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Magnetic Bead-Based HPV Nucleic Acid Extraction Kit

Product Number: RNK35-96T

Storage condition

Stored at 4~30℃, and the shelf life is 18 months.

Components

Component	Specifications	Quantity
Lysis & Binding Preloaded Plate	96 reactions/plate	1 plate
Magnetic Bead Preloaded Plate	96 reactions/plate	1 plate
Wash Buffer 1 Preloaded Plate	96 reactions/plate	1 plate
Wash Buffer 2 Preloaded Plate	96 reactions/plate	2 plate
Elution Buffer Preloaded Plate	96 reactions/plate	1 plate
96-well Magnetic Rod Sleeves	96 reactions/plate	1 plate
Proteinase K Solution	1.2mL/tube	2 tube
Enhancer S	1.2mL	1 tube

Note: Components of different kit models cannot be interchanged; components of kits with different batch numbers cannot be interchanged.

Description

This kit adopts uniquely separating magnetic beads and proprietary buffer systems to isolate and purify high-quality viral nucleic acid from cervical swabs, urethral swabs, vaginal secretions and wart exfoliated cell samples. Through steps of magnetic bead-nucleic acid binding, washing and elution, proteins and other impurities are removed. The obtained viral nucleic acid is of high purity and can be directly applied to various downstream molecular biology experiments such as qPCR.

This product is fully compatible with automatic nucleic acid extractors. Magnetic rods adsorb, transfer and release magnetic beads to realize the transfer of magnetic beads and nucleic acids, improving automation. The whole experimental process is safe and convenient. The extracted viral nucleic acid has high purity without contamination by proteins and other impurities.

Application

For nucleic acid extraction, enrichment and purification; the processed products are used for clinical in vitro testing.

This product is suitable for isolating and purifying high-quality viral nucleic acid from cervical swabs, urethral swabs, vaginal secretions and wart exfoliated cell samples. The processed products are used for clinical in vitro testing.

Sample requirements

1. Applicable sample types: cervical swabs, urethral swabs, vaginal secretions, wart exfoliated cell samples.
2. Sample storage and transportation: Samples can be tested immediately, or stored at -20±5°C pending testing. Samples shall be transported in an ice box at 0°C.

Applicable Instruments

Strip-type nucleic acid extractors with heating for Column 1/6 or plate-type nucleic acid extractors with heating for Plate 1/6.

Protocol

1. Manual Operation Steps

1.1. Add 300μL sample, 20μL Proteinase K Solution, 10μL Enhancer S and 600μL Lysis & Binding Buffer into a 2mL centrifuge tube, then vortex to mix evenly.

1.2. Incubate at 100°C for 15 minutes, invert and mix several times during incubation.

1.3. Add 20μL Magnetic Bead Suspension and vortex to mix evenly.

1.4. Incubate at 100°C for 15 minutes, invert and mix several times during incubation.

1.5. Place the centrifuge tube on a magnetic stand and stand for 1 minute to fully adsorb magnetic beads onto the tube wall. Aspirate and discard all liquid in the tube, then remove the tube from the stand.

1.6. Add 500μL Wash Buffer 1, vortex for 2 minutes to resuspend magnetic beads. Adsorb beads with the magnetic stand, aspirate liquid after 30 seconds, then remove the tube.

1.7. Add 500μL Wash Buffer 2, vortex for 1 minute to resuspend magnetic beads. Adsorb beads with the magnetic stand, aspirate liquid after 30 seconds, then remove the tube.

1.8. Add another 500μL Wash Buffer 2, vortex for 1 minute to resuspend magnetic beads. Adsorb beads with the magnetic stand, aspirate liquid after 30 seconds, then remove the tube.

1.9. Perform brief centrifugation to collect liquid droplets on the tube wall. Place the tube on the magnetic stand to adsorb beads, then aspirate all liquid after 1 minute.

1.10. Open the tube cap and dry the tube at 40°C for 5 minutes (until magnetic bead surface loses gloss).

Note: Residual ethanol will inhibit subsequent enzymatic reactions. Ensure complete ethanol volatilization during drying; excessive drying time will hinder nucleic acid elution.

1.11. Add 50~100μL Elution Buffer to resuspend magnetic beads, shake and incubate at 80°C for 10 minutes.

1.12. Perform brief centrifugation to collect liquid droplets on the tube wall. Place the tube on the magnetic stand for 1 minute to adsorb magnetic beads. Transfer the supernatant to a clean 1.5mL centrifuge tube for later use. Purified nucleic acid can be used for downstream analysis. If not used immediately, store nucleic acid solution at -20°C.

2. Automated operation steps

2.1. Extraction Protocol for Strip Pre-packaged Reagents (Note: Only Column 1 of 8-reaction pre-packaged strips is preloaded with Lysis & Binding Buffer)

2.1.1. Invert the room-temperature pre-packaged reagent strip 3 times, perform brief centrifugation with a 96-well plate centrifuge (or shake manually) to eliminate liquid hanging on the wall. Tear off the sealing aluminum foil on the strip and confirm orientation (Magnetic Bead Suspension is in Column 2/8).

2.1.2. Add 300μL sample, 10μL Enhancer S and 20μL Proteinase K Solution into wells containing Lysis & Binding Buffer (Column 1/7).

