

## DNA (cytosine-5) methyltransferase (mouse), Dnmt1

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.2).

### Applications

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

### Specifications

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

Specific activity : 17 units/ul

Storage: Store at -20

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

### Reagents Supplied with Enzyme

Dnmt1 Reaction Buffer (5 x)

5 mM S-adenosylmethionine (SAM) which was purified by Chromatography from the commercial reagent.

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

**Data Link** Swiss-Prot [P13864](http://www.uniprot.org/entry/P13864)

### References : This product was used in ref.1.

1. 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](https://pubmed.ncbi.nlm.nih.gov/15509558/)
2. Tajima S and Suetake I (1998) "Regulation and function of DNA methylation in vertebrates." *J Biochem.* **123**: 993-999 Review PMID: [9603984](https://pubmed.ncbi.nlm.nih.gov/9603984/) (To be continued.....)

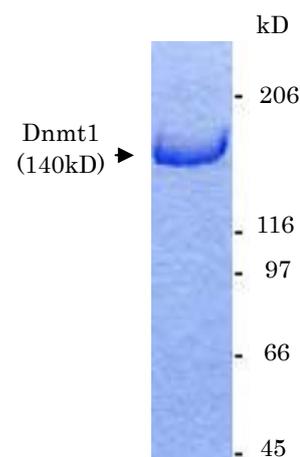


Fig.1 SDS-polyacrylamide gel electrophoresis of recombinant Dnmt1.

**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)**