

cSHMT (h): 293T Lysate: sc-115685

BACKGROUND

Mammalian serine hydroxymethyltransferase (SHMT) is a tetrameric, pyridoxal phosphate (PLP)-dependent enzyme that catalyzes the reversible interconversion of serine and tetrahydrofolate to glycine and methylenetetrahydrofolate in the cytoplasm (cSHMT, SHMT1) and mitochondria (mSHMT, SHMT2). cSHMT preferentially supplies one-carbon units for thymidylate biosynthesis, depletes methylenetetrahydrofolate pools for S-adenosylmethionine (SAM) synthesis by synthesizing serine, sequesters 5-methyltetrahydrofolate and inhibits SAM synthesis. Sheep liver cytosolic recombinant SHMT (scSHMT) Lys 71, Arg 80 and Asp 89 residues influence intra-subunit ionic interactions essential for catalytic activity; Tyr 72, Asp 227 and His 356 residues in the active site interact with PLP and maintain the tetrameric structure. Human cSHMT and mSHMT genes map to 17p11.2 and 12q13.3, respectively. The cDNA for the mitochondrial enzyme encodes a mature protein of 474 residues.

REFERENCES

1. Online Mendelian Inheritance in Man, OMIM[™]. 1998. Johns Hopkins University, Baltimore, MD. MIM Number: 138450. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
2. Liu, X., et al. 2001. Lack of catalytic activity of a murine mRNA cytoplasmic serine hydroxymethyltransferase splice variant: evidence against alternative splicing as a regulatory mechanism. *Biochemistry* 40: 4932-4939.
3. Trivedi, V., et al. 2002. Crystal structure of binary and ternary complexes of serine hydroxymethyltransferase from *Bacillus stearothermophilus*: insights into the catalytic mechanism. *J. Biol. Chem.* 277: 17161-17169.
4. Herbig, K., et al. 2002. Cytoplasmic serine hydroxymethyltransferase mediates competition between folate-dependent deoxyribonucleotide and S-adenosylmethionine biosyntheses. *J. Biol. Chem.* 277: 38381-38389.
5. Jala, V.R., et al. 2003. Identification of amino acid residues, essential for maintaining the tetrameric structure of sheep liver cytosolic serine hydroxymethyltransferase, by targeted mutagenesis. *Biochem. J.* 369: 469-476.
6. LocusLink Report (LocusID: 6472). <http://www.ncbi.nlm.nih.gov/LocusLink/>

CHROMOSOMAL LOCATION

Genetic locus: SHMT1 (human) mapping to 17p11.2.

PRODUCT

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

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 for detailed protocols and support products.

APPLICATIONS

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

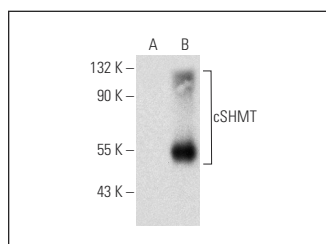
Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

cSHMT (A-2): sc-365203 is recommended as a positive control antibody for Western Blot analysis of enhanced human cSHMT expression in cSHMT 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



cSHMT (A-2): sc-365203. Western blot analysis of cSHMT expression in non-transfected: sc-117752 (A) and human cSHMT transfected: sc-115685 (B) 293T whole cell lysates.

RESEARCH USE

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