

NUCQX® Ribonuclease A (RNase A), from bovine pancreas

Cat. no. LM105007

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Product Information

Product	NUCQX® Ribonuclease A (RNase A), from bovine pancreas
Catalog No.	LM105007
Storage conditions	This product should be stored at -25 ~ -15 °C for 2 years
CAS NO.	9001-99-4
Appearance	White lyophilized powder
Molecular Weight	~13.7 kDa (amino acid sequence)
Optimal pH	7.6 (activity range 6-10)
Optimal temperature	60 °C (vigor range 15-70 °C)
Activator	Sodium salt, potassium salt, etc.
Inhibitor	Ribonuclease inhibitor
Inactivation	Not inactivated by heat, centrifugal columns, or phenol-chloroform extraction is recommended to remove sufficiently
Source	Bovine pancreas
Solubility	Soluble in water (10 mg/mL)
Loss on drying	≤ 5.0%
Enzyme activity	≥ 60 Kunitz units/mg
Isoelectric point	9.6

2. Product Description

NUCQX® Ribonuclease A (commonly abbreviated as RNase A) is a single-stranded polypeptide containing four disulfide bonds, with a molecular weight of approximately 13.7 kDa (amino acid sequence). It acts as a ribonucleic acid endonuclease (endoribonuclease) that specifically degrades cytosine (C) or uracil (U) residues on single-stranded RNA. The cleavage specifically recognizes the phosphodiester bond formed by the 5'-ribose of a particular nucleotide and the phosphate group on the 3'-ribose of an adjacent pyrimidine-like nucleotide. This results in the hydrolysis of the 2', 3'-cyclic phosphate to produce the corresponding 3'-nucleoside phosphates (e.g., pG-pG-pC-pA-pG cleaved by RNase A produces pG-pG-pC-p and A-pG). RNase A cleaves single-stranded RNA with the highest activity, with a recommended working concentration of 1-100 µg/mL, making it compatible with a variety of reaction systems.

Low salt concentrations (0-100 mM NaCl) can be used to cleave single-stranded RNA, double-stranded RNA, and RNA strands formed by RNA-DNA hybridization. However, at high salt concentrations (≥ 0.3 M), RNase A specifically cleaves only single-stranded RNA. The most common application of RNase A is in the removal of RNA during plasmid DNA or genomic DNA preparation, where the presence or absence of DNase activity is a critical factor. DNase activity can be inactivated by the traditional method of boiling in a water bath. Additionally, this product can also be used for RNA protection analysis, RNA sequencing analysis, and other molecular biology experiments.

3. Components

Cat.No.	LM105007
Size	100mg/1g/5g/10g

4. Instructions

[Note]: This is one of the commonly used methods for preparing an RNase A storage solution, though other methods can be employed according to traditional laboratory protocols or references (e.g., direct dissolution in 10 mM Tris-Cl, pH 7.5, or Tris-NaCl solution).

RNase A Storage Solution Preparation

- 1) Prepare a 10 mg/mL RNase A stock solution using 10 mM sodium acetate (pH 5.2).
- 2) Heat the solution at 100 °C for 15 minutes.
- 3) Cool to room temperature, then add 1/10 volume of 1 M Tris-HCl (pH 7.4) and adjust the pH to 7.4. For example, add 500 μ L of 1 M Tris-HCl (pH 7.4) to 5 mL of the 10 mg/mL RNase A stock solution.
- 4) Dispense the solution into aliquots and freeze at -25 to -15 °C for stable storage, which can last up to 2 years.

[Note]: Boiling the RNase A solution under neutral conditions may lead to the formation of RNase precipitates. If precipitates are observed when boiled at a lower pH, they may indicate the presence of protein impurities. In such cases, any observed precipitation after boiling can be removed by high-speed centrifugation (at 13,000 rpm), and the supernatant can then be dispensed for freezing.

5. Notes

- 1) For your safety and health, please wear a lab coat and disposable gloves during operations.
- 2) This product is for research use only.
- 3) DNase contamination has been removed during the production process. For routine plasmid DNA or genomic DNA extraction (without strict quantification of DNA levels), boiling at high temperature is not required, and the mother liquor can be prepared directly. For experiments requiring strict control of DNase residues, it is recommended to boil at high temperature or to purchase a DNase-free, protease-free RNase A solution (10 mg/mL).
- 4) RNase A will be strongly adhered to glassware, so it is recommended that the solution be stored in plastic centrifuge tubes.
- 5) For researchers conducting complete RNA experiments, it is important to prevent the introduction of RNase A, as it may interfere with the accuracy of the results.