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SPHK1 Antibody (Center)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP7237C

Product Information

Application	WB, IHC-P, E
Primary Accession	Q9NYA1
Reactivity	Human, Rat, Mouse
Predicted	Bovine, Canine, Rabbit
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	42518
Antigen Region	286-315

Additional Information

Gene ID	8877
Other Names	Sphingosine kinase 1, SK 1, SPK 1, SPHK1, SPHK, SPK
Target/Specificity	This SPHK1 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 286-315 amino acids from the Central region of human SPHK1.
Dilution	WB~~1:1000 IHC-P~~1:100~500 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	SPHK1 Antibody (Center) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	SPHK1 (HGNC:11240)
Function	Catalyzes the phosphorylation of sphingosine to form sphingosine 1-phosphate (SPP), a lipid mediator with both intra- and extracellular functions. Also acts on D-erythro-sphingosine and to a lesser extent sphinganine, but not other lipids, such as D,L-threo- dihydrosphingosine, N,N-dimethylsphingosine, diacylglycerol, ceramide, or phosphatidylinositol

	(PubMed:11923095, PubMed:20577214, PubMed:23602659, PubMed:24929359, PubMed:29662056). In contrast to proapoptotic SPHK2, has a negative effect on intracellular ceramide levels, enhances cell growth and inhibits apoptosis (PubMed:16118219). Involved in the regulation of inflammatory response and neuroinflammation. Via the product sphingosine 1-phosphate, stimulates TRAF2 E3 ubiquitin ligase activity, and promotes activation of NF- kappa-B in response to TNF signaling leading to IL17 secretion (PubMed:20577214). In response to TNF and in parallel to NF-kappa-B activation, negatively regulates RANTES induction through p38 MAPK signaling pathway (PubMed:23935096). Involved in endocytic membrane trafficking induced by sphingosine, recruited to dilate endosomes, also plays a role on later stages of endosomal maturation and membrane fusion independently of its kinase activity (PubMed:24929359, PubMed:28049734). In Purkinje cells, seems to be also involved in the regulation of autophagosome-lysosome fusion upon VEGFA (PubMed:25417698).
Cellular Location	Cytoplasm. Nucleus. Cell membrane. Endosome membrane; Peripheral membrane protein. Membrane, clathrin-coated pit. Synapse {ECO:0000250|UniProtKB:Q8CI15} Note=Translocated from the cytoplasm to the plasma membrane in a CIB1- dependent manner (PubMed:19854831). Binds to membranes containing negatively charged lipids but not neutral lipids (PubMed:24929359) Recruited to endocytic membranes by sphingosine where promotes membrane fusion (By similarity). {ECO:0000250|UniProtKB:Q8CI15, ECO:0000269|PubMed:19854831, ECO:0000269|PubMed:24929359}
Tissue Location	Widely expressed with highest levels in adult liver, kidney, heart and skeletal muscle. Expressed in brain cortex (at protein level) (PubMed:29662056).

Background

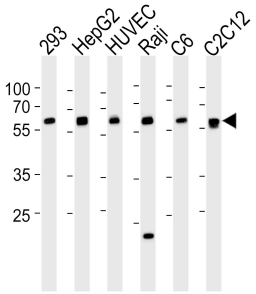
Sphingosine Kinase (SphK) catalyzes the phosphorylation of the lipid sphingosine, creating the bioactive lipid sphingosine-1-phosphate (S1P). S1P subsequently signals through cell surface G protein-coupled receptors, as well as intracellularly, to modulate cell proliferation, survival, motility and differentiation. SphK is an important signaling enzyme which is activated by diverse agents, including growth factors that signal through receptor tyrosine kinases, agents activating G protein-coupled receptors, and immunoglobulin receptors. Two SphK isotypes, SphK-1 and SphK-2, have been cloned, and both isotypes are ubiquitously expressed. SphK-1 has been shown to mediate cell growth, prevention of apoptosis, and cellular transformation, and is upregulated in a variety of human tumors. In contrast, SphK-2 increases apoptosis, and may be responsible for phosphorylating and activating the immunosuppressive drug FTY720.

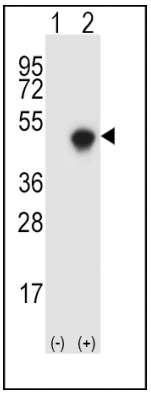
References

Ota, T., et al., Nat. Genet. 36(1):40-45 (2004). Nava, V.E., et al., FEBS Lett. 473(1):81-84 (2000). Melendez, A.J., et al., Gene 251(1):19-26 (2000). Pitson, S.M., et al., Biochem. J. 350 Pt 2, 429-441 (2000).

