Elabscience®

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Viral Nucleic Acid (DNA/RNA) Extraction Kit (Magnetic Beads Based)

Catalog No: EL-XG-05
Size: 50/100/200 Tests

This manual must be read attentively and completely before using this product.

If you have any problems, please contact our Technical Service Center for help.

Phone: 240-252-7368(USA) Fax: 240-252-7376(USA)
Email: techsupport@elabscience.com
Website: www.elabscience.com

Please refer to specific expiry date from label on the side of box.

Please kindly provide us the lot number (on the outside of the box) of the kit for more efficient service.

Intended Use

This kit is designed for the extraction of nucleic acid (DNA/RNA) in human biological fluids such as nasopharyngeal swabs, sputum, broncho lavage fluid and alveolar lavage fluid.

Storage and Stability

1.This kit can be stable for 6 months at 2-8℃.
2.This product is shipped at 2-8℃.

Kit Components

Items	Specifications			Storage
	50 Tests	100 Tests	200 Tests	
Magnetic Beads	1 mL, 1 vial	2 mL, 1 vial	2 mL × 2 vials	2-8℃, 6 months
Lysis Solution	30 mL, 1 vial	60 mL, 1 vial	120 mL, 1 vial	2-8℃, 6 months
Proteinase K	1 mL, 1 vial	1 mL × 2 vials	1 mL × 4 vials	2-8℃, 6 months
Wash Buffer 1	19 mL, 1 vial	38 mL, 1 vial	76 mL, 1 vial	2-8℃, 6 months
Wash Buffer 2	10 mL, 1 vial	20 mL, 1 vial	40 mL, 1 vial	2-8℃, 6 months
Elution Buffer	3 mL, 1 vial	6 mL, 1 vial	12 mL, 1 vial	2-8℃, 6 months

Other required reagents: Absolute ethanol

Test Principles

This kit provides all necessary reagents for highly pure viral nucleic acid (DNA/RNA) extraction from samples such as human nasopharyngeal swabs, sputum, broncho lavage fluid and alveolar lavage fluid. The extracted pure viral nucleic acid can be directly applied for Reverse Transcription, PCR, RT-qPCR, RT-PCR, Next Generation Sequencing, Biochip Analysis and other related assays.

Based on the specially embedded silica-coated superparamagnetic beads, the nucleic acid rather than proteins or other substances are adsorbed by hydrogen bonds and static electricity in the unique buffer system. The magnetic beads with nucleic acid adsorbed are then washed to remove other free components like proteins and salt. And the magnetic beads would release nucleic acid after the addition of low-salt buffer, so as to obtain rapidly separated and purified nucleic acid.

This kit enables a simple, fast, safe and efficient operation process to extract viral nucleic acid with a high yield, high purity, stable and reliable quality. It is also suitable for the automatic extraction at high-throughput workstations.

Protocols for Assays

Sample Collection and Storage

1.This kit is suitable for detection of pharynx swab, nasopharyngeal extract, sputum, bronchial lavage fluid, alveolar lavage fluid, etc. The collection was carried out according to the *Technical Guidelines for Laboratory Detection of Pneumonia with Novel Coronavirus Infection*.

2.It is recommended to complete the DNA/RNA extraction with freshly collected samples. Otherwise, samples can be kept at 2-8℃ for less than 24h, at -20℃ for less than 30 days and at -70℃ for longer

storage. Avoid repeated freeze-thaw cycles.

Viral Nucleic Acid (DNA/RNA) Extraction

Reagent preparation before this process

①. Add the specified amount of absolute ethanol into the **Wash Buffer 1** and **Wash Buffer 2** by referring to the label on the bottle to prepare **Wash Buffer 1 working solution** and **Wash Buffer 2 working solution**.

②. Before extraction process, disperse the **Magnetic Beads** fully by vortex vibration.

Assay procedures

1. Add 200 μL sample (sample less than 200 μL can be supplemented with normal saline) to an EP tube (1.5mL, nuclease-free, low-adsorption), then add 20 μL **Proteinase K**, mix it evenly by slight vortex or inverting it upside down. After that, add 20 μL **Magnetic Beads** and 600 μL **Lysis Solution**, mix it for 15 seconds with vortex vibration, then conduct the lysis process at room temperature for 5 minutes with the tube inverted upside down twice for mixing thoroughly.
2. Centrifuge the tube instantaneously, put it on the magnetic stand and keep the tube stand for 1 minute, then remove the supernatant with a pipette.
3. **Wash:** Add 700 μL **Wash Buffer 1 working solution**, mix it fully with vortex for 15 seconds. Centrifuge the tube instantaneously, put it on the magnetic stand and keep the tube stand for 1 minute, then remove the supernatant thoroughly. And then, add 700 μL **Wash Buffer 2 working solution**, mix it fully with vortex for 15 seconds. Centrifuge the tube instantaneously, put it on the magnetic stand and keep it stand for 1 minute, then remove the supernatant thoroughly.
4. Centrifuge the tube instantaneously, put it on the magnetic stand again and remove the residual supernatant. Keep the lid open at room temperature for 3 to 5 minutes until no reflection of light is found on the surface of the beads. Note: In order to ensure the purity of nucleic acid, the Wash Buffer 2 should be removed thoroughly. In addition, excessive drying (cracking) of magnetic beads will affect the final output.
5. Add 50 μL **Elution Buffer**, mix it gently for 15 seconds, and keep it stand for 3 minutes at room temperature with mixing twice by vibration.
6. Centrifuge the tube instantaneously, put it on the magnetic stand again and keep the tube stand for 1 minute. Pipet the supernatant to a new EP tube ((1.5mL, nuclease-free, low-adsorption) for subsequent assays.

Note:

1. The extracted viral nucleic acid can be stored at -20℃ for a short term and at -70℃ for 6months.
2. The buffer contains guanidine protein denaturant, and it is caustic. Please be careful in operation. If it splashes on the skin accidentally, please wash it with plenty of water immediately.
3. Applicable sample types:

① Upper respiratory tract: nasopharynx swab, sputum).

② Lower respiratory tract: (including broncho lavage fluid and alveolar lavage fluid).For the specific sampling methods, please refer to Microbe Specimen Collection Manual or Clinical Nursing Practice Guideline.

Declaration

1. To ensure the accuracy and reliability of the experimental results, please use the calibrated pipette, pipette tips and other consumables for sample treatment and reagent preparation operations. All appliances should be free of DNA and RNA enzymes.
2. Clean the workbench immediately after the experiment.
3. Sample handling shall be performed in a biosafety cabinet to ensure operator safety and prevent contamination of the environment.
4. The tested samples should be as fresh as possible, and the extraction process should strictly avoid RNA degradation caused by RNA enzyme contamination and improper operations.
5. The pipette tips used in the experiment should be threw directly into the waste tank containing 10% sodium hypochlorite and discarded with other waste materials.
6. Operation table and various experimental devices should be sterilized with 10% sodium hypochlorite, 75% alcohol and ultraviolet lamp frequently.
7. The samples to be tested by this kit shall be considered as infectious substances and shall be operated and handled in accordance with the relevant requirements of the *Ministry of Health's General Guidelines for Biosecurity in Microbiomedical Laboratories* and the *Medical Waste Management Regulations.*