

Technical Bulletin

Fpg Protein (Formamidopyrimidine DNA glycosylase, Fapy DNA glycosylase, MutM)

E. coli, Recombinant

F3174

Storage Temperature –20 °C

Product Description

This product is an *E. coli* recombinant protein expressed in *E. coli*.

Fpg Protein (EC 3.2.2.23) is a key enzyme in the base excision repair pathway (BER) and a member of the DNA repair process¹. It catalyses the excision of a broad spectrum of modified purines such as formamidopyrimidine (Fapy) and of 8-oxo-guanine (8-oxo-G), which is a major spontaneous oxidative DNA product.

Fpg Protein possess both DNA glycosylase activity, which removes the mutated base and (apurinic/apyrimidinic) AP-lyase activity that releases the ribose, leaving both 5'-phosphoryl and 3'-phosphoryl groups in the DNA². Several analytical methods based on Fpg Protein activity *in vitro* were developed for detection and quantitation of oxidative damage to DNA mainly for FapyA, FapyG and 8-oxo-G.^{3,4}

The *fpg* gene was cloned by Boiteux, et al.⁵ The protein predicted from the nucleotide sequence composed of 269 amino acids with a molecular weight of 30.2 kDa. Fpg Protein possesses a zinc finger motif at its C-terminal (one zinc atom per molecule). This region is responsible for the DNA binding and AP-lyase activity of Fpg enzyme.⁶ In addition, its N-terminal proline-1 was found to act as a nucleophile to produce a Schiff base intermediate, which is essential for the enzyme action.²

Reagents

Vial content

A solution in 50% glycerol containing 50 mM K-HEPES, pH 7.5, 1 mM DTT, 1 mM EDTA, 200 mM NaCl.

Purity

> 90% by SDS-PAGE.

Specific activity

> 20,000 units per mg protein.

Unit definition

The amount of protein that cleaves 50% of 0.5 pmol double strand DNA oligomer substrate (8-oxo guanine mutated) in 10 min at 25 °C.

Storage/Stability

Store at –20 °C.

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

References

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4. Sattler U., et al., Arch Biochem. Biophys., **376**, 26 (2000).
5. a. Boiteux, S., et al., EMBO J., **6**, 3177 (1987)
b .Boiteux, S. et al., J. Biol. Chem., **265**, 3916 (1990).
6. Tchou, J., et al., J. Biol. Chem., **268**, 26738 (1993).

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