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Product Information

Elastase, pancreatic from porcine pancreas

Product Number **E0127**
Storage Temperature -20 °C

Product Description

CAS Number: 39445-21-1
Enzyme Commission (EC) Number: 3.4.21.36
Molecular Weight: 25.9 kDa¹
Extinction Coefficient: $E^{1\%} = 20.2$ (280 nm, 100 mM NaOH)¹
pI: 8.5²
Synonyms: Elastase hog pancreas,
Pancreatopeptidase E

Elastase is a single polypeptide chain of 240 amino acid residues and contains four disulfide bridges. It is synthesized as an inactive zymogen, which requires limited proteolysis at the N-terminal by trypsin in order to produce the active enzyme.¹ Elastase is a serine protease with a broad specificity, as it will cleave proteins at the carboxyl side of small hydrophobic amino acids such as Ile, Gly, Ala, Ser, Val, and Leu. Elastase will also hydrolyze amides and esters. Some examples are N-Benzoyl-L-alanine methyl ester, N-Acetyl-L-Ala-L-Ala-L-Ala methyl ester, and N-Methoxycarbonyl-L-alanine methyl ester.^{1,3} The enzyme assay utilized by Sigma uses the substrate N-Succinyl-L-Ala-L-Ala-L-Ala-p-nitroanilide. The K_M for this substrate is 1.15 mM in the absence of organic solvents.⁴

Elastase has a pH optimum of 8.0-8.5. Elastase does not require an activator, but it is inhibited by diisopropyl fluorophosphate, phenylmethanesulfonyl fluoride, α_2 -macroglobulin, α_1 -antitrypsin, sulfonyl fluorides and p-dinitrophenyl diethylphosphate. It is also inhibited by high salt concentrations. Sodium chloride (50-100 mM) produced 50% inhibition and similar effects were observed with potassium chloride,

ammonium sulfate, sodium cyanide, and copper sulfate (10 mM).^{1,3}

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This enzyme is soluble in 200 mM Tris HCl buffer, pH 8.8 (1 mg/ml), yielding a clear solution.

Procedure

For peptide digestion, use a ratio (w/w) of approximately 1:50 to 1:100 of elastase to substrate. Perform the peptide digest in 100 mM ammonium bicarbonate, pH 8.0, at 37 °C for 4 hours. Evaluate digestion by SDS/PAGE.

References

1. The Enzymes, 3rd ed., vol. III, Boyer, P. D., ed., Academic Press (New York, NY: 1971), pp. 323-373.
2. Righetti, P. G., and Tudor, G., Isoelectric points and molecular weights of proteins, a new table. *Journal of Chromatography*, **220**, 115-194 (1981).
3. *Enzymes of Molecular Biology*, vol. 16, Burrell, M. M., Humana Press (Totowa, NJ: 1993), pp. 283-284.
4. Bieth, J., et al., The synthesis and analytical use of a highly sensitive and convenient substrate of elastase. *Biochemical Medicine*, **11(4)**, 350-357 (1974).

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