

TREVIGEN® Product Data

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Human Apurinic/Apyrimidinic Endonuclease (hAPE)

Catalog #:	4110-01K-EB		
Contents:	4110-01K-01 3900-500-07	hAPE 10X REC™ Buffer 7	Size: 1000 Units 1 ml

Description: Human APE (also referred to as Ref-1) is a 37 kDa multifunctional enzyme. It is involved in both DNA repair and in facilitating the redox state for a number of DNA binding proteins.

Source: Purified from *E. coli* containing a recombinant plasmid harboring the hAPE gene.

Unit Definition: One unit is the amount of enzyme required to cleave an AP site oligonucleotide within an oligonucleotide duplex at the rate of 1 pmol/hour at 37 °C.

Specificity: Human APE is responsible for the repair of apurinic/aprimidinic (AP) sites in the DNA base excision repair (BER) pathway. It catalyzes the cleavage of the phosphodiester bond immediately 5' to an AP site. APE also functions as a redox factor facilitating the DNA-binding capability of JUN, FOS, AP-1, NF-κB, and other transcription factors. The APE-related DNA repair activity has been demonstrated to be inactivated by phosphorylation, suggesting that this might be the mechanism by which the enzyme switches between the two functions.

Assay Conditions: 1X REC Buffer 7 (10 mM HEPES-KOH (pH 7.4), 100 mM KCl, 10 mM MgCl₂), 4 pmole of a ³²P-labeled oligonucleotide containing an AP site, annealed to a complementary oligonucleotide, and serial dilutions of enzyme in a 20 µl reaction volume are incubated for 1 hour at 37 °C. The cleavage products are resolved by 20% denaturing polyacrylamide gel electrophoresis. Bands are cut out and radioactivity counted to quantify the cleavage products.

Storage Buffer: 10 mM HEPES-KOH (pH 7.4), 100 mM KCl, 0.1 mg/ml BSA, 50% (v/v) glycerol.

Storage Conditions: Store at -20 °C in a manual defrost freezer. For long-term storage, freeze at -80 °C in working aliquots. Avoid repeated freeze-thawing.

References:

1. Hansen, W.K., W.A. Deutsch, A. Yacoub, Y. Xu, D.A. Williams, and M.R. Kelley. 1998. Creation of a fully functional human chimeric DNA repair protein. *J Biol Chem* 273:756-762.
2. Yacoub, A., M.R. Kelley, and W.A. Deutsch. 1997. The DNA repair activity of human redox/repair protein APE/Ref-1 is inactivated by phosphorylation. *Cancer Res* 57:5457-5459.
3. Duguid, J.R., J.N. Eble, T.M. Wilson, and M.R. Kelley. 1995. Differential cellular and subcellular expression of the human multifunctional apurinic/aprimidinic endonuclease (APE/ref-1) DNA repair enzyme. *Cancer Res* 55:6097-6102.
4. Lieber, M.R. 2008. The Mechanism of Human Nonhomologous DNA End Joining. *J Biol Chem* 283:1 – 5.

TREVIGEN®

8405 Helgerman Court, Gaithersburg, MD 20877 USA

Voice: 1-800-TREVIGEN (1-800-873-8443) • 301-216-2800

Fax: 301-560-4973 • e-mail: info@trevigen.com • www.trevigen.com

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