TIANLONG

Animal Virus DNA and RNA Extraction Kit (Npex 192)

User Guide

Version 2.0

Σ T809H
384

For use with Automatic nucleic acid extractor compatible with
Animal Virus DNA and RNA Extraction Kit(Npex 192)

REF T809H

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Kit Version	2.0		
Changes	Address of Manufacturer Chapter "Contents of the Kit" Chapter "Warnings and Precautions " Small lexical corrections.	Additions	Chapter " Precautions for Safe Handling"

Intended Use

The ***Animal Virus DNA and RNA Extraction Kit*** is designed to rapidly extract viral DNA/RNA from Nasopharyngeal swab,Environmental samples,Serum samples,Blood swab and Tissue samples.The extracted viral DNA and RNA are of high purity and stability, and can be used in a variety of routine operations, including enzyme digestion, Polymerase Chain Reaction (PCR), DNA library constructions, Southern hybridization and blotting and other experiments.

The ***Animal Virus DNA and RNA Extraction Kit*** is intended to be used by professionals, such as biotechnologists, microbiologists, clinical technicians, and physicians who are trained in molecular and biological techniques.

Product Performance Indicators

The ***Animal Virus DNA and RNA Extraction Kit*** can extract more than 100 copies/mL of viral DNA nucleic acid, and more than 100 copies/mL of viral RNA nucleic acid. Both the intra and inter-batch variations of the kit are less than or equal to 5%.

Special Notes

The ***Animal Virus DNA and RNA Extraction Kit*** is worked with TIANLONG® automatic nucleic acid extractor (Npex 192) that has been disinfected by UV light before use. After an experiment, wipe the inside of the extractor with 75% ethanol and disinfect it with UV light for 15 mins. An automatic nucleic acid extractor automates the entire purification process and can process 1-192n samples in a single run.

The ***Animal Virus DNA and RNA Extraction Kit*** is used to extract viral DNA and RNA targets. To avoid RNA degradation by RNase during operation, use exclusive-use utensils and sample injectors, and use disposable centrifuge tubes and tips processed by autoclave before using. The operator should wear powder-free gloves and a mask and a protective coverall.

The kit has magnetic beads with a unique separation function and buffer system to extract, separate and purify high-quality nucleic acids from Nasopharyngeal swabs, Environmental samples,Serum samples, Blood swabs and Tissue samples.

Magnetic beads enable the purification of high-quality nucleic acids that are free of protein, nuclease, and other impurities. Purified nucleic acids can be widely used in a variety of routine operations, including experiments such as enzyme digestion, Polymerase Chain Reaction (PCR), DNA library construction, and Southern hybridization and blotting.

Please carefully read the manual of instructions before attempting to install or use the product for the first time. To consider all possible consequences of incorrect operation or non-recommended functions, pay special attention to the possible consequences.

Testing Principle

The ***Animal Virus DNA and RNA Extraction Kit*** is worked with TIANLONG® automatic nucleic acid extractor (Npex 192). During the nucleic acid extraction process, magnetic beads are adsorbed, transferred and released by special magnetic rods based on the principle of magnetic bead adsorption. The extraction process enables the conduction of nucleic acid extraction and final adsorption of highly pure nucleic acids with the transfer of magnetic beads and nucleic acids.

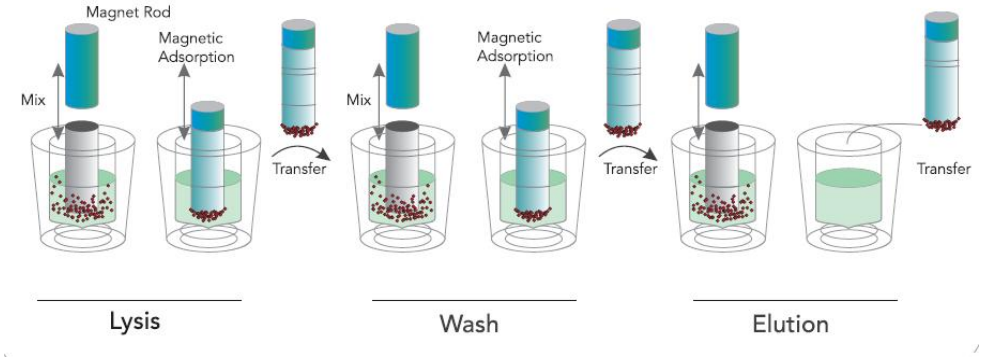

Figure 1. Schematic Diagram of Automatic Nucleic Acid Extractor

An automatic nucleic acid extractor performs the following steps on a sample containing magnetic particles:

