

DNA polymerase κ (C-His)

10-105 50 μ g

Mammalian DNA polymerase κ , a member of the UmuC/DinB nucleotidyl transferase superfamily, has been implicated in spontaneous mutagenesis (1). Human DNA polymerase κ copies undamaged DNA with average single-base substitution and deletion error rates of 7×10^{-3} and 2×10^{-3} , respectively. These error rates are high when compared to those of most other DNA polymerase (2). Important role for DNA polymerase κ in the mutagenic bypass of certain types of DNA lesions (3).

The product is over-expressed as a recombinant protein in *E. coli* with a plasmid carrying a C-terminal histidine-tagged human DNA polymerase κ (1-560 aa), and highly purified by several steps of chromatography (2). The product is catalytically active and its molecular weight is 65 kD (Fig 1). Activity of this product has been confirmed by a user researcher even if it was diluted 8,000-fold.

Applications

1) Analysis of mutagenesis

Specification

Conditions of measurement: 50 mM Tris-HCl (pH 8.0), 2 mM MgCl₂, 1 mM DTT, 0.1 mg/ml BSA, 0.1 mM dNTP, 100 nM primer/template (13-mer/30-mer) DNA polymerase κ 13 - 50 ng/25 μ l assay, at 37°C, 10 min (right figure)

Purity: Over 90% by SDS-PAGE (CBB staining)

Protein concentration: 3.2 mg/ml as measured by BCA method

Form: 0.2 M NaCl, 10 mM sodium phosphate buffer (pH 7.0), 50% glycerol,

Storage: -20°C

References:

1. Friedberg EC, et al., The many faces of DNA polymerases: strategies for mutagenesis and for mutational avoidance. Proc. Natl. Acad. Sci. USA 97, 5681-5683 (2000)
2. Ohashi E, et al., Fidelity and processivity of DNA synthesis by DNA polymerase kappa, the product of the human DINB1 gene. J. Biol. Chem. 275: 39678-39684 (2000)
3. Ohashi E, et al., Error-prone bypass of certain DNA lesions by the human DNA polymerase kappa. Genes Dev. 14: 1589-1594 (2000)

Fig. 1 Polyacrylamide gel electrophoresis of DNA polymerase κ protein

Related product: [10-103 DNA polymerase \$\kappa\$ \(N-His\)](#)

