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# MTH1 (m): 293T Lysate: sc-121835

## BACKGROUND

MTH1, also known as NUDT1 (nudix (nucleoside diphosphate linked moiety X)-type motif 1), is a 179 amino acid cytoplasmic protein that is a member of the nudix hydrolase family. Highly expressed in testis, thymus and proliferating blood lymphocytes, MTH1 functions as an antimutagenic that hydrolyzes oxidized purine nucleoside triphosphates to their corresponding monophosphates. Through its ability to enzymatically hydrolyze ATP and GTP to AMP and GMP, respectively, MTH1 prevents misincorporation of GTP into DNA, thus preventing A:T to C:G transversions. The cytoplasmic location of MTH1, along with its antimutagenic capabilities, suggests that it may also be involved in the sanitization of nucleotide pools for both mitochondrial and nuclear genomes. Four isoforms of MTH1 exist—three of which are formed due to alternative splicing events and one of which is formed via a single-nucleotide polymorphism. Overexpression of MTH1 is implicated in prostate and cell lung carcinomas.

## REFERENCES

1. Furuichi, M., et al. 1994. Genomic structure and chromosome location of the human mutT homologue gene MTH1 encoding 8-oxo-dGTPase for prevention of A:T to C:G transversion. *Genomics* 24: 485-490.
2. Takama, F., et al. 2000. Mutation analysis of the hMTH1 gene in sporadic human ovarian cancer. *Int. J. Oncol.* 17: 467-471.
3. Kennedy, C.H., et al. 2003. Expression of human MutT homologue (hMTH1) protein in primary non-small-cell lung carcinomas and histologically normal surrounding tissue. *Free Radic. Biol. Med.* 34: 1447-1457.
4. Kajitani, K., et al. 2006. MTH1, an oxidized purine nucleoside triphosphatase, suppresses the accumulation of oxidative damage of nucleic acids in the hippocampal microglia during kainate-induced excitotoxicity. *J. Neurosci.* 26: 1688-1698.
5. Sakai, Y., et al. 2006. The GT to GC single nucleotide polymorphism at the beginning of an alternative exon 2C of human MTH1 gene confers an amino-terminal extension that functions as a mitochondrial targeting signal. *J. Mol. Med.* 84: 660-670.
6. Nakabeppu, Y., et al. 2006. MTH1, an oxidized purine nucleoside triphosphatase, prevents the cytotoxicity and neurotoxicity of oxidized purine nucleotides. *DNA Repair* 5: 761-772.
7. Hayakawa, H. and Sekiguchi, M. 2006. Human polynucleotide phosphorylase protein in response to oxidative stress. *Biochemistry* 45: 6749-6755.
8. Kohno, T., et al. 2006. Association of polymorphisms in the MTH1 gene with small cell lung carcinoma risk. *Carcinogenesis* 27: 2448-2454.
9. Kamiya, H., et al. 2006. Recognition of nucleotide analogs containing the 7,8-dihydro-8-oxo structure by the human MTH1 protein. *J. Biochem.* 140: 843-849.

## CHROMOSOMAL LOCATION

Genetic locus: Nudt1 (mouse) mapping to 5 G2.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.

## PRODUCT

MTH1 (m): 293T Lysate represents a lysate of mouse MTH1 transfected 293T cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

## APPLICATIONS

MTH1 (m): 293T Lysate is suitable as a Western Blotting positive control for mouse reactive MTH1 antibodies. Recommended use: 10-20 µl per lane.

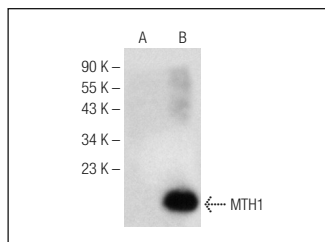
Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

MTH1 (A-11): sc-373709 is recommended as a positive control antibody for Western Blot analysis of enhanced mouse MTH1 expression in MTH1 transfected 293T cells (starting dilution 1:100, dilution range 1:100-1:1,000).

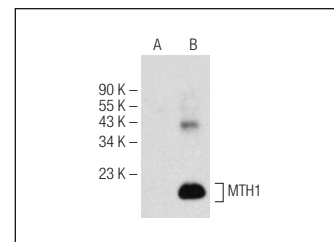
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended:  
 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048.

## DATA



MTH1 (A-11): sc-373709. Western blot analysis of MTH1 expression in non-transfected: sc-117752 (A) and mouse MTH1 transfected: sc-121835 (B) 293T whole cell lysates.



MTH1 (E-2): sc-374011. Western blot analysis of MTH1 expression in non-transfected: sc-117752 (A) and mouse MTH1 transfected: sc-121835 (B) 293T whole cell lysates.

## STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.