Ribonuclease A from bovine pancreas for molecular biology

Catalog Number R6513
Storage Temperature –20 °C

CAS RN 9001-99-4
EC 3.1.27.5
Synonyms: Ribonuclease I; Pancreatic ribonuclease; Ribonuclease 3′-pyrimidinooligonucleotidohydrolase; RNase A; Endoribonuclease I

Product Description
A major application for Ribonuclease A (RNase A) is the removal of RNA from preparations of plasmid DNA. In this application, the presence of DNase activity as an impurity is a concern. The boiling-water bath method used to eliminate contaminating DNase activity has proven unreliable. For this reason, Sigma developed a proprietary chromatographic preparation method for elimination of DNase activity.

RNase A is an endoribonuclease that attacks at the 3′ phosphate of a pyrimidine nucleotide. The sequence of pG-pG-pC-pA-pG will be cleaved to give pG-pG-pCp and A-pG. The highest activity is exhibited with single stranded RNA. RNase A is a single chain polypeptide containing 4 disulfide bridges. In contrast to RNase B, it is not a glycoprotein. RNase A can be inhibited by alkylation of His12 or His119, which are present in the active site of the enzyme. Activators of RNase A include potassium and sodium salts.

Molecular mass: 13.7 kDa (amino acid sequence)
Extinction coefficient: E1%= 7.1 (280 nm)
Isoelectric point: pl = 9.6
Optimal temperature: 60 °C (activity range of 15–70 °C)
Optimal pH: 7.6 (activity range of 6–10)
Inhibitors: ribonuclease inhibitor

The chromatographically purified product is supplied as an essentially salt-free lyophilized powder.
Activity: ≥70 Kunitz units/mg protein

Precautions and Disclaimer
This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Note: RNase A is stable to both heat and detergents. In addition, it adsorbs strongly to glass. Scrupulous precautions are necessary to ensure RNase A residue does not cause artifacts in processes requiring intact RNA.

Preparation Instructions
When Sigma tests the activity of RNase A, a stock solution is prepared in water at 1 mg/ml.

Note: Boiling stock solutions of this RNase A product (Catalog No. R4642) to inactivate residual DNase is not necessary and may cause precipitation of RNase and possible loss of enzymatic activity. If an RNase A solution is heated at a neutral pH, precipitation will occur. When heated at a lower pH, some precipitation may occur because of protein impurities that are present.

Storage/Stability
This product remains active for at least 3 years when stored properly at –20 °C.

RNase A is a very stable enzyme and solutions have been reported to withstand temperatures up to 100 °C. At 100 °C, an RNase A solution is most stable between pH 2.0 and 4.5.

Procedure
A major application for RNase A is the removal of RNA from preparations of plasmid DNA. For this application, DNase free RNase A is used at a final concentration of 10 µg/ml.
Related Products

- Ribonuclease Inhibitor (Catalog No. R2520)
- ProtectRNA™ RNase Inhibitor (Catalog No. R7397)
- RNaseZAP® (Catalog No. R2020)
- Sodium Acetate Buffer Solution, 3 M, pH 5.2 (Catalog No. S7899)
- Ribonucleic Acid, Type VI from Torula Yeast (Catalog No. R6625)
- Water for molecular biology (Catalog No. W4502)
- Ribonuclease A from bovine pancreas, lyophilized powder, for molecular biology (Catalog No. R6513)

References


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