

Datasheet for MB-113-0005**Ribonuclease A****Overview**

Description:	Ribonuclease A - MB-113-0005
Item No.:	MB-113-0005
Size:	5 mg
Applications:	WB
Origin:	Bovine

Product Details

Background: Ribonuclease A (RNase A) is a pancreatic ribonuclease that cleaves single-stranded RNA. Bovine pancreatic RNase A is one of the classic model systems of protein science. Bovine pancreatic RNase A was secured when the Armour & Co. (of hot dog fame) purified a kilogram of it, and gave 10 mg samples away free to any interested scientists. The ability to have a single lot of purified enzyme instantly made RNase a predominant model system for protein studies. RNase A was the model protein used to work out many spectroscopic methods for assaying protein structure, including absorbance, circular dichroism/optical rotary dispersion, Raman, EPR and NMR spectroscopy. RNase A was also the first model protein for the development of several chemical structural methods, such as limited proteolysis of disordered segments, chemical modification of exposed side chains, and antigenic recognition. Ribonuclease A is ideal for investigators involved in DNA damage and repair, cell cycle proteins, stem cells and chromatin research.

Species of Origin:	Bovine
Reagent Type:	Enzyme
Specific Activity:	6,748 units/mg protein

Target Details

Purity/Specificity: RNase A is specific for pyrimidine nucleoside linkages (Volkin and Cohn 1953). The reaction is believed to take place in two steps. In the first step, the 3',5'-phosphodiester bond is cleaved, while generating a 2',3'-cyclic phosphodiester intermediate. In the second step, the cyclic phosphodiester is hydrolyzed to a 3'-monophosphate group. The first step is nonspecific with respect to the nitrogenous base of the substrate; however, the second step is absolutely specific for pyrimidine nucleotides with terminal 2',3'-cyclic phosphates. RNase B has the same specificity as RNase A toward both cyclic cytidylate and yeast RNA (Plummer and Hirs 1963).

RNase A shows a preference for larger substrates (Nogués et al. 1995).

The enzyme cleaves at cytidine residues twice as fast as at uridyl residues (Richards and Wyckoff 1971). Thr45 has been found to be most important for mediating the pyrimidine specificity, both by forming hydrogen bonds with pyrimidine bases and sterically excluding purine bases (del Cardayré and Raines 1994). The side chain of Asp83 is important for stabilizing the transition state during the cleavage of uridine-containing substrates; this residue has no effect on the kinetics of cytidine cleavage (del Cardayré and Raines 1995).

Dnase - none detected

Protease - none detected

Application Details

Suggested Applications:	WB (Based on references)
Application Note:	Ribonuclease A application is one unit will cause an increase in the absorbance of 1.0 OD units at 260 nm at 37° C and pH 5.0 when yeast ribosomal RNA is hydrolyzed to acid soluble oligonucleotides. One unit equals 0.02 kunitz units and at least 2,000 units are present per mg of protein
Assay Dilutions:	All assays should be optimized by the user. Recommended dilutions (if any) may be listed below.
Other:	Enzyme Concentration: 44,320 units/ml Protein Concentration: 4.89 mg protein/ml Specific Activity: >2,000 units/mg Protein

Formulation

Physical State:	Liquid (sterile filtered)
Concentration:	5 mg/mL by dry weight
Buffer:	None
Stabilizer:	50% (v/v) Glycerol

Shipping & Handling

Shipping Condition:	Wet Ice
Storage Condition:	Store vial at 4° C or at -20° C or colder prior to opening product.
Expiration:	Expiration date is six (6) months from date of receipt.

References

- Kaushik, S et al. Methods to monitor chaperone-mediated autophagy. *Methods in Enzymology* (2009)

Disclaimer

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