2.1.3. Set extraction program (suitable for strip-type nucleic acid extractors with heating for Column 1/6):

Step	Hole position	Name	Waiting time (seconds)	Mixing time (seconds)	Magnetic attraction time (seconds)	Mixing speed 1-10	Volume μL	Temperature status	Temperature ℃
1	1	Lysis	0	900	0	7	900	Column 1	100
2	2	Magnetic Transfer	0	20	20	7	500	Close	0
3	1	Binding	0	900	20	7	900	Column 1	100
4	3	Washing 1	0	120	20	7	500	Close	0
5	4	Washing 2	0	60	20	7	500	Close	0
6	5	Washing 2	0	60	20	7	500	Close	0
7	6	Elution	240	600	20	5	80	Column 6	80
8	2	Magnetic Discard	0	10	0	7	500	Close	0

2.1.4. Place sample-loaded pre-packaged strip and 8-well magnetic rod sleeves into the automatic nucleic acid extractor and start the program.

2.1.5. After program completion, purified nucleic acid is located in Column 6/12. Carefully transfer nucleic acid to a clean

1.5mL centrifuge tube for downstream analysis. If not used immediately, store nucleic acid solution at -20°C.

Note: If the extractor sets magnetic adsorption by cycles, each cycle equals 20 seconds.

2.2. Extraction Protocol for Plate Pre-packaged Reagents: (product number : RNK35-96T)

2.2.1. Invert room-temperature preloaded plates 3 times, perform brief centrifugation with a 96-well plate centrifuge (or shake manually) to eliminate hanging liquid.

2.2.2. Tear off aluminum foil of Lysis & Binding Preloaded Plate. Add 300μL sample, 10μL Enhancer S and 20μL Proteinase K Solution to the plate. Place the loaded plate at Plate Position 1 of the extractor.

2.2.3. Tear off aluminum foil of Magnetic Bead Preloaded Plate and place it at Plate Position 2 of the extractor.

Note:To prevent magnetic beads from adhering to foil and well walls, invert the plate up and down 3 times and shake firmly twice with plate bottom facing down to drain all liquid to well bottoms before tearing foil.

2.2.4. Tear off aluminum foil of Wash Buffer 1 Preloaded Plate and place it at Plate Position 3 of the extractor.

2.2.5. Tear off aluminum foil of Wash Buffer 2 Preloaded Plates and place the two plates at Plate Position 4 and 5 of the extractor.

2.2.6. Tear off aluminum foil of Elution Buffer Preloaded Plate and place it at Plate Position 6 of the extractor.

Note: Elution buffer volume is low. Shake the plate firmly twice with plate bottom facing down to drain all liquid to well bottoms before tearing foil to avoid liquid adhering to foil.

2.2.7. Set extraction program (suitable for plate-type nucleic acid extractors with heating for Plate 1/6):

Step	Hole position	Name	Waiting time (seconds)	Mixing time (seconds)	Magnetic attraction time (seconds)	Mixing speed 1-10	Volume μL	Temperature status	Temperature ℃
1	1	Lysis	0	900	0	7	900	Column 1	100
2	2	Magnetic Transfer	0	20	20	7	500	Close	100
3	1	Binding	0	900	20	7	900	Column 1	0
4	3	Washing 1	0	120	20	7	500	Close	0
5	4	Washing 2	0	60	20	7	500	Close	0
6	5	Washing 2	0	60	20	7	500	Close	0
7	6	Elution	240	600	20	5	80	Column 6	80
8	2	Magnetic Discard	0	10	0	7	500	Close	0

2.2.8. Place 96-well magnetic rod sleeves into the automatic nucleic acid extractor and start the program.

2.2.9. After program completion, purified nucleic acid is located on Plate 6. Carefully transfer nucleic acid to a clean 1.5mL centrifuge tube for downstream analysis. If not used immediately, store nucleic acid solution at -20°C.

Note: If the extractor sets magnetic adsorption by cycles, each cycle equals 20 seconds.

Limitations of the product

Sample extraction efficiency depends on whether operators strictly follow the instructions.

Product performance indicators

Visual Inspection: All components are clean, leak-free and intact; labels are complete and undamaged with clear, full markings and complete information. Visual observation: Proteinase K Solution is colorless or pale yellow, clear and free of impurities. Mixed Magnetic Bead Suspension is uniform black-brown without precipitation; after standing, magnetic beads form black-brown sediment with clear transparent supernatant.

Note

For Research Use Only

1. Read this manual carefully before experiment.
2. Different models of nucleic acid extractors may require different extraction programs due to hardware differences. Contact our company for detailed parameters.
3. Test samples shall be treated as infectious substances to avoid contact with skin and mucous membranes to prevent potential biological hazards. Sample processing is recommended in a biosafety cabinet that prevents aerosol leakage. Tubes and tips used in sample preparation shall be placed into containers with disinfectant, sterilized together with waste before disposal. Sample operation and processing shall comply with relevant regulations: General Biosafety Guidelines for Microbiological and Biomedical Laboratories and Medical Waste Management Regulations issued by the Ministry of Health.
4. All kit components shall be used within shelf life. Experiments performed without matching kit components may produce erroneous results.
5. Laboratory management shall strictly follow PCR amplification laboratory specifications. Operators must receive professional training. All operations shall be carried out in strictly divided zones (Reagent Preparation Area, Sample Preparation Area, Amplification & Product Analysis Area). Disposable consumables shall be sterilized before use. Dedicated instruments and equipment shall be used for each zone and step; cross-use of supplies between zones is prohibited.
6. Use autoclaved disposable centrifuge tubes and tips, or purchase DNase/RNase-free tubes and tips.
7. Subsequent experiments are recommended immediately after nucleic acid extraction; otherwise store samples at -20°C for use within 24 hours.
8. After experiment completion, wipe workbench and pipettes with 5% sodium hypochlorite or 75% ethanol, then irradiate with UV lamp for 20~30 minutes.