SANTA CRUZ BIOTECHNOLOGY, INC.

SphK1 (FQ-9): sc-100441

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Sphingosine kinase (SphK) is a key enzyme catalyzing the phosphorylation of sphingosine to form sphingosine 1-phosphate (SPP or S1P). SPP is a bioactive lipid that exerts multiple biological effects in a large variety of cell types, acting as either an intracellular messenger or an extracellular ligand coupled to EDG-family receptors. Competitive inhibitors of SphK block formation of SPP and selectively inhibit cellular proliferation induced by a variety of factors. One potent inhibitor of SphK1 activity is DMS (N,N-dimethylsphingosine). SPP/SphK has been implicated as a signaling pathway that regulates diverse cellular functions, including cell growth, proliferation and survival. Specifically, SphK1 is involved in the signaling pathway(s) that protects human hepatocytes from the apoptotic action of TNFα. Furthermore, SPP/SphK may play an important role in neuronal survival by regulating activation of SAPKs and caspases. SphK is widely expressed with highest levels in adult liver, kidney, heart and skeletal muscle. However, activation of SphK disengages cells from their liver-specific phenotype. SphK1 is highly homologous with SphK2, another member of a growing class of sphingolipid kinases. Expression of SphK2 mRNA exhibits a markedly different tissue distribution than that of SphK1 and appears at a later stage in embryonic development.

REFERENCES

1. Xia, P., et al. 2000. An oncogenic role of sphingosine kinase. Curr. Biol. 10: 1527-1530.
2. Liu, H., et al. 2000. Molecular cloning and functional characterization of a novel mammalian sphingosine kinase type 2 isoform. J. Biol. Chem. 275: 19513-19520.
3. Osawa, Y., et al. 2001. Sphingosine kinase regulates hepatoma cell differentiation: roles of hepatocyte nuclear factor and retinoid receptor. Biochem. Biophys. Res. Commun. 286: 673-677.
4. Edsall, L.C., et al. 2001. Sphingosine kinase expression regulates apoptosis and caspase activation in PC-12 cells. J. Neurochem. 76: 1573-1584.
5. Osawa, Y., et al. 2001. TNFα-induced sphingosine 1-phosphate inhibits apoptosis through a phosphatidylinositol 3-kinase/Akt pathway in human hepatocytes. J. Immunol. 167: 173-180.
6. Hayashi, S., et al. 2002. Identification and characterization of RPK118, a novel sphingosine kinase-1-binding protein. J. Biol. Chem. 277: 33319-33324.
7. Meacci, E., et al. 2002. Sphingosine 1-phosphate evokes calcium signals in C2C12 myoblasts via EDG-3 and EDG-5 receptors. Biochem. J. 362: 349-357.

CHROMOSOMAL LOCATION

Genetic locus: SPHK1 (human) mapping to 17q25.1.

SOURCE

SphK1 (FQ-9) is a mouse monoclonal antibody raised against recombinant SphK1 of human origin.

RESEARCH USE

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

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.

APPLICATIONS

SphK1 (FQ-9) is recommended for detection of SphK1 of human origin by Western Blotting (starting dilution to be determined by researcher, dilution range 1:100-1:5000), immunoprecipitation [1-2 µl per 100-500 µg of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution to be determined by researcher, dilution range 1:100-1:5000).

Suitable for use as control antibody for SphK1 siRNA (h): sc-44114, SphK1 shRNA Plasmid (h): sc-44114-SH and SphK1 shRNA (h) Lentiviral Particles: sc-44114-V.

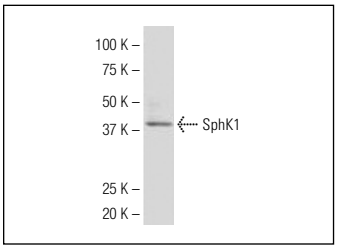
Molecular Weight of SphK1: 42 kDa.

Positive Controls: A-431 whole cell lysate: sc-2201.

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, TBS Blotto A Blocking Reagent: sc-2333 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



SphK1 (FQ-9): sc-100441. Western blot analysis of SphK1 expression in A-431 whole cell lysate.

STORAGE

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

PROTOCOLS

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

CONJUGATES

See **SphK1 (G-11): sc-365401** for SphK1 antibody conjugates, including AC, HRP, FITC, PE, Alexa Fluor® 488 and Alexa Fluor® 647.