SANTA CRUZ BIOTECHNOLOGY, INC.

SMS2 (7D10): sc-293384

BACKGROUND

The SMS (sphingomyelin synthase) family is a group of integral membrane proteins that includes SMS1 (sphingomyelin synthase 1) and SMS2 (sphingomyelin synthase 2). SMS1 is located in the Golgi apparatus, whereas SMS2 resides primarily at the plasma membrane. Both are bidirectional lipid cholinephosphotransferases which convert phosphatidylcholine (PC) and ceramide to sphingomyelin (SM) and diacylglycerol (DAG) and vice versa, the direction of which depends on the relative concentrations of ceramide and diacylglycerol as phosphocholine acceptors. Therefore, sphingomyelin synthases are thought to be involved in both cell death and survival. Tricyclodecan-9-yl-xanthogenate (D609), a selective tumor cytotoxic agent, inhibits SMS activity, contributing to tumor cell cytotoxicity. SMS proteins are expressed in liver, muscle, heart, brain, stomach and kidney. SMS1 is expressed as four alternatively spliced mRNAs (SMS1α1, SMS1α2, SMS1β and SMS1γ) that translate into three different proteins (SMS1α, SMS1β and SMS1γ), which differ in their tissue distribution and function.

REFERENCES

1. Luberto, C. and Hannun, Y.A. 1998. Sphingomyelin synthase, a potential regulator of intracellular levels of ceramide and diacylglycerol during SV40 transformation. Does sphingomyelin synthase account for the putative phosphatidylcholine-specific phospholipase C? J. Biol. Chem. 273: 14550-14559.
2. Huitema, K., et al. 2004. Identification of a family of animal sphingomyelin synthases. EMBO J. 23: 33-44.
3. Yamaoka, S., et al. 2004. Expression cloning of a human cDNA restoring sphingomyelin synthesis and cell growth in sphingomyelin synthase-defective lymphoid cells. J. Biol. Chem. 279: 18688-18693.
4. Meng, A., et al. 2004. Sphingomyelin synthase as a potential target for D609-induced apoptosis in U937 human monocytic leukemia cells. Exp. Cell Res. 292: 385-392.
5. Yang, Z., et al. 2005. The mouse sphingomyelin synthase 1 (SMS1) gene is alternatively spliced to yield multiple transcripts and proteins. Gene 363: 123-132.

CHROMOSOMAL LOCATION

Genetic locus: SGMS2 (human) mapping to 4q25.

SOURCE

SMS2 (7D10) is a mouse monoclonal antibody raised against amino acids 2-80 of SMS2 of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

SMS2 (7D10) is recommended for detection of SMS2 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for SMS2 siRNA (h): sc-44429, SMS2 shRNA Plasmid (h): sc-44429-SH and SMS2 shRNA (h) Lentiviral Particles: sc-44429-V.

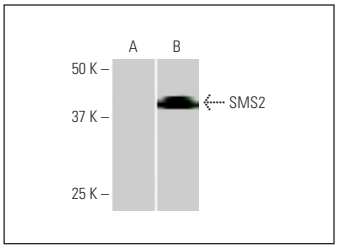
Molecular Weight of SMS2: 42 kDa.

Positive Controls: SMS2 transfected 293T whole cell lysate.

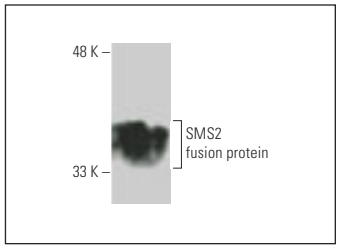
RECOMMENDED SUPPORT REAGENTS

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. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

DATA



SMS2 (7D10): sc-293384. Western blot analysis of SMS2 expression in non-transfected (**A**) and SMS2 transfected (**B**) 293T whole cell lysates.



SMS2 (7D10): sc-293384. Western blot analysis of human recombinant SMS2 fusion protein.

SELECT PRODUCT CITATIONS

1. Niekamp, P., et al. 2022. Ca^{2+}-activated sphingomyelin scrambling and turnover mediate ESCRT-independent lysosomal repair. Nat. Commun. 13: 1875.
2. Sokoya, T., et al. 2022. Pathogenic variants of sphingomyelin synthase SMS2 disrupt lipid landscapes in the secretory pathway. Elife 11: e79278.
3. Mori, Y., et al. 2022. Membrane sphingomyelin in host cells is essential for nucleocapsid penetration into the cytoplasm after hemifusion during rubella virus entry. mBio. E-published.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.