A magnetic rod protected by the mixing sleeve inserts into a well which contains sample. The mixing sleeve stirs rapidly and repeatedly in the liquid to ensure complete mixing of the liquid and magnetic beads. After cell lysis, nucleic acid adsorption, washing and elution, highly pure nucleic acid is obtained.

Npex 192 is equipped with an array of 192 magnetic rods, allowing it to process up to 192 samples simultaneously.

Content of the Kit

Name of Component / Short Code			T809H
REAG 1	Lysis Solution	Size	384 T/Box（Pre-filled）
		Component	Pre-filled 96-deep well plate
		Quantity	4
		Component Specification	96 Tests
REAG 2	Washing 1	Size	384 T/Box
		Component	Pre-filled 96-deep well plate
		Quantity	4
		Component Specification	96 Tests
REAG 3	Washing 2	Size	384 T/Box
		Component	Pre-filled 96-deep well plate
		Quantity	4
		Component Specification	96 Tests
REAG 4	Elution	Size	384 T/Box
		Component	Pre-filled 96-deep well plate

		Quantity	4
		Component Specification	96 Tests
Instructions for Use			**1 Copy**

Materials Required but not Provided

When working in a laboratory, make sure to wear a proper lab coat, powder-free disposable gloves and protective goggles. For more information, please consult the Safety Data Sheet (SDS) available from the product supplier.

- Pipettor: 100μL, 1000 μL
- Tip: 100 μL, 1000 μL
- Vortex mixer
- High-speed centrifuge
- Sample holder
- 75% ethanol

Warnings and Precautions

Please be sure to read the precautions before using the kit.

The ***Animal Virus DNA and RNA Extraction Kit*** is particularly used to extract viral DNA and RNA targets. To avoid RNA degradation by RNase during operation, use exclusive-use utensils and sample injectors,and use disposable centrifuge tubes and tips processed by autoclave before using. The operator (researcher or clinical expert) should wear powder-free gloves and a mask.

Please read the manual carefully before using the kit, and strictly follow the manual throughout operation. The clinical samples should be collected on a clean bench or in a bio-safety cabin.

Before using TIANLONG® automatic nucleic acid extractor (Npex 192), it must be disinfected by UV light. After an experiment, wipe the inside of the extractor with 75% ethanol and disinfect it with UV light for 15 minutes.

Due to the possibility of residual magnetic beads in the eluate following extraction, every possible effort should be made to avoid suctioning of any magnetic beads during eluate absorption.

Do not mix reagents from different batches, and use the kit within the expiry date.

Dispose of all samples and reagent materials used in an experiment, and clean and disinfect the experimental workbench thoroughly.

When using kit, always wear a suitable lab coat, disposable gloves, and protective goggles. For more information, please consult the appropriate Material Safety Data Sheets (MSDSs). These documents are available online in a convenient and compact PDF format at https://www.ug-msds.com/MSDS1, where the operator can find, view and print the appropriate MSDSs.

⚠ **Caution: Do not add any bleach or acidic solution directly to the pre-filled reagent.**

The pre-filled reagent contains guanidinium salts, which, when combined with bleach can form highly reactive compounds. If any of buffers are spilled, clean immediately with a suitable laboratory detergent and water. If the spilled liquid contains potentially infectious agents, clean the affected area first with laboratory detergent and water first. Then clean with sodium hypochlorite at a concentration of 1% (v/v). The Animal Virus DNA and RNA Extraction Kit comes with the following warnings and precautions.

