Certificate of Analysis & Product Manual

DNA & RNA Purification, Polymerase Chain Reaction
Custom Primers and Probes
Hybridization and Detection Reagents

Proteinase K Solution

Catalog No.: 40-5203-XX

Storage Condition: -20°C to -10°C

For Research Use Only. Not for use in diagnostic procedures for clinical purposes

Material Supplied & Product Label Information

		Catalog Number	**Description**	**Size**
REF	❑	40-5203-02	Proteinase K Solution 10 mg/mL; 200 µL	200 µL
	❑	40-5203-01	Proteinase K Solution 10 mg/mL; 1 mL	1 mL

RUO Research Use Only	-10°C -20°C	LOT
Research Use Only	**Storage** Store at -20°C to -10°C	**Lot Number** Stated on product tube and packing slip

Expiry 6 months from date of shipment	**Instructions** Consult product description	**QR Code** Visit Gene Link website for product details

Certificate of Analysis & Product Specifications

All component reagents have been manufactured using molecular biology grade water and certified to be DNase and RNase Free.

Appropriate nuclease free handling, dispensing and storage conditions required.

Manufacturing lot numbers are stated on the label of each product and accompanying packing slip.

Storage: Shipped on ice. Store at -20°C.

Storage and Stability:

Shipped on ice. Store at -20°C. The undiluted enzyme is stable for at least 6 months from date of shipment when stored at -20°C.
Supplied in ready to use solution of 10 mg/mL in 20mM Tris-HCl pH 7.4, 1 mM $CaCl_2$ and 50% glycerol.

Product Description:

Proteinase K is an endolytic protease that cleaves peptide bonds at the carboxylic sides of aliphatic, aromatic or hydrophobic amino acids. Proteinase K is classified as a serine protease. The smallest peptide to be hydrolyzed is a tetrapeptide (1). Proteinase K is useful in purifying high molecular weight genomic nucleic acids from cells and tissues.

Specifications:

Enzyme Name:	**Proteinase K**
Source:	*Tritirachium album*
EC Number:	3.4.21.64
Molecular Weight:	28,900 Da
Solution Form:	20mM Tris-HCl pH 7.4, 1mM $CaCl_2$ and 50% glycerol
Concentration:	Approximately 10 mg/mL; ~46 units/ mL
Working Concentration:	Approximately 0.05- 1 mg/mL
Optimum Temperature	55°C
Unit Definition:	One unit is the amount of enzyme that liberates folin positive amino acids and peptides corresponding to 1 µmol tyrosine in 1 min at 37°C using hemoglobin as substrate.
Purity:	Tested for contaminating ribonucleases and deoxyribonucleases.

Recommended Product Use:

Proteinase K is a highly active and stable endopeptidase used in a wide range of applications purified from the fungus *T. album*. It cleaves peptide bonds mainly following the carboxyl group of N-substituted hydrophobic aliphatic and aromatic amino acids (1) and is classified as a serine protease. Proteinase K is useful in purifying high molecular weight nucleic acids from cells and tissues.

This product is specifically recommended for use in genomic DNA preparation and in digestion of high protein samples prior to DNA extraction procedures.

Optimum Enzymatic Conditions

1. Proteinase K is activated by 0.2 - 1% SDS or 1 - 4M urea and the recommended working concentration is 0.05- 1 mg/mL (2, 3).
2. Stable over a wide pH range: 4.0-12.5, optimum pH 7.5-8.0.
3. Optimum activity at 50-55°C and rapid denaturation occurs at temperatures above 65°C.
4. Ca^{2+} protects Proteinase K against autolysis, increases the thermal stability and has a regulatory function for the substrate binding site of Proteinase K.

Applications:

1. Used in the isolation of native, high molecular weight DNA and RNA. Proteinase K digests native proteins very effectively.
2. Remove DNases and RNases when isolating DNA and RNA from tissues or cells (2).
3. Used as a general protease to inactivate DNases, RNases and to degrade proteins.
4. Specifically modifies cell surface proteins and glycoproteins for analysis of membrane structures for protein localization (4-6).
5. Produces characteristic protein fragments used in enzyme/protein structure and function studies.

