Product Information

RNase A Solution (10mg/mL)

Catalogue Number	Size
ATR-N707	1 mL (10 mg/mL)

Product Description

Bovine pancreatic RNase A, a member of the RNase A protein superfamily, is a well-characterized kidney-shaped basic protein consisting of 124 amino acids. In its native state, RNase A forms a homodimer. This endoribonuclease specifically degrades single-stranded RNA at C and U residues by cleaving the phosphodiester bond between the 5'-ribose of a nucleotide and the phosphate group attached to the 3'-ribose of an adjacent pyrimidine nucleotide, resulting in the hydrolysis of the resulting 2', 3'-cyclic phosphate to the corresponding 3'-nucleoside phosphate.

Treatment with RNase A is optional in protocols aiming to remove residual RNA from Genomic DNA Purification Kits to prevent the overestimation of DNA yield due to co-purification of RNA during gDNA extraction. This high-quality enzyme preparation, purified from bovine pancreas, is free of DNase, protease, and DNA contaminants.

Applications

- **Plasmid and genomic DNA preparation**
- **Removal of RNA from recombinant protein preparations**
- **Ribonuclease protection assays, used in conjunction with RNase T1**
- **Mapping single-base mutations in DNA or RNA**

Highlights

- **Ready-to-use solution**
- **High-quality enzyme**
- **DNase, protease and DNA-free**

Inhibition and Inactivation

Inhibitors of ribonucleases include mammalian ribonuclease inhibitor, uridine 2',3'-cyclic vanadate, 5'-diphosphoadenosine 3'-phosphate, 5'-diphosphoadenosine 2'-phosphate, SDS, diethyl pyrocarbonate (DEPC), 4 M guanidinium thiocyanate plus 0.1 M 2-mercaptoethanol, and heavy metal ions.

The most potent inhibitor, mammalian ribonuclease inhibitor, competitively inhibits RNase A. Other inhibitors act through mechanisms such as denaturing DNA, with denatured DNA exhibiting a higher inhibitory effect than native nucleic acids. Additionally, alkylation of His12 or His119, present in the enzyme's active site, can also inhibit RNase A. However, RNase A remains highly active under diverse conditions and is challenging to inactivate. Methods for RNase A inactivation include spin column purification, or phenol/chloroform extraction.

Note

The recommended concentration range for RNase A is 1 to 100 µg/mL, with the optimal concentration varying based on the specific application. The enzyme exhibits activity across a broad spectrum of reaction conditions. RNase A demonstrates peak activity at a pH range of 7.0 to 7.5. Under low salt concentrations ranging from 0 to 100 mM NaCl, RNase A effectively cleaves both single-stranded and double-stranded RNA, including the RNA strand in RNA-DNA hybrids. However, at NaCl concentrations of 0.3 M or higher, RNase A selectively targets single-stranded RNA for cleavage.

Storage

Stored at -20°C.

Shipping

The enzyme is shipped with ice gel.

Precautions and Disclaimer

This product is intended for research and development (R&D) purposes only and is not suitable for use in drugs, diagnostic procedures, households, or other applications. When handling the product, always wear appropriate laboratory attire, including a lab coat, disposable gloves, and protective

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