Name of Component		**Hazard pictograms (CLP)**	**Classification under CLP:**	**H- and P-statements**
REAG 1	Lysis solution		Acute toxicity (oral), Category 4 Skin corrosion/irritation, Category 2 Serious eye damage/eye irritation, Category 2	**Hazard statements (CLP)** H302: Harmful if swallowed. H315: Causes skin irritation. H319: Causes serious eye irritation. **Precautionary statements (CLP)** P264 ：Wash hands, forearms and face thoroughly after handling. P280: Wear protective gloves/protective

				clothing/eye protection/face protection/hearing protection. P321: Specific treatment (see supplemental first aid instruction on this label). P337+P313: If eye irritation persists: Get medical advice/attention. P501: Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.
REAG 2	Washing 1		Acute toxicity (oral), Category 4 Skin corrosion/irritation, Category 2 Serious eye damage/eye irritation, Category 2	**Hazard statements (CLP)** H302: Harmful if swallowed. H315: Causes skin irritation. H319: Causes serious eye irritation. **Precautionary statements (CLP)** P264 ：Wash hands, forearms and face thoroughly after handling. P280: Wear protective gloves/protective clothing/eye protection/face protection/hearing protection. P321: Specific treatment (see supplemental first aid instruction on this label). P337+P313: If eye irritation persists: Get medical advice/attention. P501: Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.
REAG 3	Washing 2		Acute toxicity (oral), Category 4 Skin corrosion/irritation, Category 2 Serious eye damage/eye irritation, Category 2	**Hazard statements (CLP)** H302: Harmful if swallowed. H315: Causes skin irritation. H319: Causes serious eye irritation. **Precautionary statements (CLP)** P264 ：Wash hands, forearms and face thoroughly after handling. P280: Wear protective gloves/protective clothing/eye protection/face protection/hearing protection. P321: Specific treatment (see supplemental first aid instruction on this label). P337+P313:If eye irritation persists: Get medical advice/attention. P501: Dispose of contents/container to hazardous or special waste collection point, inaccordance with local, regional, national and/or international regulation.
REAG 4	Elution	None	None	None

Please see MSDS for more details.

Precautions for Safe Handling

Do not dispose of the preparations or the packaging waste in drains leading to the sewage system or in the drainage system for waste not produced by industrial processing/analysis waste.
Any material in contact with reagents should be treated as a biological contaminant and treated in accordance with relevant local regulations.

Reagent Storage and Handling

The ***Animal Virus DNA and RNA Extraction Kit*** should be stored at room temperature in a cool, dry and well-ventilated area. All components of the kit can be adequately stored for up to 18 months.

The kit should be used in a well-ventilated area, keep away from the source of heat, sparks, open flames, and smoking.

To avoid evaporation, the pre-filled reagent should be used immediately after opening, and should not be placed for a long period of time.

Avoid exposure to UV light (e.g., for decontamination), which may result in accelerated aging.

Sample Handling and Storage

Avoid foam inside or on the samples. Depending on the starting material, sample pre-treatment may be required. Samples should be stored at room temperature (15~25°C) before starting the experiment.

Samples should be used immediately after collection to extract nucleic acid or stored at 2~8°C for further experiment within 24 hours. For long-term storage, the samples should be placed at -20°C.

Detail information for sample pretreatment, please refer to 2.1.3.

Operation Guide

1. Automated Extraction Process

Automatic nucleic acid extractor (Npex 192) enables nucleic acid extraction by magnetic beads. It uses magnetic rods to move the beads adsorbed with nucleic acid into different reagent plates. Magnetic rod protected by the mixing sleeve which stirs rapidly and repeatedly in the liquid to ensure complete mixing of the liquid and magnetic beads. After cell lysis, nucleic acid adsorption, washing, and elution, the highly pure nucleic acids are obtained. Automatic nucleic acid extractors are characterized by high automation, rapid extraction speed, stable results, and ease of operation.

