples, and incorporates a unique humic acid removal technology to effectively eliminate humic acid and other inhibitory factors from the samples. The high-affinity magnetic beads used in this kit can adsorb nucleic acids through hydrogen bonding and electrostatic interactions in a high-salt buffer, and excess humic acid, proteins, salts, and other impurities are removed through rinsing. Under the action of a low-salt elution buffer, the magnetic beads release nucleic acids, achieving rapid separation and purification of nucleic acids. This kit can quickly extract high-yield, high-purity DNA, and the purified DNA can be directly used in experiments such as PCR, qPCR, and next-generation sequencing.

02/Components

	Components	DMA5102-01 (50 × 1 T)	DMA5102-02 (6 × 16 T)
	Lysis Tube	50	2 × 48
	Lysis Buffer	50 ml	96 ml
■	RNase A	250 μl	500 μl
	PI Buffer	15 ml	30 ml
	Extraction Plate	50 × 1 T	6 × 16 T

03/Storage

BOX 1: RNase A, PI Buffer. Store at 2 ~ 8°C and ship on ice.

BOX 2: Other Components. Store at 15 ~ 25°C and ship at room temperature.

04/Applications

It is applicable for soil, stool, intestinal contents, fermentation products, water filter membranes, etc.

05/Applicable Instruments

It is applicable for fully automatic nucleic acid extraction instrument (Vazyme #VNP-32P) and similar types of instruments (heating slots are 1, 6, 7, 12).

06/Self-prepared Materials

High speed centrifuge, homogenizer or vortex mixer, fully automatic nucleic acid extraction instrument.

07/Notes

1. Before use, please read the instruction manual carefully and operate strictly according to the instruction manual.
2. The vessels, pipettes, and other items used in this kit are all specialized, and the disposable consumables such as centrifuge tubes and pipette tips should be DNase and RNase free. Sample processing should be conducted in a laminar flow cabinet or in a biosafety cabinet. Operators should wear powder-free gloves, masks, etc.
3. Before and after using the fully automatic nucleic acid extraction instrument, it is necessary to perform UV disinfection for 30 min.
4. After the extraction is complete, if there are trace amounts of magnetic beads remaining in the elution solution, care should be taken to avoid aspirating the beads when taking the elution solution; if beads are aspirated, a magnetic rack can be used for secondary magnetic separation.
5. PI Buffer and RNase A should be placed at 2 ~ 8°C after receipt. Remove from 2 ~ 8°C before use and equilibrate to room temperature for optimal use effect.
6. For complex samples with low nucleic acid content (such as mineral soil, sandy soil, coal soil, etc.), it's recommended to use Lysis buffer Pro (Vazyme #DMA5101-C1) which is not provided in this kit. Please contact our sales agent for Lysis buffer Pro.
   ▲ This reagent is prone to precipitation at low temperatures. If there is a precipitate, it can be dissolved by heating in a 37°C water bath and mixed well before use.
7. Before use, prepare Lysis Buffer/RNase A mixture: add 5 μl RNase A per reaction, mix well and use. And it is recommended to be prepared freshly.

08/Experiment Process

08-1/Sample pre-treatment

1. Add sample to Lysis Tube, then add Lysis Buffer/RNase A mixture.

▲ Prepare Lysis Buffer/RNase A mixed solution in advance: add 5 μl RNase A per reaction, mix well, and use.

a. Soil sample: Add 100 - 250 mg soil sample, then add 700 μl Lysis Buffer/RNase A mixture.

b. Stool sample: Add 50 - 150 mg stool sample, then add 700 μl Lysis Buffer/RNase A mixture.

c. Filter membrane sample: Add the shredded filter membrane (approximately one piece of 47 mm diameter filter membrane), then add 700 µl Lysis Buffer/ RNase A mixture. If the filter membrane has strong water absorption, the amount of Lysis Buffer/RNase A can be increased to 1 ml, or the amount of filter membrane can be appropriately reduced.

d. Other solid samples (intestinal contents, wine lees, fermentation products, etc.): Add 100 - 250 mg sample, then add 700 µl Lysis Buffer/RNase A mixture.