Inhibition and Inactivation

Inhibitors:. Phenylmethylsulfonyl fluoride (PMSF) and diisopropyl phosphorofluoridate completely inhibit the enzyme (1). Proteinase K is not inactivated by metal chelators, by thiol-reactive reagents or by specific trypsin and chymotrypsin inhibitors

Inactivated by heating at 65°C for 20 min.

References:

1. Ebeling, W., Hennrich, N., Klockow, M., Metz, H., Orth, H. D. and Lang, H. (1974) Proteinase K from *Tritirachium album* Limber. *Eur. J. Biochem.* **47**, 91-97.
2. Wiegers, U. and Hilz, H., A new method using 'proteinase K' to prevent mRNA degradation during isolation from HeLa cells, Biochem. and Biophys. Res. Commun., 44, 513-519, 1971.
3. Hilz, H., et al., Stimulation of proteinase K action by denaturing agents: application to the isolation of nucleic acids and the degradation of "masked" proteins, Eur. J. Biochem., 56, 103-108, 1975.
4. Gross-Bellard, M., Oudet, P. and Chambon, P. (1973) *Eur. J. Biochem.* **36**, 32-38.
5. Hansen, J. N. (1974) *Prep. Biochem.* **4**, 473-488.
6. Kasche, V., Zollner, R., Amneus, H. and Naslund, L. (1981) *Prep. Biochem.* **11**, 233-250.

Ordering Information

Product	Catalog No.	Size
Proteinase K; 10 mg/ml; 200 µL	40-5203-02	200 µL
Proteinase K; 10 mg/ml; 1 mL	40-5203-01	1 mL
RNase A solution, DNase Free. 2 mg/ml; 200 µL	40-5101-02	400 µg
RNase A solution, DNase Free. 2 mg/mL; 1 mL	40-5101-10	2 mg
RNase A solution, DNase Free. 10 mg/mL; 1 mL	40-5101-01	10 mg
DNase I, RNase-free; 2u/µL	40-5111-05	500 units
Lytic Enzyme; 4000 units/mL	40-5205-02	200 µL
Glycogen Solution; 10 mg/mL	40-5112-02	200 µL

Related Products **Ordering Information**

Omni-Pure™ DNA & RNA Purification Systems

Product	Catalog No.	Size* (Purifications)
Omni-Pure™ Blood DNA Purification System	40-4010-01	100
Omni-Pure™ Blood DNA Purification System	40-4010-05	500
Omni-Pure™ Blood DNA Purification System	40-4010-10	1000
Omni-Pure™ Tissue DNA Purification System	40-4050-01	100
Omni-Pure™ Tissue DNA Purification System	40-4050-05	500
Omni-Pure™ Tissue DNA Purification System	40-4050-10	1000
Omni-Pure™ Plant DNA Purification System	40-4060-01	100
Omni-Pure™ Plant DNA Purification System	40-4060-05	500
Omni-Pure™ Plant DNA Purification System	40-4060-10	1000
Omni-Pure™ Viral DNA Purification System	40-3720-01	100
Omni-Pure™ Viral DNA Purification System	40-3720-05	500
Omni-Pure™ Microbial DNA Purification System	40-3700-01	100
Omni-Pure™ Microbial DNA Purification System	40-3700-05	500
Omni-Pure™ Viral RNA Purification System	40-3650-01	100
Omni-Pure™ Viral RNA Purification System	40-3650-05	500

*Sample volume for each purification system varies. Each purification yields sufficient quantity for desired applications.

Omni-Pure™ Plasmid DNA Purification Systems

Product	Catalog No.	Size*
Omni-Pure™ Plasmid DNA Purification System	40-4020-01	100
Omni-Pure™ Plasmid DNA Purification System	40-4020-05	500

*Sample volume for each purification system varies. Each purification yields sufficient quantity for desired applications.

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