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T4 Endonuclease V

Cat. Nos. TE6605, TE661K, and TE665K

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1. Introduction

T4 Endonuclease V functions as part of a base excision repair pathway to recognize and remove cyclobutane pyrimidine dimers. The enzyme binds to UV-irradiated DNA and processively scans the DNA until a pyrimidine dimer is encountered. T4 Endonuclease V then cleaves the glycosyl bond of the 5′ pyrimidine of the dimer and the 3′-phosphodiester bond, resulting in breakage of the DNA strand.[1,2] Strand breakage is evident during subsequent electrophoresis as a change in conformation (i.e., from covalent closed circular to relaxed circular molecules), or as the appearance of unique DNA fragments. The enzyme is a small protein that does not require divalent cations or other cofactors.[1]

T4 Endonuclease V is available in 500-, 1,000-, and 5,000-Unit sizes (1 U = 1 ng) at a concentration of 20 U/µl.

2. Product Specifications

Storage: Store only at –20°C in a freezer without a defrost cycle.

Storage Buffer: T4 Endonuclease V is supplied in a 50% glycerol solution containing 50 mM Tris-HCl (pH 7.5), 100 mM NaCl, 1.0 mM dithiothreitol, 0.1 mM EDTA, and 0.1% Triton® X-100.

Unit Definition: One unit of T4 Endonuclease V converts 1 µg of UV-irradiated plasmid from covalent closed circles (form I) to nicked circles (form II) in 30 minutes at 37°C.

Activity Assay: The activity assay is performed in a reaction containing 50 mM Tris-HCl (pH 7.5) and 5 mM EDTA using plasmid DNA irradiated for 1 minute at 254_{nm}.

Contaminating Activity Assays: T4 Endonuclease V is free of detectable RNase, exonuclease, and endonuclease activities (except those inherent in to the enzyme) as judged by electrophoresis after incubation of 1 µg of various DNA substrates with 500-1000 U of enzyme at 37°C for 16 hours.

3. References

1. Friedberg, E.C. *et al.*, (1995) *DNA Repair and Mutagenesis,* ASM Press, Washington D.C., **164**.
2. Schrock, R.D. and Lloyd, R.S. (1993) *J. Biol. Chem.* **268**, 880.

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