

Recombinant Human Sphingosine Kinase 2 (N Terminal HIS Tag) Active Enzyme

EC 2.7.1, SK 2, SPK 2, SPHK2, Gene name: SPHK2 or SPHK or SP

BACKGROUND

Sphingosine Kinase 2 (Sphk2) catalyzes the phosphorylation of sphingosine to sphingosine 1-phosphate (S1P), an important signaling molecule with intra- and extracellular functions. Inside the cell S1P acts as a signaling molecule like other sphingolipid metabolites like ceramide and sphingosine. S1P has been implicated in regulating cell differentiation, calcium mobilization from intracellular stores, and apoptosis. The cell surface receptors for S1P are the EDG family of G protein-coupled receptors (S1P Receptors). These receptors couple to multiple G proteins (e.g. S1P₁ couples to Gi whereas S1P₂ and S1P₃ couple to Gq, G13 in addition to Gi) and regulate a extremely wide raange of cellular events including cell motility, survival, apoptosis, migration and cell-cell interaction. Important roles for S1P have also been reported in regulation of cardiogenesis, vascular maturation, oocyte survival, immune cell trafficking, cells of the neuronal system and bone cells. S1P levels are regulated by the activity of Sphk (Sphk1 and Sphk2).

ORDERING INFORMATION

CATALOG NUMBER

X1709E

SIZE

10 µg

STORAGE CUSTOMER

Enzyme should be stored at -20°C. Enzyme should be kept on ice when dispensing

STABILITY

Products are stable for one year from purchase when stored properly

SHIP CONDITIONS

Ship on gel ice, store at -20°C immediately upon arrival

FORMULATION

Provided in 50mM Tris (pH 8) solution containing 138 mM NaCl, 10% glycerol

CONCENTRATION

Lot specific, see vial

SOURCE

Baculovirus infected Sf9 cells

ACTIVITY

Activity lot specific. See vial for specific activity of each lot. Sphingosine kinase activity was determined using D-erythro-sphingosine and [γ -³²P]ATP as substrates. A unit of sphingosine kinase activity is defined as the amount of enzyme required to produce 1 nmole of S1P/min.

PURITY

>80% by SDS-PAGE

REFERENCES

1. Kihara A, Ikeda M, Kariya Y, Lee EY, Lee YM, Igarashi Y, Sphingosine-1-phosphate lyase is involved in the differentiation of F9 embryonal carcinoma cells to primitive endoderm. *J. Biol. Chem.* 278 (2003) 14578-14585
2. Choi OH, Kim JH, Kinet JP, Calcium mobilization via sphingosine kinase in signalling by the FcεRI antigen receptor. *Nature* 380 (1996) 634-636
3. Olivera A, Kohama T, Edsall L, Nava V, Cu villier O, Poulton S, Spiegel S, Sphingosine kinase expression increases intracellular sphingosine-1-phosphate and promotes cell growth and survival. *J. Cell Biol.* 147 (1999) 545-558
4. Chun J, Goetzl EJ, Hla T, Igarashi Y, Lynch KR, Moolenaar W, Pyne S, Tigyi G, International union of pharmacology. XXXIV. Lysophospholipid receptor nomenclature. *Pharmacol. Rev.* 54 (2002) 265-269
5. Hla T, Signaling and biological actions of sphingosine 1-phosphate. *Pharmacol. Res.* 47 (2003) 401-407
6. Gregorius K, Mouritsen S, Elsner HI, Hydrocoating: a new method for coupling biomolecules to solid

For research use only. Not for use in human diagnostics or therapeutics.

Cat. No. X1709E

ASSAY METHODS

MATERIALS

1. Assay Buffer: 20 mM Tris (pH 7.4), 20% glycerol, 1 mM mercaptoethanol, 1 mM EDTA, 1 mM sodium orthovanadate, 40 mM b-glycerophosphate, 15 mM NaF, 10 μ g/ml leupeptin, 10 μ g/ml aprotinin, 10 μ g/ml soybean trypsin inhibitor, 1 mM phenylmethylsulfonyl fluoride and 0.5 mM 4-deoxypyridoxine
2. [³²P]-ATP (10 mCi, 20 mM) containing 200 mM MgCl₂.
3. 1N HCl
4. Chloroform/methanol/HCl (100:200:1, v/v)
5. 2M KCl
6. 1-butanol/ethanol/acetic acid/water (80:20:10:20, v/v)
7. Silica gel G60 (for TLC autoradiography)

PROCEDURE

1. Mix samples (up to 40 μ g) with 10 μ l of 1 mM sphingosine (dissolved in 5% Triton X-100).
2. Mix sample solution with Assay Buffer to a total volume of 190 μ l.
3. Start reaction by addition of 10 μ l of [³²P]-ATP/MgCl₂.
4. Incubate for 5 to 15 minutes at 37°C.
5. Terminate reaction by addition of 20 μ l of 1N HCl followed by 0.8 ml of chloroform/methanol/HCl solution and vortex vigorously.
6. Add 240 μ l of chloroform and 240 μ l of 2M HCl.
7. Separate phases by centrifugation.
8. Resolve organic phase by TLC with 1-butanol/ethanol/acetic acid/water solution and visualize with autoradiography and counted.

For research use only. Not for use in human diagnostics or therapeutics.

Cat. No. X1709E