*Research Use Only*

# Preloaded DNA/RNA Extraction Set

## User Manual

**Manufacturer:**

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# Content

# Symbols

Date of manufacturing

Manufacturer


Lot number

## Reagent Set Components

| **taco™** Preloaded DNA/RNA Extraction Set<br>Cat. No.: atc-pd/rna<br>Number of reaction: 48 reactions | | |
|---|---|---|
| Item | Specification | Quantity |
| Preloaded 48-Well Extraction Plate | 8 rxns/plate | 6 plates |
| Mixing Comb | N/A | 6 pieces |
| User manual | N/A | 1 copy |

**Note: Treat all reagents as potential irritants.**

**Note: Do not reuse the Plate & Comb.**

## Shipping and Storage

All preloaded plates should be stored and transported at room temperature (16~30℃), and store the reagent set in a cool and dry place. The expiration date of the reagent set is stated on the exterior package. Do not use the reagent set beyond the expiration date, as it could affect the accuracy of subsequent nucleic acid test result.

# Materials and Equipment Required, but Not Provided

- **taco™** Nucleic Acid Automatic Extraction System: **taco™ 24** or **taco™ mini**
- Disposable gloves
- Micro-centrifuge tubes
- Micropipette and filter tips (p1000, p200)
- Phosphate buffered saline (PBS)
- Laminar air-flow (optional)

# Introduction

The **taco™** Preloaded DNA/RNA Extraction Set is specially designed for **taco™ 24** and **taco™ mini** Automatic Nucleic Acid Extraction System. Based on the magnetic separation technology, nucleic acids are captured by silica-coated magnetic beads after sample lysis. Washing Buffer is then applied to remove impurities, followed by Eluting Buffer to recover nucleic acids from magnetic beads. This reagent set can extract viral DNA and RNA from shrimp muscle for research use purpose only. Other sample types must be validated by users.

# Intended Use

This reagent set can extract viral DNA and RNA from various sample types such as shrimp tissue. The **taco™** Preloaded DNA/RNA Extraction Set has to be used with the **taco™** Automatic Nucleic Acid Extraction System.

This product is intended to be used by professional users such as well-trained laboratory technicians who are familiar with molecular biology techniques.

## Important Notes

- After receiving the product, check the components for any damage. Contact GeneReach or your local distributor if the components are damaged. Do not use damaged items, as that could affect the reagent performance.
- All plastic consumables are for one-time use only. Repeated usage may lead to cross-contamination.
- When working with chemicals, always wear a suitable lab coat, disposable gloves, and protective goggles.
- To minimize the risks from contacting potentially infectious materials, we recommend working under a laminar hood until the samples are lysed.
- This reagent set should only be used by trained personnel.
- Disposal of waste must be compliant with local laws.

## Product Limitations

The system performance has been validated with virus-infected shrimp muscle for viral nucleic acid isolation. The user is responsible for validating the performance of the **taco™** Preloaded DNA/RNA Extraction Set for other particular uses.

The reagent set and plastic parts are not intended for any therapeutic or diagnostic purposes for animals or humans.

# Nucleic Acid Extraction Procedure

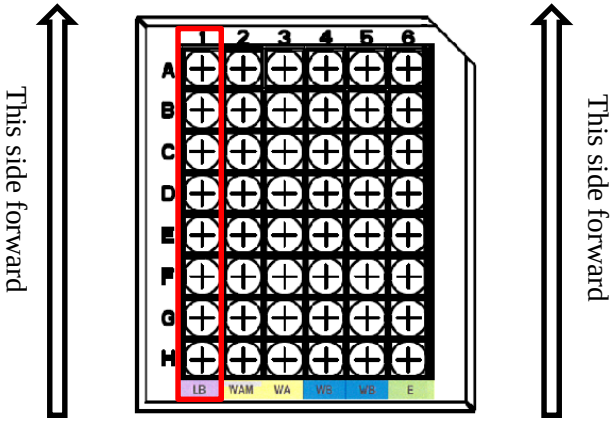
**Note: Do not reuse Plate & Comb.**

**Note: The following protocol is for fresh and frozen shrimp samples. For other sample types, please refer to [www.tacomag.com](http://www.tacomag.com) for instructions.**

**Note: Perform extraction at room temperature.**

**a.** Slowly peel the cover film off Preloaded 48-Well Extraction Plate.

**b.** Transfer **200 µl sample** to well #1 of the preloaded plate (see illustration below).




**Note: For sample preparation please see Appendix I.**

**c.** Open the door of the instrument, insert Mixing Comb and Preloaded 48-Well Extraction Plate with sample (please refer to the user manual of **taco™** instrument).

**d.** Close the door of the instrument and start extraction program (please refer to the user manual of **taco™** instrument).

**e.** After the extraction program is finished, take out the 48-Well Extraction Plate and Mixing Comb.

**f.** Transfer the nucleic acids from well #6 to new micro-centrifuge tubes (see "Purity Analysis and Quantification of Nucleic Acid", Appendix II, for basic rules of nucleic acid storage and analysis). For subsequent applications in the iiPCR **POCKIT™** platform, please refer to the user manual of each kit.

