Ribonuclease A (RNase A)

Cat.No.: HYC115

Product Description

Ribonuclease A (RNase A) is a single-chain polypeptide with four disulfide bonds and a molecular weight of approximately 13.7 kDa. As an endoribonuclease, it specifically degrades cytosine (C) or uracil (U) residues on single-stranded RNA. Specifically, the cleavage recognizes the phosphodiester bond formed by the 5'-ribose on a certain nucleotide and the phosphate group on the 3'-ribose of the adjacent pyrimidine nucleotide, thereby hydrolyzing the 2', 3'-cyclic phosphate to the corresponding 3'-nucleoside phosphate (for example, pG-pG-pC-pA-pG is cleaved by RNase A to produce pG-pG-pCp and A-pG). RNase A has the highest activity in cleaving single-stranded RNA. The recommended working concentration is 1-100 μg/mL, and it is compatible with various reaction systems. Low salt concentrations (0-100 mM NaCl) can be used to cut single-stranded RNA, double-stranded RNA, and RNA chains formed by RNA-DNA hybridization. However, at high salt concentrations (≥ 0.3 M), RNase A only specifically cuts single-stranded RNA. The most common application of RNase A is to remove RNA during the preparation of plasmid DNA or genomic DNA. The presence or absence of DNase enzyme activity in this preparation process is one of the contaminations that need to be paid attention to. The traditional method of water bath boiling can be used to inactivate DNase activity. In addition, this product can also be used for molecular biology experiments such as RNA enzyme protection analysis and RNA sequence analysis.

Components

Components	Size-1	Size-2	Size-3
Ribonuclease A (RNase A)	0.1 g	1 g	10 g

Storage

Store in a dry place at -25 ~ -15 ℃, valid for 2 years.

Properties

Source	Bovine pancreas
Synonyms	Ribonuclease I; Rnase A; Endoribonuclease I; Pancreatic ribonuclease; Ribonuclease 3'-pyrimidineoligonucleotidohydrolase;
CAS No.	9001-99-4
Appearance	White lyophilized powder
Molecular Weight	~13.7 kDa
Suitable pH Value	7.6 (Activity range 6 - 10)
Suitable Temperature	60 ℃ (Activity range 15 - 70 ℃)
Activator	Sodium salt, sylvine
Inhibitor	RNase Inhibitor
Inactivation method	Heating will not inactivate, it is recommended to use centrifugal columns or phenol-chloroform extraction to fully remove
Solubility	Soluble in water (10 mg/mL)
Loss on Drying	≤ 5.0 %
Enzyme activity	≥ 60 Kunitz units/mg
Isoelectric point	9.6

Preparation of stock solution

This is one of the common methods for preparing RNase A stock solution.It can also be prepared by other methods according to the traditional methods in the laboratory or references.

1. Stock solution (e.g. directly dissolved in 10 mM Tris-HCl, pH 7.5; or Tris-NaCl solution)

1) Prepare 10 mg/mL RNase A stock solution with 10 mM sodium acetate (pH 5.2);
2) Heat at 100 ℃ for 15 min;
3) Cool to room temperature, add 1/10 volume of 1 M Tris-HCl (pH 7.4), and adjust the pH to 7.4 (for example, add 500 µL 1 M Tris-HCl, pH 7.4 to 5 mL 10 mg/mL RNase stock solution);
4) Aliquot and freeze at -25 ~ -15 ℃, which can be stored stably for up to 2 years.

Note: When boiling RNase A solution under neutral conditions, RNase precipitates will form; if it is boiled at a lower pH, if precipitates can be observed, it may be caused by the presence of protein

impurities. If precipitates are found after boiling, impurities can be removed by high-speed centrifugation (13,000 rpm) and then aliquoted and frozen.

Notes

1. This product has been subjected to the corresponding method to remove DNase contamination during the production process. For the application of conventional plasmid DNA or genomic DNA extraction (no strict quantitative DNA level), high temperature boiling is not required and the mother solution can be directly prepared. For experiments that require strict control of DNase enzyme residues, it is recommended to boil at high temperature or purchase DNase-free, Protease-free RNase A solution.
2. RNase A will strongly adsorb on glassware, and it is recommended to put the solution into a plastic centrifuge tube.
3. For researchers who operate complete RNA experiments at the same time, be sure to prevent RNase A from introducing interference with the accuracy of the test results.
4. For your safety and health, please wear a lab coat and disposable gloves when operating.
5. This product is for scientific research purposes only!