VAMNE Magnetic Universal Plant Total RNA Kit (Prepackaged)

RMA4102

Vazyme

Instruction for Use

Version 25.1

Contents

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

01/Product Description

VAMNE Magnetic Universal Plant Total RNA Kit (Prepackaged) is designed for the extraction of high-purity RNA from various plant tissues, achieving high-throughput processing of samples. The kit is based on superparamagnetic particle purification technology with an optimized reagent system, which can specifically adsorp nucleic acids and effectively remove various impurities. DNase I can efficiently eliminate DNA. The fully automated workflow is simple, rapid, safe and efficient. The obtained RNA can be directly used for downstream experiments such as RT-PCR, qRT-PCR, Northern Blot, Dot Blot, *in vitro* translation, and high-throughput sequencing.

02/Components

		Components	RMA4102-01 (50 × 1 T)	RMA4102-02 (6 × 16 T)
BOX 1		VAMNE Magnetic Universal Plant Total RNA Kit (Prepackaged for RMA4102)	50 × 1 T	6 × 16 T
		Lysis Buffer PLA	45 ml	80 ml
		Buffer RDD	3 ml	5 ml
	☐	Elution Buffer	1 ml	1 ml
BOX 2		Proteinase K	1.2 ml	2.5 ml
		Buffer TP	2 × 1 ml	3 × 1.2 ml
		DNase I	165 μl	320 μl

RMA4102-01 VAMNE Magnetic Universal Plant Total RNA Kit (Prepackaged) Specific Component Information

Position	Components	Volume per Well
Well 1	Binding Buffer A	220 μl
Well 2	Beads	255 μl
Well 3	Wash Buffer 1	700 μl
Well 4	Wash Buffer 2	700 μl
Well 5	Wash Buffer 3	700 μl
Well 6	Elution Buffer	70 μl

RMA4102-02 VAMNE Magnetic Universal Plant Total RNA Kit (Prepackaged) Specific Component Information

Position	Components	Volume per Well
Column 1 & 7	Binding Buffer A	220 μl
Column 2 & 8	Beads	255 μl
Column 3 & 9	Wash Buffer 1	700 μl
Column 4 & 10	Wash Buffer 2	700 μl
Column 5 & 11	Wash Buffer 3	700 μl
Column 6 & 12	Elution Buffer	70 μl

03/Storage

BOX 1: Store at 15 ~ 25°C and ship at room temperature.
BOX 2: Store at -30 ~ -15°C and ship at ≤0°C.

04/Applicable Instruments

For use with the fully automatic nucleic acids extraction instruments (Vazyme #VNP-32P) and equivalent instruments (Heating positions: columns 1, 6, 7, and 12).

▲ For automated instruments of other brands or models, compatible consumables and operating programs must be adjusted accordingly.

05/Applications

Plant leaves and fungi: 20 - 100 mg;
Polysaccharide-rich tubers, roots and seeds: 20 - 50 mg;
Fruits; 50 - 200 mg.

06/Self-prepared Materials

Seed Lysis Buffer (Vazyme #DMA4101-C2) (Optional).

07/Notes

1. For use with RMA4102-01, the Reagent Strips Holder (Vazyme #EXS101, available upon request from sales representatives) must be prepared in advance.
2. The key to successful RNA extraction is to prevent RNase contamination. RNases are ubiquitous and extremely stable in the environment. Even trace amounts of RNase can rapidly degrade RNA. Therefore, please follow standard RNA extraction precautions, including wearing masks and disposable sterilized gloves, operating in a dedicated and clean area, and using RNase-free laboratory consumables.
3. The automatic nucleic acids extraction instruments should be disinfected with the UV light for 30 min before and after use.
4. Traces of magnetic beads may remain in the eluate after extraction. Avoid aspirating the magnetic beads. If magnetic beads are accidentally aspirated, repeat magnetic adsorption once more using a magnetic rack.
5. Properly dispose of all samples and reagents, thoroughly wipe down and disinfect all work surfaces with 75% ethanol.

08/Experiment Process

08-1/Reagents Preparation

1. RMA4102-01: Take out the prepackaged strip from the kit. Invert the strip several times to fully resuspend the magnetic beads. Gently flick the strip to concentrate the reagents and beads at the bottom of the well. Before use, insert a single reagent strip into the Reagents Strips Holder (Vazyme #EXS101) in the correct orientation firmly. Carefully remove the aluminum sealing film.

2. RMA4102-02: Take out the prepackaged plate from the kit. Invert the plate several times to fully resuspend the magnetic beads. Gently flick the plate to concentrate the reagents and magnetic beads at the bottom of the well. Before use, ensure the plate orientation and carefully remove the aluminum sealing film.

▲ Avoid vibration when tearing off the sealing foil to prevent liquid from spilling.

