RNAlater RNA Sample Slotution

REF：GxRNA002
SIZE：50ml /100ml

1. Introduction to RNAlater RNA Sample Slotution

RNAlater RNA Sample Slotution is an aqueous sample storage reagent that stabilizes and preserves RNA in samples for extended period at a wide range of storage conditions (-80 °C to 37 °C). The solution has been tested for compatibility with various sample types, ranging from bacteria, tissue culture cells, animal tissues and even preservation of some plant tissues. RNAlater RNA Sample Slotution can also act as a quick and easy-to-use RNA preservation buffer for field sample storage when refrigerated storage is unavailable.

By storing samples in RNAlater RNA Sample Slotution, the solution protects the RNA from degradation by rapidly inactivating the enzymatic activities of RNases for an RNase-free storage environment. Moreover, it is easy to perform RNA isolation from samples stored in RNA Sample Slotution, as the solution is compatible with most RNAlater RNA Sample Slotution, including TRIzol™ and spin column kits. Samples stored in RNAlater RNA Sample Slotution yield high quality RNA, suitable for downstream applications (e.g.: gene expression by PCR and real-time PCR).

2. Product Information

2.1 Product Types

Product	Package	Cat. No.
RNAlater RNA Sample Slotution	1 x 50 mL	GxRNA002-50
RNAlater RNA Sample Slotution	1 x 100 mL	GxRNA002-100

2.2 Product Specification

Info	
Description	RNAlater RNA Sample Slotution
Format	Liquid
Product Type	RNA preservation solution
Quantity	1 x 50 mL / 1 x 100 mL
Reagent Storage	Ambient temperature (15 – 25 ˚C)
Sample Type	*If precipitate is noted, heat the solution (up to 65 ˚C) with vortexing to dissolve precipitate.
Sample Stability	Bacteria, tissue culture cells, animal tissues, plant tissues
Applications	Refrigerated (4 ˚C) > 1 month

3. Storage and Kit Stability

RNAlater RNA Sample Slotution is guaranteed for at least 24 months from the date of manufacture when stored appropriately.

Upon receipt, store RNAlater RNA Sample Slotution at ambient room temperature (15 – 25 ˚C) and avoid direct heat/sunlight.

4. Important Consideration Before Use

Check RNAlater RNA Sample Slotution for precipitates before use. If precipitates are noted, heat the solution (up to 65 ˚C) with vortexing to dissolve.

5. Safety Precaution

RNAlater RNA Sample Slotution contain components that can be harmful if swallowed and may cause irritation when in contact with skin and eyes. To prevent accidental ingestion, do not eat, drink or smoke when using this product. Wear personal protective equipment (gloves, lab coat and eye protection) to prevent contact with the skin or mucous membranes.

6. Protocol

6.1 Sample preparation

1. It is recommended to use RNAlater RNA Sample Slotution with fresh samples for best RNA preservation results.

2. Select sample of interest and submerge sample in 1 – 10 volumes of RNAlater RNA Sample Slotution. Process samples accordingly prior to buffer immersion.
   - Bacteria: Remove culture media by pelleting bacteria cells at 10,000 x g for 2 min and resuspend cells in appropriate volume of RNAlater RNA Sample Slotution.
   - Tissue culture cells: Remove culture media by pelleting cells at 300 x g for 10 min and resuspend cells in appropriate volume of RNAlater RNA Sample Slotution.
   - Animal tissue: Section animal tissue into smaller pieces to maximize surface contact and fully submerge the tissue in appropriate volume of RNAlater RNA Sample Slotution.
   - Plant tissue: Section plant tissue into smaller pieces to maximize surface contact and fully submerge the tissue in appropriate volume of RNAlater RNA Sample Slotution.
3. The volume of RNAlater RNA Sample Slotution required for sample storage is sample dependent and will vary from sample to sample.
   Recommended RNAlater RNA Sample Slotution volume:

Sample types	RNAlater RNA Sample Slotution volume (µL)
Bacteria (e.g.: 3 mL *E. coli* culture)	250
Tissue culture cells (e.g.: 1 million cells)	250
Animal tissues (e.g.: 15 mg)	100
Plant tissues (e.g.: 60 mg)	250

   *Scale up accordingly. Ensure samples are fully submerged in RNAlater RNA Sample Slotution.

