

Pepsin
from porcine gastric mucosaProduct Number **P7012**

Storage Temperature -20°C

Product DescriptionMW: 34,620 (amino acid sequence)¹pI: 2.2 - 3.0²; 2.2, 2.8³ λ_{\max} : 278 nm⁴Extinction coefficient: $E_M = 51,300$ ⁴

Pepsin, unlike some other peptidases, hydrolyzes only peptide bonds, not amide or ester linkages. The cleavage specificity includes peptides with an aromatic acid on either side of the peptide bond, especially if the other residue is also aromatic or a dicarboxylic amino acid. Increased susceptibility to hydrolysis occurs if there is a sulfur-containing amino acid close to the peptide bond, which has an aromatic amino acid. Pepsin will also preferentially cleave at the carboxyl side of phenylalanine and leucine and to a lesser extent at the carboxyl side of glutamic acid residues. Pepsin will not cleave at valine, alanine, or glycine linkages.⁵ Some good substrates of pepsin are Z-L-tyrosyl-L-phenylalanine, Z-L-glutamyl-L-tyrosine, or Z-L-methionyl-L-tyrosine. Amidation of the C-terminal carboxyl group prevents hydrolysis by pepsin.^{5,6}

Pepsin is commonly used in the preparation of Fab fragments from antibodies. The optimal pH for the pepsin reaction is 1.5-2.5, which will not be detrimental to the antibody if it is not exposed for long durations to the low pH. Solutions should be adjusted to neutral pH for storage. The control of pepsin digestion of antibodies has been reported.⁷

For general digestion of proteins, suggested conditions are a 0.4% solution of pepsin in 10 mM HCl, and digestion for 30-90 minutes at 37 °C. Pepsin has an optimal activity with native proteins at approximately pH 1.0, but with some denatured proteins the optimal activity is at approximately pH 1.5-3.5.^{8,9}

Pepsin is inhibited by several phenylalanine-containing peptides.¹⁰

Precautions and Disclaimer

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

Preparation Instructions

Pepsin is soluble in deionized water at 1% (10 mg/ml) and at 0.4% (4 mg/ml) in cold 10 mM hydrochloric acid.

Storage/Stability

Solutions at pH 4.4 are stable at -20 °C for about 2-3 months.¹¹ Pepsin is not active when not at an acidic pH and a solution is stable at pH 6-7. Bringing the pH up to 8; however, will irreversibly inactivate pepsin. Pepsin is irreversibly denatured at pH 8.5-11 at room temperature.¹²

References

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ARO/RXR 9/07