Thermo SCIENTIFIC

PRODUCT INFORMATION

Endonuclease V, *T.maritima*

Pub. No. MAN0011995
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#EN0141

Lot: _ **Expiry Date: _**

Components	#EN0141 250 U
Concentration	5 U/µL
10X Reaction Buffer	0.3 mL

Store at -20 °C

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

Description

Endonuclease V, *T.maritima* (Endo V), is a 3'-endonuclease involved in DNA repair which initiates removal of deaminated bases from damaged DNA, including uracil, hypoxanthine and xanthine. Endonuclease V is also active toward abasic sites and urea sites, base pair mismatches, flap and pseudo Y structures, and small insertions/deletions in DNA molecules. The cleavage site generated by Endonuclease V is at the second phosphodiester bond 3' to a lesion. When the enzyme is in excess, the primary nicked products experience a second nicking event on the complementary strand, leading to a doublestranded break. At low concentrations, however, Endonuclease V first nicks a DNA strand at the lesions located closer to the 5'-end of DNA molecule. Single-stranded DNA is cleaved with much lower efficiency. Mg^{2+} or Mn^{2+} ions are required for enzyme activity (1, 2, 3).

Applications

- High-throughput methods for mutation research (3, 4).
- Studies in mutagenesis and DNA repair.
- Mismatch cleavage.
- Genotyping.

Source

E.coli with a cloned *nfi* gene of *Thermotoga maritima*.

Molecular Weight

25 kDa monomer.

Definition of Activity Unit

One unit of the enzyme relaxes one µg of depurinated, supercoiled plasmid DNA in 30 min at 65 °C.
Enzyme activity is assayed in the following mixture: 25 mM HEPES-NaOH (pH 7.4), 5 mM $MgCl_2$, 5 mM DTT, 2% (v/v) glycerol, 2 µg of depurinated pUC19 DNA.

Storage Buffer

The enzyme is supplied in: 20 mM HEPES-NaOH (pH 7.4), 5 mM DTT, 50 mM NaCl, 0.1% (v/v) Triton X-100 and 50% (v/v) glycerol.

10X Reaction Buffer

250 mM HEPES-NaOH (pH 7.4 at 25 °C), 50 mM $MgCl_2$, 50 mM DTT, 20% (v/v) glycerol.

Inhibition and Inactivation

- Inhibitors: no specific inhibitors have been described.
- Inactivated by heating in boiling water bath for 10 min, preferably in the presence of EDTA.

CERTIFICATE OF ANALYSIS

Labeled Oligonucleotide (LO) Assay

No detectable degradation of single-stranded or double-stranded radiolabeled oligonucleotides after incubation with Endonuclease V.

Ribonuclease Assay

No detectable degradation was observed after incubation of [3H]-RNA with Endonuclease V.

Quality authorized by:  Jurgita Zilinskiene

References

1. Huang, J., et al., Multiple cleavage activities of endonuclease V from *Thermotoga maritima*: recognition and strand nicking mechanism, Biochemistry, 40(30), 8738-8748, 2001.
2. Hitchcock, T.M., et al., Cleavage of deoxyoxanosine-containing oligodeoxyribonucleotides by bacterial endonuclease V, Nucleic Acids Res., 32(13), 4071-4080, 2004.
3. Pincas, H., et al., High sensitivity EndoV mutation scanning through real-time ligase proofreading, Nucleic Acids Res, 32, 148, 2004.
4. Huang, J., et al., An endonuclease/ligase based mutation scanning method especially suited for analysis of neoplastic tissue, Oncogene, 21, 1909-1921, 2002.

PRODUCT USE LIMITATION

This product is developed, designed and sold exclusively *for research purposes and in vitro use only.* The product was not tested for use in diagnostics or for drug development, nor is it suitable for administration to humans or animals.
Please refer to www.thermofisher.com for Material Safety Data Sheet of the product.