



PRODUCT HIGHLIGHT

Proteinase K is a serine endopeptidase with a broad spectrum of action, isolated from the fungus *Tritirachium album limber*. Worthington Proteinase K is supplied as a highly purified lyophilized powder (PROKR) and ready-to-use liquid (PROKRS), and tested to be free of DNase and RNase contaminants.

Description	Activity	Code	Catalog No.	Size	Price
Proteinase K, Recombinant Solution, 20mg/ml A concentrated, ready to use liquid formulation. Proteinase K prepared at 20mg/ml in 10mM Tris-HCl, 1mM calcium acetate, pH 7.5 containing 50% glycerol, DNase and RNase free. Store at -20°C.	≥ 400 units per milliliter ≥ 20 units per mg dry weight	PROKRS	LS004254	5 ml	\$120.00
			LS004256	25 ml	480.00
			LS004258	Bulk	Inquire
Proteinase K, Recombinant, Lyophilized A lyophilized powder. Purified to remove DNase and RNase. Store at 2-8°C.	≥ 20 units per mg dry weight	PROKR	LS004248	25 mg	\$38.00
			LS004249	100 mg	81.00
			LS004250	1 gm	620.00
			LS004252	Bulk	Inquire

Characteristics of Proteinase K from *Tritirachium album limber*:

Molecular weight: 28,900 daltons.

pH Optimum: Stable over a wide pH range: 4.0-12.5, optimum pH 7.5-8.0, using denatured hemoglobin as substrate.

Stability: Although calcium ions do not affect the enzyme activity, they do protect Proteinase K against autolysis and increase thermal stability when present at a concentration of 1 - 5 μ moles. An interesting characteristic of Proteinase K is that it retains its activity in the presence of sodium dodecyl sulphate (SDS) or urea. (0.5 - 1% SDS and 1 - 4 M urea). Raising the temperature of the reaction from 37°C to 50 - 60°C can increase the activity several fold. A special feature of Proteinase K is its ability to digest native proteins, thereby inactivating enzymes such as DNase and RNase without recourse to a denaturation process. Proteinase K is inactivated by diisopropyl fluorophosphate (DFP) or phenyl methane sulphonyl fluoride (PMSF). Chelating agents such as citrate and EDTA have no effect on the enzyme activity. Proteinase K can also be inactivated by heating above 65°C for 15-20 minutes or by extraction with phenol/chloroform.

Storage: The lyophilized powder is stable for ≥ 1 year at 2-8°C. Solutions in 50mM Tris-HCl, pH 8.0 with 1mM CaCl₂ are stable for months at 2-8°C.

Unit Definition: One Unit releases one micromole of Folin positive amino acids, measured as tyrosine, at 37°C, pH 7.5, using urea denatured hemoglobin as the substrate.

Specificity: In addition to cleavage of peptide bonds, it is able to catalyze peptide amide hydrolysis.

Application: The recommended working concentration for Proteinase K is 0.05-1 mg/ml. Proteinase K is very useful in the isolation of highly native, undamaged DNAs or RNAs, since most microbial or mammalian DNases and RNases are rapidly inactivated by the enzyme, particularly in the presence of 0.2 - 1% SDS.

Proteases For Protein Digestion and Protein Sequencing

Enzyme	Specificity	Molecular Weight KDa	pH Optimum	Extinction Coefficient E1%, 280nm	Common Substrates	Activators	Inhibitors	Product Code/ Applications
Proteases For Protein Sequencing								
Carboxy-peptidase B	H ₂ -N-Rn-Y-†-X-COOH X = basic amino acids (Arg, Lys, Orn) Y = nonspecific	34.3	7.0-9.0	21.4 (Folk 1971)	Hippuryl-L-arginine	None required	EDTA Hg ²⁺ & other heavy metal ions EDTA, EGTA o-phenanthroline	COBC/COBPMS, Sequence analysis by successive cleavage of C-terminal basic amino acids Insulin production
Carboxy-peptidase Y	H ₂ -N-Rn-Y-†-X-COOH X, Y = non-specific, prefers aromatic	64.0	4.5-6.0	15.0 (Hayashi <i>et al.</i> 1973, and Kuhn <i>et al.</i> 1973)	ATEE Bz-Phe-Ala-Leu Z-Phe-Ala	None required	APCK, Aprotinin DFP 4-Hydroxymer-curibenzoate PMSF	COY, C-terminal sequencing & Modification/ labeling of peptides and proteins
Chymotrypsin TLCK treated	-X-†-Y- X = aromatic Y = nonspecific	25.6	7.8-8.0	20.57 (Theoretical)	ATEE BTEE	None required	α-antitrypsin Aprotinin DFP, PMSF, TPCK α ₂ -macroglobulin	CDSEQ, CDTLCK, Sequence analysis Peptide synthesis, mapping/finger-printing
Endo-Arg-C (Clostripain)	-Arg-†-Y- Y = nonspecific	53	7.4-7.8	16.57 (Theoretical)	BAEE	Ca ²⁺ Reducing agents	EDTA, TLCK, Tris Hg ²⁺ & other heavy metal ions	CPSEQ, CP, Peptide mapping & synthesis Sequence analysis Hydrolysis/condensation of amide bonds
Endo-Glu-C (Staph. Protease V8)	-Glu-†-Y- (NH ₄ buffers pH 4, 7.8) -Asp-†-Y- (PO ₄ buffer pH 7.8)	27.0	4.0 & 7.8	4.26 (Houmard 1976)	Casein Z-Phe-Leu-Glu-4NA	None required	DFP F-, Cl-, Br-, CH ₃ COO- NO ₃ -α ₂ -macroglobulin	STSEQ, STAP, Peptide mapping & sequence analysis
Pepsin	-X-†-Y- X = nonspecific but aromatic & hydrophobic preferred Y ≠ Ala, Gly, Va	34.6	1.0-4.0 unstable ≥5	14.39 (Theoretical)	Casein Hemoglobin	None required	Pepstatin A Diazoketones Epoxides	PM, Collagen bioprocessing/ purification Antibody cleavage
Proteinase K	-X-†-Y- X = nonspecific but aliphatic, aromatic & hydrophobic preferred Y = nonspecific	28.9	7.5-12	12.6 (Theoretical)	Casein Hemoglobin Keratin	Ca ²⁺ Active in 0.5-1% SDS	DFP EGTA PMSF	PROKR, PROKRS, DNA/RNA purification
Trypsin	-X-†-Y- X = Arg, Lys Y = nonspecific	23.8	7.5-8.5	14.3	BAEE Casein TAME	Ca ²⁺ Lanthanide	Aprotinin, Benzamidine DFP, EDTA, Leupeptin α ₂ -macroglobulin PMSF, TLCK Trypsin Inhibitors (egg white, lima bean, pancreatic, soybean)	TRTPCK, TRSEQZ, TRSEQII, Peptide mapping & sequence analysis Cleavage fusion proteins

For a listing of up-to-date enzyme and biochemical citations, go to:
<http://Worthington-Biochem.com/index/manual.html>

Related Products

Albumin, Nuclease-Free	Ribonuclease A	Nucleic Acids	Phosphodiesterase II
DNase I	Lysozyme	Ribonuclease T1	Reverse Transcriptase, Recombinant HIV
DNase I, Recombinant	Nuclease, Micrococcal	Phosphatase, Alkaline	Ribonuclease T2, Recombinant
Histones	Nuclease, S1	Phosphodiesterase I	

For Product Catalog, Tissue Dissociation Guide and Enzyme Manual, go to: Worthington-Biochem.com