The user needs to load samples and magnetic bead nucleic acid extraction reagents into the reaction consumables, the nucleic acid extractors are going to perform all nucleic acid extraction operations according to the experimental procedures. Please refer to the user manual provided with the respective instruments for operating instruction and start-up of tests.

2. Operation Steps of Automated Extraction

2.1 Automatic Nucleic Acid Extractor (model:Npex 192)

2.1.1 Edit Experiment Program

The extraction procedure of Npex 192 Automatic Nucleic Acid Extractor is as follows:

Step	Name	Plate	Stir (min:s)	Magnetic (min:s)	Wait (min:s)	Speed	Volume (μL)	Temp (°C)	Heating State
1	Remove bead	W2	00:20	00:30	00:00	8	850	0	OFF
2	Lysis	L	03:00	00:45	00:00	8	750	90	ON
3	Washing 1	W1	01:00	00:30	00:00	8	800	90	ON
4	Washing 2	W2	01:00	00:30	01:00	8	850	90	ON
5	Elution	E	02:00	00:30	00:00	8	60	90	ON

2.1.2 Reagent preparation

96-deep well plate:

Open the kit and take out the REAG 1 from the plastic package, slowly invert it several times to resuspend the magnetic beads. Gently shake the 96-well plate so that the reagent and magnetic beads are concentrated on the bottom of the 96-well plate (A 96-well plate horizontal centrifuge can also be used for centrifugation at 500 rpm for 1 min). Carefully tear off the aluminum foil sealing film before use to avoid liquid splashing.

2.1.3 Adding Sample to the Reagent

96-deep well plate:

Add 400 µL of the sample that has been equilibrated to room temperature to the Lysis solution plate of the pre-filled reagent respectively(Be aware of the effective wells).

⚠ **Caution: When pipetting the sample, avoid having substance other than liquid adhere to the tip of the sample injector; do not add the sample too quickly to avoid contaminating the upper portion of the well wall; and do not splash air bubbles to avoid contaminating adjacent wells.**

Note: The following points should be taken into consideration when determining whether a sample is suitable for the *Animal Virus DNA and RNA Extraction Kit*.

Type of sample: As stated in the intended use.

Short-term storage: Samples can be used immediately after collection for nucleic acid extraction or stored at 2~8°C for testing with a maximum storage period of 24 hours.

Long-term storage: If the user does not operate the sample temporarily, it should be kept sealed in a refrigerator at -20°C.

2.1.4 Loading in deep well plate

Place the 96-deep well plate or 6 strip tube in the Automatic Nucleic Acid Extractor, and ensure the marked notch of the plate faces front.

Insert the mixing sleeve into the mixing sleeve holder and close the cabin door.

Note: As shown in Figure 2, the user should ensure that the 96-deep well plate docking is properly positioned with the notch facing outward.

Note: Insert the 96-deep well plate docking into the experiment cabin and push the magnetic rod covers into the right position. Check the position of the magnetic rod covers. Otherwise, instrument dysfunction or malfunction may occur and affect the experiment results.

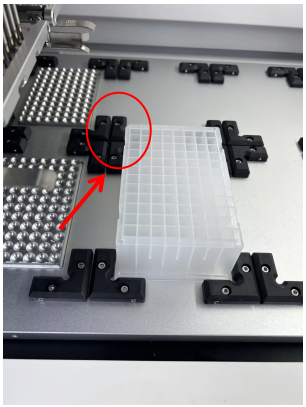

Figure 2. 96-deep well plate

2.1.5 Experimental Procedure run

For special operations please see 2.1.1, After the procedure is completed, the instrument will notify the user the experiment has been completed. Transfer the extracted product from the Elution plate to a clean centrifuge tube that is free of nuclease.

Note: If the user does not analyze the extracted product for immediate use, please seal and store it in a refrigerator at -20°C.

⚠ **Caution: Any used deep well plate and mixing sleeve should be considered biological contaminants and disposed of in accordance with relevant regulations.**

⚠ **Caution: Using expired reagents or those that are not compatible with this instrument does not guarantee the expected results.**

2.1.6 Cleaning and maintenance of the instrument

Follow the Cleaning and Maintenance of the Instrument section in accordance with the instruction in the user manual provided with the equipment. Ensure that the experimental chamber is cleaned regularly to minimize the risk of cross-contamination.