4. Resuspend the mixture until homogenous to achieve equal buffer penetration into the sample and maximal sample preservation.
5. Store mixture at desired storage conditions for 1 month (or longer for frozen storage).
6. **Sample preparation before RNA extraction:**
   In general, RNAlater RNA Sample Slotution can either be removed or remain in suspension prior to extraction. If RNAlater RNA Sample Slotution is not removed, it is recommended to increase the volume of lysis buffer to achieve desired extraction results. Below are the recommended lysis options based on different sample types:
   - **For cell pellets (e.g.: bacteria or culture cells),** resuspend cells and RNAlater RNA Sample Slotution by vortexing to thoroughly mix the suspension. Using the cell suspension, proceed to the sample lysis step according to the RNA isolation kits' protocols.

- **For tissue samples (e.g.: animal tissues or plant tissues)**, remove RNAlater RNA Sample Slotution by discarding the buffer in the sample tube. Using only the tissue, proceed to the sample lysis step according to the RNA isolation kits' protocols.

7. Perform RNA extraction using a commercial RNA isolation kit, according to the manufacturer's instructions. **Recommended RNA extraction kit:** MP Biomedicals SPINeasy RNA kit for Bacteria / Tissue (with lysing matrix).

7. Data

The following data shows the quality of RNA extraction from various samples stored in RNAlater RNA Sample Slotution, demonstrating effective RNA preservation across a wide range of storage conditions. Extracted RNA was also suitable for qPCR analysis.

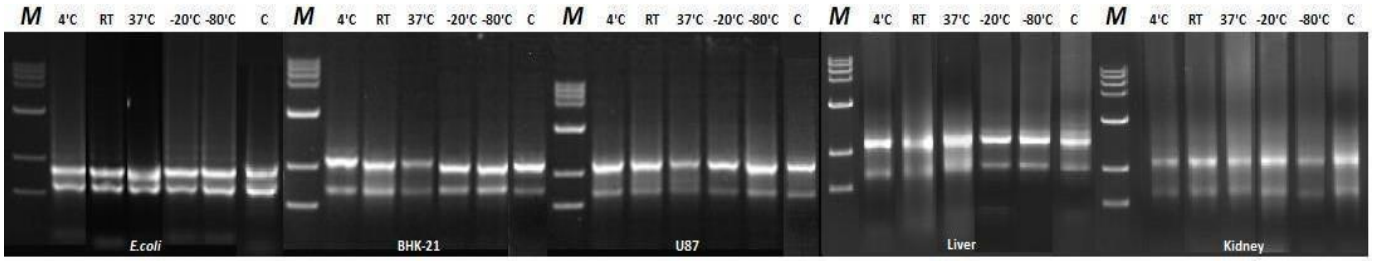

Figure 1: RNA extracted from different samples incubated in RNAlater RNA Sample Slotution at variable conditions (4 °C for 1 month, room temperature for at least 3 weeks, 37 °C for at least 2 days, -20 °C for 1 month and -80 °C for 1 month) separated on 1% agarose gel electrophoresis. *M*: Reference ladder; C: RNA extracted from fresh sample.

Samples from left to right: *E. coli*: *Escherichia coli*; BHK-21: Hamster fibroblast cells; U87: Human glioblastoma cells; Liver: Rabbit liver tissue; Kidney: Rabbit kidney tissue.

8. Troubleshoot

Problem	Possible Cause	Recommendation
Low RNA Yield and Recovery	Sample quality	Use only fresh or high-quality samples with RNA Sample Slotution.
	Sample was not mixed well	Mix sample well with RNAlater RNA Sample Slotution. For cell pellets, increase resuspension until a homogenous mixture is observed. For tissue samples, cut tissue into smaller dimensions to increase surface area of sample.
	Sample content	• Increase sample amount to increase RNA yield. • Incubate elution buffer for longer time (2 – 5 mins) at room temperature for higher yield. Perform a second elution if needed.
	Sample type	Increase/optimize the volume of RNAlater RNA Sample Slotution for different samples to achieve desirable performance.
	Eluate degradation	Ensure the eluted RNA is immediately stored on ice after collection.
Low A260/230 ratios	Wash buffer carryover	Ensure that the flow-through is discarded after washing with Wash Buffer and the column is centrifuged an additional time to dry the membrane.
High A260/280 ratios	Possible DNA contaminatio n	Perform DNase I treatment to remove unwanted gDNA from lysed sample (on-column or in-tube).
Low RNA performance for downstream application	Possible RNA degradation	Perform extraction under RNase-free environment.
	Possible sample degradation	Prepare fresh sample for incubation with RNA Sample Slotution.