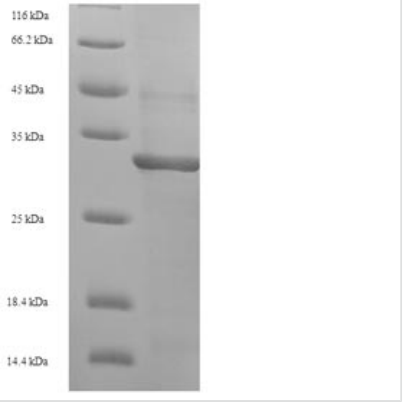
Recombinant Escherichia coli 8-oxo-dGTP diphosphatase (mutT)

Product Code	CSB-EP357355ENV
Relevance	Involved in the GO system responsible for removing an oxidatively damaged form of guanine (7,8-dihydro-8-oxoguanine) from DNA and the nucleotide pool. 8-oxo-dGTP is inserted opposite dA and dC residues of template DNA with almost equal efficiency thus leading to A.T to G.C transversions. MutT specifically degrades 8-oxo-dGTP to the monophosphate.
Abbreviation	Recombinant E.coli mutT protein
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P08337
Alias	7,8-dihydro-8-oxoguanine-triphosphatase Mutator protein MutT dGTP pyrophosphohydrolase
Product Type	Recombinant Protein
Immunogen Species	Escherichia coli (strain K12)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MKKLQIAVGIIRNENNEIFITRRAADAHMANKLEFPGGKIEMGETPEQAVVREL QEEVGITPQHFSLFEKLEYEFPDRHITLWFWLVERWEGEPWGKEGQPGEWM SLVGLNADDFPPANEPVIAKLKRL
Research Area	Others
Source	E.coli
Target Names	mutT
Protein Names	Recommended name: 8-oxo-dGTP diphosphatase Short name= 8-oxo-dGTPase EC= 3.6.1.55 Alternative name(s): 7,8-dihydro-8-oxoguanine-triphosphatase Mutator protein MutT dGTP pyrophosphohydrolase
Expression Region	1-129aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-SUMO-tagged
Mol. Weight	30.9kDa
Protein Length	Full Length
Image	



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

The Recombinant E.coli K12 mutT protein is a protein encoded by recombinant DNA that was cloned in an expression vector that supported the expression of mutT gene. This recombinant mutT protein was expressed in the host. The expression region is 1-129aa of the E.coli K12 mutT. In the production, the expression vector contains N-terminal 6xHis-SUMO tag. Every production step was performed with a strict QC system. The purity of this protein is 90%+ determined by SDS-PAGE.

The MutT protein in Escherichia coli removes 8-oxo-deoxyguanosine triphosphate (8-oxo-dGTP) and 8-oxo-guanosine triphosphate (8-oxo-GTP) from the nucleotide pools precluding incorporation into DNA and RNA. 8-oxo-dGTP is a potent mutagenic nucleotide that is readily incorporated into DNA opposite template C or A, with a preference for template A. Therefore, by cleaning the 8-oxo-dGTP pool, MutT reduces spontaneous transversion mutations ~1000-fold. In addition, MutT can also act on 8-oxo-guanosine triphosphate (8-oxo-GTP) and convert it to 8-oxo-GMP averting mutagenic nucleotide incorporation into RNA. mutT mutants are known to exhibit phenotypes independent of DNA mutational effects, which have been attributed to a decrease in transcription fidelity. The persistence of oxidized ribonucleotides in the available nucleotide pool and the subsequent incorporation of 8-oxo-GTP into mRNA, causing T to G transversions in the nascent transcript, was assumed to be the mechanism for RNA errors and these phenotypes. It was suggested that the absence of MutT can increase the readthrough of a stop codon mutation through 8-oxo-GTP incorporation generating a 30-fold increase in functional protein levels in mutT cultures compared to wild-type cultures. Such RNA infidelity in mutT strains may account for the accumulation of misfolded proteins and the observed cytotoxicity of aminoglycoside antibiotics. mutT phenotypes, such as protein mistranslation or antibiotic sensitivity, that have been attributed to 8-oxo-GTP require other explanations than simply 8-oxo-GTP misincorporation into mRNA.

Reconstitution

We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.

Shelf Life

The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself.

Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.