**g.** It is strongly recommended to use freshly extracted nucleic acids for downstream applications, such as amplification. Keep the extracted nucleic acids at -80℃ for long-term storage (See "Storage of Nucleic Acid", Appendix II).

# Troubleshooting

| | Comments and suggestions |
|---|---|
| **Low DNA/RNA yield** | |
| (a) Poor sample quality | Poor sample quality may influence final nucleic acid quality. Use fresh samples for extraction if possible. Avoid repeated freeze-thaw cycles of samples. |
| (b) Incorrect sample volume | Reagent set performance is affected by sample volume. Optimize sample volume when dealing with different sample types. |
| (c) Mixing Comb was not installed properly | Contact your local distributor or GeneReach Biotechnology Corporation for assistance. |
| (d) Inappropriate operation environment | Operating temperature affects the recovery rate of the reagent set. Ensure the ambient temperature is within the range of 16-30°C. |
| (e) Use non-recommended extraction instrument | The performance of **taco™** Preloaded DNA/RNA Extraction Set in instruments not recommended is not guaranteed. We strongly recommend users to apply **taco™** Preloaded DNA/RNA Extraction Set only on **taco™ 24** or **taco™ mini** system. |

## Comments and suggestions

### Poor DNA/RNA performance in downstream applications

**Note: <u>A spectrophotometer is required for the following analysis.</u>**

| | |
|---|---|
| (a) Insufficient DNA/RNA is used in downstream application | Quantify extracted DNA/RNA with a spectrophotometer to measure the absorbance at 260 nm (see "Quantification of Nucleic Acid", Appendix II). |
| (b) Excess DNA/RNA used in downstream application | Excess DNA/RNA can inhibit some enzymatic reactions. Quantify extracted DNA/RNA with a spectrophotometer to measure the absorbance at 260 nm (see "Quantification of Nucleic Acid", Appendix II). |

### Low $A_{260}/A_{280}$ ratio

| | |
|---|---|
| (a) Absorbance reading at 320 nm was not subtracted from the absorbance readings at 260 nm and 280 nm | To correct for the presence of magnetic bead residues in the eluent absorbance readings obtained at 320 nm should be taken and subtracted from the absorbance readings at 260 nm and 280 nm. |

# Appendix I—Sample Preparation

## A. Shrimp Tissue: fresh or frozen shrimp muscle

i. Grind the tissue (40 mg) with 450 µl PBS in a 1.5 ml micro-centrifuge tube with a disposable grinder.

ii. Centrifuge at 12,000 x g for 5 minutes to spin down the debris.

iii. Use 200 µl supernatant for extraction (see Nucleic Acid Extraction Procedure).

## B. Shrimp Tissue: ethanol preserved shrimp muscle

i. Grind the tissue (40 mg) with 500~1000 µl PBS in a 1.5 ml micro-centrifuge tube with an automatic homogenizer, such as **taco™ Prep Bead Beater**.

ii. Centrifuge at 12,000 x g for 5 minutes to spin down the debris.

iii. Use 200 µl supernatant for extraction (see Nucleic Acid Extraction Procedure).

## C. Swab sample (for cotton tips of diameter of ≤ 0.2 inches (0.5 cm))

i. Use the cotton swab to collect swab samples from host.

ii. Cut off the swab tip and place it into a 1.5 ml or 2 ml micro-centrifuge tube with 1 ml PBS or saline.

iii. Mix for 10 seconds.

iv. Spin for 1 minute in a centrifuge.

v. Transfer 200 µl supernatant into a new micro-centrifuge tube (for subsequent nucleic acid extraction, follow the manufacturer's instructions of the extraction system.

## D. Swab sample (for cotton tips of diameter of > 0.2 inches (0.5 cm))

i. Use the cotton swab to collect swab samples from host.

ii. Place it into a 1.5 ml or 2 ml micro-centrifuge tube with 1 ml PBS or saline.

iii. Swirl the swab in PBS or saline for 30 seconds.

iv. Discard swab and spin the tube for 1 minute in a centrifuge.

v. Transfer 200 µl supernatant into a new micro-centrifuge tube (for subsequent nucleic acid extraction, follow the manufacturer's instructions of the extraction system.

# Appendix II—Purity Analysis and Quantification of Nucleic Acid

## A. Storage of Nucleic Acid

Extracted nucleic acids should be stored at -80°C.

## B. Quantification of Nucleic Acid

**Note: A spectrophotometer is required for following check-up.**

Concentration is determined by calculating the absorbance at 260 nm with a background correction at 320 nm, i.e., ($A_{260}$-$A_{320}$). A subtraction by $A_{320}$ reading is to correct for signals from residual magnetic particles in the eluent. Residual magnetic particles may affect the $A_{260}$ reading, but should not affect the performance of nucleic acids in most downstream applications.

Use distilled water or TE buffer as the blank to zero the spectrophotometer.

## C. Purity Analysis of Nucleic Acid

Purity is determined by calculating the ratio of $A_{260}$ to $A_{280}$ with a background correction with $A_{320}$, i.e., ($A_{260}$-$A_{320}$) / ($A_{280}$-$A_{320}$). A subtraction with $A_{320}$ reading is to correct for the presence of residual magnetic particles in the eluent solution. An $A_{260}$ / $A_{280}$ ratio of 1.6~2.0 is indicative of high nucleic acid purity.