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Product Information

Protease from *Bacillus licheniformis*
Type VIII, lyophilized powder

Catalog Number **P5380**
Storage Temperature –20 °C

CAS RN 9014-01-1
EC 3.4.21.62
Synonyms: Subtilisin A, Subtilisin Carlsberg, Subtilopeptidase A, Proteinase from *Bacillus licheniformis*

Product Description

This proteolytic enzyme is isolated from *Bacillus licheniformis*.[1] Known by various names, such as Subtilisin A and Subtilisin Carlsberg, this protease is a serine endoproteinase with a broad specificity towards native and denatured proteins, and is active under alkaline conditions.[2] Subtilisin A is a single polypeptide chain of molecular mass of ~ 27 kDa. Several publications have elucidated the sequence of this enzyme.[3-7] The crystal structure of native Subtilisin Carlsberg has been reported.[8]

Studies on the use of Subtilisin A in non-aqueous, organic solvents have been published.[9-10]

Isoelectric point (pI):[11] 9.4
E1% (280nm) :[11] 8.6

Unit definition: One unit will hydrolyze casein to produce color equivalent to 1.0 µmole (181 µg) of tyrosine per minute at pH 7.5 at 37 °C (color by Folin-Ciocalteu reagent).

Preparation Instructions

The product is generally soluble in water at normal usage concentrations. Different publications report preparation of stock solutions of this product at various concentrations:

- 1.1 mg/mL in 10 mM Trizma buffer (pH 8.0)[12]
- 100 mg/mL in DPBS (without added calcium or magnesium)[13]

Storage/Stability

This enzyme is reported to be stable for 1-2 days at 4 °C as a 100-200 mg/mL solution in 0.1 M borate (pH 8.0), containing 0.1 M $CaCl_2$.[11] Stock solutions of this product may be frozen at -20 °C.[14]

Optimal Conditions[15]

Effect of pH at constant temperature (T = 25 °C), for 10 minutes (activity remaining):

- pH 6 ≈ 70%
- pH 7 ≈ 80%
- pH 7.5-10 ≈ 95%
- pH 10.5 ≈ 90%
- pH 11 ≈ 70%
- pH 11.5 ≈ 0%

Effect of temperature at constant pH (pH = 8.5), for 10 minutes (activity remaining):

- 30 °C ≈ 25%
- 40 °C ≈ 40%
- 50 °C ≈ 75%
- 55-60 °C ≈ 95+%
- 65 °C ≈ 80-85%
- 70 °C ≈ 15%

Effect of temperature at constant pH (pH = 8.5), for 1 hour (activity remaining or relative stability):

- At 50 °C, > 95% activity remaining after 60 min.
- At 55 °C, ≈ 90% after 60 min.
- At 60°C, ≈ 80% after 60 min.
- At 65°C, ≈ 75% after 10 min., ≈ 50% after 20 min., ≈ 20% after 60 min.
- At 70 °C, ≈ 50% after 5 min., ≈ 25% after 10 min., ≈ 0% after 35 min.

Effect of pH at constant temperature (T = 25 °C) for 24 hours. (activity remaining or relative stability):

- pH 5, ≈ 20%
- pH 6, ≈ 50%
- pH 7, ≈ 75%
- pH 8-10, ≈ 90%
- pH 11, ≈ 45%
- pH 11.5, ≈ 0%

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.

References

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