08-2/Sample Pretreatment

1. Sample grinding: Rapidly transfer fresh or frozen plant tissue stored at -85 ~ -65°C into a liquid nitrogen–precooled mortar and grind thoroughly. Continuously add liquid nitrogen to maintain the tissue at a low temperature until it is ground into a fine powder with no obvious particles. Alternatively, rapidly grind the tissue into a powder at low temperature using a fully automated tissue homogenizer. Recommended parameters are provided in the table below.

Sample type	Parameters settings	
Plant leaves, flowers, fruits, fungi, etc.	40 - 60 Hz	45 sec, 1 cycle
Plant polysaccharide-rich tubers, roots, etc.	40 - 60 Hz	45 sec, 2 cycles
Plant seeds, such as soybeans, wheat seeds, etc.	60 Hz	45 sec, 3 cycles

▲ The grinding parameters can be adjusted according to the difficulty of disrupting sample. Laboratory-standard grinding parameters may also be used as appropriate.

▲ All grinding accessories should be pre-cooled with liquid nitrogen prior to use, and re-precooled between successive grinding cycles.

2. Sample Pre-processing Solution preparation: Add 30 µl Buffer TP and 20 µl Proteinase K to each 800 µl of Lysis Buffer PLA and mix well. Transfer the ground tissue into a 1.5 ml centrifuge tube. Immediately add 850 µl Pre-processing Solution. Vigorously vortex for 30 - 60 sec to thoroughly mix the sample and Pre-processing Solution until no obvious large tissue clumps remain, then incubate at room temperature for 5 min. Centrifuge at 12,000 rpm (~13,400 × g) for 5 min at room temperature. Transfer 700 µl of supernatant to the Binding Buffer A wells (Well 1 of the reagent strip).

▲ Pre-processing Solution needs to be prepared freshly and used immediately. It is recommended to prepare Pre-processing Solution for N + 1 reactions.

▲ For samples with low RNA content, the input amount can be appropriately increased. Due to the diversity of plant samples, the input amount can be adjusted based on specific experimental requirements and experience.

▲ For certain seed or polysaccharide-rich samples, a transparent gel-like layer may appear between the pellet and the supernatant after centrifugation. Accidentally aspirating this layer can affect extraction efficiency. To ensure optimal results, the volume of the supernatant can be appropriately reduced. For seed samples (e.g., wheat seeds, rice seeds) ≥30 mg, Seed Lysis Buffer (Vazyme #DMA4101-C2) is recommended. Contact sales representatives for acquisition.

08-3/Aliquoting DNase I

1. DNase I Working Solution Preparation: For each reaction, mix 47 µl Buffer RDD with 3 µl DNase I by gentle pipetting.
2. Add prepared DNase I Working Solution to Beads wells (Well 2 of the reagent strip), dispensing 50 µl per well.
   ▲ It is recommended to prepare DNase I Working Solution for N + 2 reactions.
   ▲ DNase I Working Solution needs to be prepared freshly and used immediately. Make sure to add the DNase I Working Solution directly into the liquid; adding it onto the well wall may reduce the efficiency of genomic DNA removal.

08-4/Operation on the automatic instrument

1. Place the Reagents Strips Holder (Vazyme #EXS101) or the 96 deep-well plate into the Automatic nucleic acids extraction instrument **with the notch toward the inner left front of the instrument**. Install the magnetic rod sleeves and ensure that they are properly seated.
2. Edit the program as below (or select the corresponding pre-imported program) to perform automated extraction.

The Program for Vazyme #VNP-32P (RMA4102)

Step	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	1	Lysis	5	0	0	900	8	58	10	80	0	10
2	2	Beads	0.5	30	0	300	8	-	10	80	0	10
3	1	Lysis	2	60	0	900	8	58	10	80	0	10
4	3	Wash 1	1	30	0	700	8	-	10	80	0	10
5	2	DNase I	10	30	0	300	8	-	10	80	0	10
6	3	Wash 1	1	30	0	700	8	-	10	80	0	10
7	4	Wash 2	1	30	0	700	8	-	10	80	0	10
8	5	Wash 3	1	30	5	700	8	-	10	80	0	10
9	6	Elution	2.5	60	0	70	10	75	10	80	0	10
10	2	Beads	0.1	0	0	300	8	-	10	80	0	10
Other settings (in the Option menu): Temperature control (TC) setting (TC Type: Start with TC); **Adsorption setting (Adsorption type: three-stage adsorption)**; Drying setting (Drying position: Above the kit; Drying fan: OFF)												

3. After the automated extraction, promptly transfer the eluates from Elution wells/plate (note the valid wells) into clean RNase-free centrifuge tubes.The extracted product can be stored at -85 ~ -65°C for long-term storage, and -30 ~ -15°C for short-term storage.

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