

DNA (cytosine-5) methyltransferase (mouse), Dnmt1 (Cartagena Protocol)

10-201 300 units (conc.)

DNA methylation is significant for epigenetic regulation of gene expression, X chromosome inactivation, genomic imprinting, and development. Abberant methylation patterns are associated with certain human tumors and developmental abnormalities. In vertebrates, there are two types of DNA methyltransferase activities; *de novo* and maintenance types. Two DNA methyltransferases, Dnmt3a and Dnmt3b, are responsible for the creation of methylation patterns at an early stage of embryogenesis (*de novo*-type), while **Dnmt1** is responsible for the maintenance of methylation patterns during replication. **Dnmt1** favors to methylate the hemimethylated DNA and preferentially methylates one strand of the double-stranded DNA during its processive methylation. This product, mouse **Dnmt1** deleting the N-terminal 290 amino acid residues, was expressed using a **baculovirus expression system*** and purified by Prof. S. Tajima and Dr. I. Suetake of Osaka University (ref.1).

Applications

- 1) In vitro metylation of cytosine residues in hemimethylated DNA at 5'....CG...3'. (ref. 2)
- 2) Antigen for anti-mammalian Dnmt1 antibodies.

Specification

Form: 0.5mg protein/ml in 0.2M NaCl, 10mM HEPES (pH 7.4), 50% glycerol

Definition of specific activity: 1 unit is defined as the amount of the enzyme that transfer 1 pmole of methyl group to poly dI-dC substrate during 30 minutes at 37°C

Specific activity: 17 units/ul

Storage: Store at -20°C

Quality Assurance: Greater than 95% protein determined by SDS-PAGE (CBB staining) (Fig.1)

Reaction Conditions

Incubate in 1 x Dnmt1 Reaction Buffer (20mM Tris-HCl, pH7.4, 0.5 mM EDTA, 0.2 mM DTT, 5% glycerol) with 10 μ M S-adenosylmethionine (SAM) at 37°C

Reagents Supplied with Enzyme

Dnmt1 Reaction Buffer (5 x)

20mM S-adenosylmethionine (SAM) which was purified by chromatography from the commercial reagent and dissolved in H₂O

Note: SAM is very unstable. Store at -80°C and use it within 6 months.

Data Link UniProtKB/Swiss-Prot [P13864](#) (DNMT1_MOUSE)

References : This product was used in ref.1 and 2.

1. Takeshita K et al "Structural insight into maintenance methylation by mouse DNA methyltransferase 1 (Dnmt1)." PNAS 108:9055-9 (8 2011. PMID: [21518897](#)
 2. Vilkaitis G *et al* (2005) "Processive methylation of hemi-methylated CpG sites by mouse Dnmt1 DNA methyl-transferase." *J Biol Chem* 280: 64-72 PMID : [15509558](#)
- (To be continued)

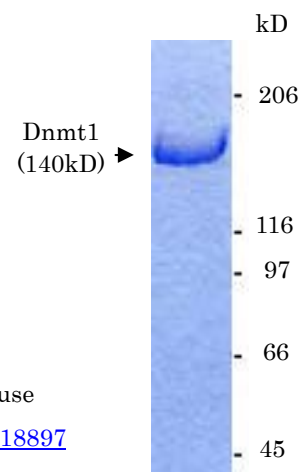


Fig.1 SDS-polyacrylamide gel electrophoresis of recombinant Dnmt1

*Since contamination of a trace of recombinant baculovirus in the purified Dnmt1 product can not be excluded, this product should be treated by the regulation based on [Cartagena Protocol on Biodiversity](#) The product or the container should be sterilized by autoclave, 121°C for 20 min for disposal.

Related Products:

#[70-201](#) anti-Dnmt1 (1-248) antibody, affinity-purified (rabbit polyclonal)

#[70-203](#) anti-Dnmt1 (1037-1386) antibody, affinity-purified (rabbit polyclonal)

#[70-205](#) anti-Dnmt3b antibody, affinity-purified (rabbit polyclonal)