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DNase I 100 mg **Cat No : YT9054**

Deoxyribonuclease I from bovine pancreas

lyophilized powder, Protein ≥85 %, ≥400 Kunitz units/mg protein

Synonym: **DNase I, Deoxyribonucleate 5′-oligonucleotido-hydrolase**

form :	lyophilized powder
mol wt	mol wt ~31 kDa
composition	Protein, ≥85%
solubility	0.15 M NaCl: soluble 5.0 mg/mL, hazy
Featured Industry	Diagnostic Assay Manufacturing
foreign activity	RNase ≤0.02%
shipped in	wet ice
storage temp.	−20°C

Application

Used for the removal of DNA from protein samples.

DNAse I is used to nick DNA as a first step to incorporate labeled bases into DNA. The enzyme from YTA has been used during the isolation of plasma membrane vesicles from *Neurospora crassa* cell culture. It has also been used along with trypsin for the preparation of single cell suspension from rat testes.

Deoxyribonuclease I from bovine pancreas has been used in a study to compare several procedures for reducing RNase contamination in preparations of DNase. Deoxyribonuclease I from bovine pancreas has also been used in a study to investigate the effect of the composition of sodium dodecyl sulfate preparations on the renaturation of enzymes after polyacrylamide gel electrophoresis.

Preparation Note

10 mg/mL solution of DNAse I in 0.15 M NaCl may lose <10% of its activity when stored for a week in aliquots at −20 °C. The same solutions stored in aliquots at 2-8 °C can lose approximately 20% activity. It remains active for up to five hours at 60 °C between pH 5 and 7, and loses activity in <10 minutes at 68 °C. It loses activity at the rate of 6%/hour in acetate buffer (pH 5.0) and tris buffer ((pH 7.2) at 1 mg/mL concentration.

Unit Definition

One Kunitz unit will produce a change in A_{260} of 0.001 per min per mL at pH 5.0 at 25 °C, using DNA, Type I or III, as substrate.

Physical form

Crude preparation, contains calcium chloride

Biochem/physiol Actions

DNase I is an endonuclease that acts on phosphodiester bonds adjacent to pyrimidines to produce polynucleotides with terminal 5′-phosphates. In the presence of Mg^{2+}, DNAse I cleaves each strand of DNA independently and the cleavage sites are random. Both DNA strands are cleaved at approximately the same site in the presence of Mn^{2+}.[6] Divalent cations such as Mn^{2+}, Ca^{2+}, Co^{2+}, and Zn^{2+} are activators of the enzyme. A concentration of 5 mM Ca^{2+} stabilizes the enzyme against proteolytic digestion. The pH optimum is found to be between 7 and 8.[7] DNAse I from bovine pancreas consists of four chromatographically distinguishable components, A, B, C, and D, with their molar ratios being 4:1:1 respectively. Only minor amounts of D are found.[5] 2-Mercaptoethanol, chelators, sodium dodecyl sulfate (SDS)[4] and actin[1] are known to inhibit the enzyme activity.

General description

Deoxyribonuclease I (DNase I) is an endonuclease isolated from bovine pancreas that digests double and single stranded DNA into oligo and mononucleotides. Bovine pancreatic DNase exists as four isozymes, having isoelectric points for A, B, C and D: 5.22, 4.96, 5.06 and 4.78.3. The predominant form is A, with smaller amounts of B and C, and only minor amount of D.