Native *Bacillus licheniformis* Protease

Catalog Number NATE-0633

Description

A protease is an enzyme that helps proteolysis: protein catabolism by hydrolysis of peptide bonds. The native *Bacillus licheniformis* protease belongs to the serine endopeptidase subtilisin family, which breaks the peptide bond non-specifically under alkaline conditions. The enzyme is active in aqueous solutions and in some organic solvents such as dry octane. The protease is inactivated by serine active-site inhibitors, such as phenylmethylsulfonyl fluoride (PMSF) and diisopropylfluorophosphate.

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Product Information

Catalog number: NATE-0633	Active temperature: 4-75 °C
EC number: 3.4.21.62	Optimum temperature: 55-60 °C
CAS number: 9001-92-7	Specificity: Subtilisin A is a member of the serine S8 endoproteinase family. It has broad specificity with a preference for a large uncharged residue in the P1 position. It hydrolyzes native and denatured proteins, and is active under alkaline conditions.
Source: *Bacillus licheniformis*	
Molecular Weight: 27 kDa	
Form: Lyophilized powder	
Activity: >8 units/mg solid	
Optimum pH: 8-10	

Applications

- The protease has a broad specificity towards native and denatured proteins.
- The product has been used in tissue dissociation and single cell isolation from specimen during preparation for single-cell RNA sequencing at cold temperatures.
- It has been used in the process of isolation of subsarcolemmal (SS) and intermyofibrillar (IMF) mitochondria that can be used for functional *in vitro* studies.
- The product has been used with other enzymes for *in situ* proteolysis to produce crystals suitable for structure determination.

Publications

Native *Bacillus licheniformis* protease can be used for single-cell dissociation at 4-8°C. The protocol involves mincing the specimen, digestion with protease on ice, incubation with Miltenyi gentleMACS and trituration or physical disruption, followed by filtration. Reported examples can be found in the following published research articles:

Title	Author	Year	Journal
Probabilistic cell type assignment of single-cell transcriptomic data reveals spatiotemporal microenvironment dynamics in human cancers	Zhang A W, *et al.*	2019	bioRxiv
Ulcerative colitis mucosal transcriptomes reveal mitochondriopathy and personalized mechanisms underlying disease severity and treatment response	Haberman Y, *et al.*	2019	Nature communications
Psychrophilic proteases dramatically reduce single-cell RNA-seq artifacts: a molecular atlas of kidney development	Adam M, *et al.*	2017	Development

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Contact Information
45-1 Ramsey Road, Shirley, NY 11967, USA
www.creative-enzymes.com
Email: info@creative-enzymes.com
Tel: 1-631-562-8517
Fax: 1-631-938-8127