Product Information

Ribonuclease A from bovine pancreas

Sigma Type III-A, ≥85% RNase A basis (SDS-PAGE), 85-140 Kunitz units/mg protein

R5125

Product Description

CAS Registry Number: 9001-99-4

Enzyme Commission (EC) Number: 3.1.27.5

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

Molecular mass:[1] 13.7 kDa (based on amino acid sequence)

Extinction coefficient:[2] $E^{1\%}$ = 7.1 (280 nm)

Isoelectric point:[3] pI = 9.6

Optimal temperature: 60 °C (activity range of 15-70 °C)

Optimal pH:[4] 7.6 (activity range of 6-10)

Inhibitors: ribonuclease inhibitor

RNase A is an endoribonuclease that attacks at the 3'-phosphate of a pyrimidine nucleotide. For example, RNase A will cleave pG-pG-pC-pA-pG to give pG-pG-pCp and A-pG. The highest activity is exhibited with single-stranded RNA.[5]

RNase A is a single chain polypeptide with 4 disulfide bridges. In contrast to RNase B, RNase A is not a glycoprotein.[6] RNase A can be inhibited by alkylation of His^{12} or His^{119} (present in the active site of the enzyme).[7] Activators of RNase A include potassium and sodium salts.

Several theses[8,9] and dissertations[10-17] have cited use of product R5125 in their protocols.

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Solubility

This product is soluble in water at 1 mg/mL.

Preparation Instructions

Solutions prepared from RNase A lyophilized powder can be made free of DNase by boiling. One procedure is as follows, according to one literature method:[18]

1. Prepare a 10 mg/mL stock solution in 10 mM sodium acetate buffer, pH 5.2.
2. Heat to 100 °C for 15 minutes. Allow to cool to room temperature.
3. Adjust to pH 7.4 using 0.1 volume of 1 M Trizma®-HCl, pH 7.4.
4. Aliquot and store at –20 °C.

If RNase A is boiled at a neutral pH, precipitation will occur. When boiled at a lower pH, some precipitation may occur because of protein impurities that are present.

Storage/Stability

This product is supplied as a lyophilized powder. Store RNase A at –20 °C.

RNase A is a very stable enzyme. Stock solutions stored in frozen aliquots remain active for at least 6 months. RNase A solutions have been reported to withstand temperatures up to 100 °C. At 100 °C, an RNase A solution is most stable between pH 2.0-4.5.[19]

Usage

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.[20]

References

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