▲ For samples with strong water absorption, the amount of Lysis Buffer/RNase A can be increased, not exceeding 1 ml.

e. Liquid sample (dilute stool, fermentation liquid, sludge, etc.): Add 200 µl liquid sample, then add 500 µl Lysis Buffer/ RNase A mixture.

f. Microbial cultures (bacteria, fungi, yeast) : Add an approximate amount of to a Lysis Tube. For the liquid cultures, 10^9 input is recommended. For mycelium, 20 - 100 mg input is recommended. Then add 300 µl Lysis Buffer/RNase A mixture.

2. Mix the above solution by vortexing or homogenizing, recommended vortexing conditions: maximum speed 5 min; homogenizing conditions: 60 Hz 2 min.

▲ If higher requirements for DNA integrity are needed, mild grinding conditions can be adopted, but grinding intensity reduction may affect nucleic acid yield. It is recommended to vortex at medium speed for 5 min or homogenize at 25 Hz for 5 min.

3. Centrifuge at 12,500 rpm (15,000 × g) for 2 min. Transfer about 500 µl supernatant (if less than 500 µl, pipette it out completely) to 1.5 ml centrifuge tubes (self-provided).

4. Add 300 µl PI Buffer. Vortex mix for 5 - 10 sec or mix by inversion 20 times, centrifuge at 12,500 rpm (15,000 × g) for 2 min. Transfer 500 µl supernatant (if less than 500 µl, pipette it out completely) for the next step. For microbial cultures, 300 µl PI Buffer is omitted.

▲ For samples with low humic acid content (such as filter membranes, water bodies, etc.), the amount of PI Buffer can be reduced to 100 µl, or PI Buffer can be omitted.

08-2/Automated extraction step

1. Take out the pre-packaged reagent from the kit, mix by inversion several times to resuspend the magnetic beads. Gently tap the plate to concentrate the reagent and magnetic beads at the bottom of the wells. Before use, please confirm the orientation of the wells and carefully tear off the aluminum foil parafilm. Avoid vibration when tearing off the sealing foil to prevent liquid from spilling.

▲ DMA5102-01 single reagent strip needs to be used with a strip holder (Vazyme #EXS101).

2. Carefully transfer the supernatant from **08-1/Sample pretreatment** to the 1st column or 7th column wells of the prepackaged extraction strip or plate, place the strip or plate in the nucleic acid extraction instrument (with the notch facing the upper left corner). Install the magnetic rod sleeves and confirm they are properly installed, then run the DMA5102 program for automated extraction.

3. Automated extraction program.

Step	Plate Position	Name	Mixing Time (min)	Adsorption Time (sec)	Waiting Time (min)	Volume (μl)	Mixing Speed	Temperature (°C)	Mixing Position	Mixing Amplitude	Adsorption Position	Adsorption Speed
1	2	Movebeads	0.5	30	0	700	10	-	10%	80%	0%	10
2	1	Binding	4	45	0	1,000	10	-	10%	80%	0%	10
3	3	W1	1	30	0	700	8	-	10%	80%	0%	10
4	4	W2	1	30	0	700	8	-	10%	80%	0%	10
5	5	W3	1	30	2	700	8	-	10%	80%	0%	10
6	6	Elution	3	30	0	70	10	65	5%	80%	0%	10
7	2	Movebeads	0.3	0	0	700	10	-	10%	80%	0%	10
Other settings (in the Option menu): Heating settings (heating and action start at the same time) Adsorption settings (three-stage adsorption)												

4. After the automated program ends, the purified nucleic acid products will be in the 6th and 12th column wells of the strip or plate. Transfer the eluted products to a clean, nuclease-free centrifuge tube; if not used immediately, store the eluted products at -20°C.

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