

Product Information

Ribonuclease A from bovine pancreas

Catalog Numbers **R5125, R4875, R5503, R5000, R5250, and R5500**

Storage Temperature $-20\text{ }^{\circ}\text{C}$

CAS RN 9001-99-4

EC 3.1.27.5

Synonyms: Ribonuclease I, Pancreatic ribonuclease, Ribonuclease 3'-pyrimidinooligonucleotidohydrolase, RNase A, Endoribonuclease I

Product Description

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.¹ RNase A is a single chain polypeptide containing 4 disulfide bridges. In contrast to RNase B, it is not a glycoprotein.² RNase A can be inhibited by alkylation of His¹² or His¹¹⁹, which are present in the active site of the enzyme.³ Activators of RNase A include potassium and sodium salts.

Molecular mass:⁴ 13.7 kDa (amino acid sequence)

Extinction coefficient:⁵ $E^{1\%} = 7.1$ (280 nm)

Isoelectric point:⁶ $pI = 9.6$

Optimal temperature: $60\text{ }^{\circ}\text{C}$ (activity range of $15\text{--}70\text{ }^{\circ}\text{C}$)

Optimal pH:⁷ 7.6 (activity range of 6–10)

Inhibitors: ribonuclease inhibitor

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.

Solutions prepared from powdered RNase A products can be made free of DNase by boiling. According to a literature method,⁸ prepare a 10 mg/mL stock solution in 10 mM sodium acetate buffer, pH 5.2. Heat to $100\text{ }^{\circ}\text{C}$ for 15 minutes, allow to cool to room temperature, and then adjust to pH 7.4 using 0.1 volume of 1 M Tris-HCl, pH 7.4. Aliquot and store at $-20\text{ }^{\circ}\text{C}$. If RNase A is boiled at a neutral pH, precipitation will occur. When boiled at the lower pH, some precipitation may occur because of protein impurities that are present.

Storage/Stability

Store at RNase A at $-20\text{ }^{\circ}\text{C}$. Stock solutions stored in frozen aliquots remain active for at least 6 months.

RNase A is a very stable enzyme and solutions have been reported to withstand temperatures up to $100\text{ }^{\circ}\text{C}$. At $100\text{ }^{\circ}\text{C}$, an RNase A solution is most stable between pH 2.0 and 4.5.⁹

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 $10\text{ }\mu\text{g/ml}$.¹⁰

References

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