



## Product Information

### Trypsinogen from bovine pancreas

Product Number **T1143**  
Storage Temperature -20 °C

#### Product Description

CAS Number: 9002-08-8  
Molecular Weight: 23.7 kDa<sup>1</sup>  
Extinction Coefficient:  $E^{1\%} = 14.4$  (280 nm)  
pI: 9.3<sup>2</sup>

Trypsinogen is a proenzyme (zymogen) form of trypsin which is synthesized in the pancreas. Bovine trypsinogen consists of a single polypeptide chain of 229 amino acids and is cross linked by six disulfide bridges. The proenzyme is activated only after it reaches the lumen of the small intestine. Enterokinase activates pancreatic trypsinogen to trypsin by the hydrolysis of a hexapeptide from the NH<sub>2</sub> terminus. This cleavage occurs at the Lys<sup>6</sup> - Ile<sup>7</sup> peptide bond. Trypsin in turn then autocatalytically activates more trypsinogen to trypsin. This native form of trypsin is referred to as  $\beta$ -trypsin. Autolysis of  $\beta$ -trypsin (which is cleaved at Lys<sup>131</sup> - Ser<sup>132</sup>) results in  $\alpha$ -trypsin which is held together by disulfide bridges. Trypsin is a member of the serine protease family. The active site amino acid residues of trypsin include His<sup>46</sup> and Ser<sup>183</sup>.<sup>3-5</sup>

Trypsin will cleave peptides on the C-terminal side of lysine and arginine amino acid residues. The rate of hydrolysis is slower if an acidic residue is on either side of the cleavage site and no cleavage occurs if a proline residue is on the carboxyl side of the cleavage site. The pH optimum of trypsin is 7 - 9.<sup>6</sup> Trypsin will also hydrolyze ester and amide linkages of synthetic derivatives of amino acids such as: benzoyl L-arginine ethyl ester (BAEE), p-toluenesulfonyl-L-arginine methyl ester (TAME), N $\alpha$ -benzoyl-L-arginine p-nitroanilide (BAPNA), L-lysyl-p-nitroanilide, and benzoyl-L-arginamide.<sup>2,7,8</sup>

Trypsinogen can be utilized as a molecular weight standard (24 kDa) in SDS-PAGE.<sup>9</sup>

#### Precautions and Disclaimer

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

#### Preparation Instructions

This protein is soluble in water (10 mg/ml).

#### Storage/Stability

Trypsinogen solutions are stable in acidic buffers (pH 2 - 4), while in neutral buffers the autocatalytic activation to trypsin occurs.

#### References

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5. Shaw, E., et al., Evidence for an active center histidine in trypsin through use of a specific reagent, 1-chloro-3-tosylamido-7-amino-2-heptanone, the chloromethyl ketone derived from N $\alpha$ -tosyl-L-lysine. *Biochemistry*, **4**(10), 2219-2224 (1965).
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