

Proteinase K

Cat. No.:	K1037
CAS No.:	39450-01-6
M. Wt:	29.3 kDa
Concentration:	> 600 U/mL (approximately 20 mg/mL)
Storage:	-20°C
General Tips:	APExBIO guarantees optimal performance of this product for 18 months after date of delivery under the appropriate temperature and condition.
Shipping Condition:	Ship with blue ice

Description

Proteinase K is a broad-spectrum serine protease. Our product is derived from recombinant *Pichia pastoris* strains expressing the endoproteinase gene originally sourced from the fungus *Tritirachium album limber*. It is a highly active enzyme widely used in the hydrolysis of a variety of proteins and enzymatic contaminants (including endonucleases, exonucleases, DNases, and RNases). Proteinase K is therefore commonly used for DNA preparations as it does not impair DNA integrity. Proteinase K preferentially cleaves peptide bonds adjacent to the carboxyl end of hydrophobic amino acids (aliphatic, aromatic, etc.) and exhibits excellent performance under various conditions such as different pH values, buffer types, detergents (e.g. SDS), chelating agents (e.g. EDTA), and temperatures. Proteinase K is also used for enzyme mapping and the removal of unwanted enzymes from DNA preparations to enhance cloning efficiency. Except the isolation of genome, it can also take a job in detection of enzyme localization or removal of enzymes from DNA to improve cloning efficiency.

Appropriate working concentration of proteinase K is always among the range of 0.05 to 1 mg/mL. The activity of the enzyme can be stimulated by 0.2 to 1% SDS or by 1 to 4 M urea. It is activated by calcium (1-5 mM). Calcium ions do not affect the enzyme activity, but it contributes to the thermal stability and protects the proteinase from autolysis. Calcium ion has a regulatory function for the substrate binding site of proteinase K. The enzyme is inactivated by DIFP or PMSF. However, it is not inhibited by EDTA, iodoacetic acid, trypsin-specific inhibitor TLCK, chymotrypsin-specific inhibitor TPCK, and p-chloromercuribenzoate.

We recommend an optimum pH of 7.5 to 8.0 and optimum temperature at 50 to 55°C. Rapid denaturation will occur above 65°C. It is inactivated under 95°C for 10 min.

References:

- [1] Kraus, E., et al. Proteinase K from the Mold *Tritirachium album limber*, Specificity and Mode of Action. *Z. Physiol. Chem.*, 357:939; 1976.
- [2] Jany, K.D., et al. Amino Acid Sequence of Proteinase K from the Mold, *Tritirachium album limber*. Proteinase K; a Subtilisin-related Enzyme with Disulfide Bonds. *FEBS Letter*, 199,139.1986.

Protocol

This protocol is used in the extraction of genomic DNA from mouse tail with Proteinase K.

1. Place an approximately 0.5 cm mouse tail into a 1.5 mL microcentrifuge tube.
 2. Add 500 μ L of lysis buffer (e.g. 50 mM KCl, 50 mM Tris-HCl (pH 8.0), 2.5 mM EDTA, 0.45% NP-40, 0.45% Tween-20).
 3. Add 2.5 μ L Proteinase K (20 mg/ml) to the tube and mix the solution.
 4. Incubate overnight at 55°C.
- Optional step: Incubate for an additional 1 hour at 65°C.
5. Vortex the tube and spin down for 10 seconds at 13,000 rpm to collect cell debris.
 6. Use 1 μ L from the top part of the supernatant per 50 μ L of PCR mix (for genotyping).



Product Citations

1. Nicole DeFoor, Swagatika Paul, et al. "Remdesivir increases mtDNA copy number causing mild alterations to oxidative phosphorylation." Sci Rep. 2023 Sep 15;13(1):15339. PMID: 37714940
2. Jiana Huang, Peigen Chen, et al. "Multi - Omics Analysis Reveals Translational Landscapes and Regulations in Mouse and Human Oocyte Aging." Adv Sci (Weinh). 2023 Jul 3;e2301538. PMID: 37401155
3. Hira Khan, Takashi Ochi, et al. "Plant PAXX has an XLF - like function and stimulates DNA end - joining by the Ku - DNA ligase IV - XRCC4 complex." Plant J. 2023 Oct;116(1):58-68. PMID: 37340932
4. Penghui Zhang, Xizhe Liu, et al. "Effect of cyclic mechanical loading on immunoinflammatory microenvironment in biofabricating hydroxyapatite scaffold for bone regeneration." Bioact Mater. 2021 Mar 9;6(10):3097-3108. PMID: 33778191

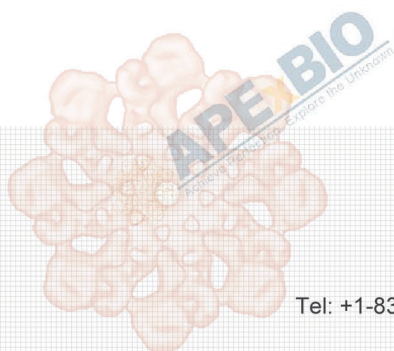
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Caution

FOR RESEARCH PURPOSES ONLY.

NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

Specific storage and handling information for each product is indicated on the product datasheet. Most APEX BIO products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Shortterm storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.



APEX BIO Technology

www.apexbt.com

7505 Fannin street, Suite 410, Houston, TX 77054.

Tel: +1-832-696-8203 | Fax: +1-832-641-3177 | Email: info@apexbt.com