Troubleshooting Guide

This troubleshooting guide should assist you in resolving any problems that arise during the experimental process. For more information, please visit our Technical Support Centre and Frequently Asked Questions, page at http://www.medtl.net The scientists in our Tianlong company's Technical Services Department are always available to answer any questions you may have about the information and protocols contained in the manual, as well as sample and assay technologies (Contact information is included on the back cover or at http://www.medtl.net).

When an exception or error occurs during the experiment, the current run step is terminated/stopped. After resolving the error or exception, restart the run from the beginning. The troubleshooting guide is shown in the following table.

No.	Fault Symptom	Fault Cause	Handling Method
1	The well plate vibrates and the liquid splashes when tearing off the aluminum foil sealing film.	When tearing the film, please press the well plate to prevent it from rocking.	The reagent for this plate shall be scrapped, and re-extraction shall be performed.
2	Add the sample to unexpected wells.	Please read this manual carefully before adding samples.	The reagent for this plate shall be scrapped, and re-extraction shall be performed.
3	The amount of liquid in the reagent wells is insufficient	/	Contact the after-sales service of Tianlong.
4	Reuse of pre-filled components	Please read the precautions in this manual before using the kit.	Perform re-extraction of nucleic acid.
5	Abnormal noise from the instrument during extraction	The 96-deep well plate may be placed correctly.	Conduct reposition of the deep well plate.
		The mixing sleeve may not be inserted in place.	Reinsert the mixing sleeve.
6	Poor extraction performance	Please follow the operation requirements in the manual.	Contact the after-sales service of Tianlong.
		The temperature control components of the instrument may be abnormal.	Contact the after-sales service of Tianlong.
		Other	Contact the after-sales service of Tianlong.

* **Ensure that the reagents have been preserved and used according to the manufacturer's instructions.**

Quality Control

In accordance with Tianlong Company's ISO-certified Quality Management, each lot of ***Animal Virus DNA and RNA Extraction Kit*** is tested against predetermined specifications to ensure consistent product quality.

Limitations of Test Methods

The system performance has been established through performance evaluation studies using Nasopharyngeal swabs, Environmental samples, Serum samples, Blood swabs and Tissue samples to purify viral DNA and RNA.

It is the user's responsibility to validate system performance for any procedures used in their laboratory that are not covered by the performance evaluation studies of Xi'an Tianlong Science and Technology Co., Ltd.

Although the kit is intended for use in public health and scientific research, the purity and quality of extraction results are also affected by the testing instruments and personnel. Moreover, the kit uses a specially formulated eluent that can affect the absorbance value, so it is not recommended to use a UV rays spectrophotometer to measure the extraction effect directly.

The extraction kit is intended for use with clinical diagnostic samples, forensic materials, and scientific research samples. The instrument and operator have an effect on the concentration and purity of the extracted product. Any generated diagnostic results must be interpreted in conjunction with the other clinical or laboratory findings.

Safety Symbols and Signs

No.	Symbol	Implication
1		Catalogue number
2		Batch code
3		Contains sufficient for <N> tests
4		Use by date
5		Caution
6		Temperature limit
7		Reminder
8		Manufacturer
9		Do not re-use
10		Warning
11		PAP21: Non-corrugated paperboard
12	CONT	Content of the kit
13	REAG1	Lysis Solution

14	REAG2	Washing 1
15	REAG3	Washing 2
16	REAG4	Elution

Contact Information

For technical assistance and more information, please contact our Technical Support Center at +86-29-82682132 (Tel), +86-29-82216680 (Fax), inquiry@medtl.com or contact your local distributor.

For up-to-date licensing information or product-specific disclaimers, please see the respective User Guide. Tianlong User Guides are available at www.medtl.net or can be requested from Tianlong Technical Services or the local distributor.