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Endonuclease IV, *E. coli*

Cat. No. E70100

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1. Introduction

Endonuclease IV from *Escherichia coli* is a 32-kD metalloprotein that aids in the repair of damaged DNA. The enzyme functions both as an apurinic/apyrimidinic nuclease[1] and as a 3′-terminal diesterase.[1-4] The latter activity is important in the repair of DNA strand breaks generated by oxidation (e.g., H_2O_2) and ionic radiation.[2,3] In such events, the strand breaks terminate with either a 3′ phosphate or a deoxyribose fragment, preventing repair by DNA polymerase I or DNA ligase. Endonuclease IV removes the blocking groups, leaving a free 3′-hydroxyl terminus. Although a metalloenzyme, Endonuclease IV is active in the presence of EDTA provided a suitable substrate is present.[4] In addition, the enzyme does not have detectable associated exonuclease or DNA *N*-glycosylase activitites.[1]

Endonuclease IV from *E. coli* is available in a 100-Unit size at a concentration of 2 U/µl.

2. Product Specifications

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

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

Unit Definition: One unit of Endonuclease IV converts 1 µg of a partially depurinated, covalently closed supercoiled plasmid DNA to relaxed closed circular form (Form II) in 30 minutes at 37°C.

Note: *Partially depurinated plasmid is generated by incubating supercoiled plasmid DNA in 100 mM NaCl and 2.5 mM potassium acetate (pH 4.8) at 70°C for 20 minutes.*

Quality Control: The enzyme is function-tested in a reaction containing 50 mM Tris-acetate (pH 7.5), 50 mM KCl, 1 mM EDTA, 1 µg partially depurinated pUC19 DNA, and varying amounts of enzyme for 30 minutes at 37°C.

Contaminating Activity Assays: Endonuclease IV is free of detectable exo- and endonuclease and RNase activities except for the inherent endonucleolytic properties of the enzyme.

3. Related Products

The following products are also available:

– T4 Endonuclease V
– HK™-UNG Thermolabile Uracil N-Glycosylase

4. References

1. Ljungquist, S. (1977) *J. Biol. Chem.* **252**, 2808.
2. Demple, B. *et al.*, (1986) *Proc. Natl. Acad. Sci. USA* **83**, 7731.
3. Levin, J.D. *et al.*, (1988) *J. Biol. Chem.* **263**, 8066.
4. Levin, J.D. *et al.*, (1991) *J. Biol. Chem.* **266**, 22893.

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