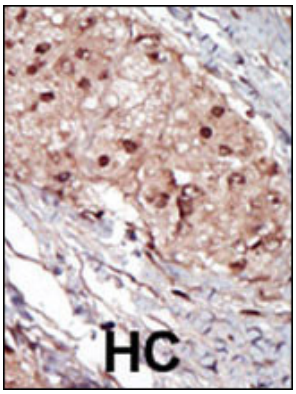
Images

Western blot analysis of lysates from 293, HepG2, HUVEC, Raji, rat C6, mouse C2C12 cell line (from left to right), using SPHK1 Antibody (R301)(Cat. #AP7237c). AP7237c was diluted at 1:1000 at each lane. A goat anti-rabbit IgG H&L(HRP) at 1:5000 dilution was used as the secondary antibody. Lysates at 35ug per lane.





Western blot analysis of SPHK1 (arrow) using rabbit polyclonal SPHK1 Antibody (R301) (Cat.#AP7237c). 293 cell lysates (2 ug/lane) either nontransfected (Lane 1) or transiently transfected (Lane 2) with the SPHK1 gene.



Formalin-fixed and paraffin-embedded human cancer tissue reacted with the primary antibody, which was peroxidase-conjugated to the secondary antibody, followed by AEC staining. This data demonstrates the use of this antibody for immunohistochemistry; clinical relevance has not been evaluated. BC = breast carcinoma; HC = hepatocarcinoma.

Citations

- Isoflurane versus sevoflurane for early brain injury and expression of sphingosine kinase 1 after experimental subarachnoid hemorrhage
- Up-regulation of sphingosine-1-phosphate receptors and sphingosine kinase 1 in the peri-ischemic area after transient middle cerebral artery occlusion in mice
- Increased Sphingosine Kinase 1 Expression Predicts Distant Metastasis and Poor Outcome in Patients With Colorectal Cancer.
- Sphingosine kinase 1 and sphingosine 1-phosphate receptor 3 are functionally upregulated on astrocytes under pro-inflammatory conditions.
- Overexpression of sphingosine kinase 1 is associated with salivary gland carcinoma progression and might be a novel predictive marker for adjuvant therapy.
- Sphingosine kinase 1 regulates the expression of proinflammatory cytokines and nitric oxide in activated microglia.
- Sphingosine-1-phosphate elicits receptor-dependent calcium signaling in retinal amacrine cells.
- Differential regulation of sphingosine kinases 1 and 2 in lung injury.
- Sphingosine kinase 1 is associated with gastric cancer progression and poor survival of patients.
- Clinical significance of sphingosine kinase-1 expression in human astrocytomas progression and overall patient survival.
- Activation of sphingosine kinase-1 mediates inhibition of vascular smooth muscle cell apoptosis by hyperglycemia.
- FHL2/SLIM3 decreases cardiomyocyte survival by inhibitory interaction with sphingosine kinase-1.
- Sphingosine kinase-1 enhances resistance to apoptosis through activation of PI3K/Akt/NF- ?B pathway in human non-small cell lung cancer.
- Isoflurane activates intestinal sphingosine kinase to protect against renal ischemia-reperfusion-induced liver and

intestine injury.
- Isoflurane activates intestinal sphingosine kinase to protect against bilateral nephrectomy-induced liver and intestine dysfunction.
- Isoflurane attenuates blood-brain barrier disruption in ipsilateral hemisphere after subarachnoid hemorrhage in mice.
- SphK1 confers resistance to apoptosis in gastric cancer cells by downregulating Bim via stimulating Akt/FoxO3a signaling.
- The apoptotic mechanism of action of the sphingosine kinase 1 selective inhibitor SKI-178 in human acute myeloid leukemia cell lines.
- Sphingosine kinase 1 mediates neuroinflammation following cerebral ischemia.
- Regulation of cellular sphingosine-1-phosphate by sphingosine kinase 1 and sphingosine-1-phopshate lyase determines chemotherapy resistance in gastroesophageal cancer.
- Inhibition of basal-like breast cancer growth by FTY720 in combination with epidermal growth factor receptor kinase blockade.
- Neuronal SphK1 acetylates COX2 and contributes to pathogenesis in a model of Alzheimer's Disease.
- Predictive and prognostic value of sphingosine kinase 1 expression in patients with invasive ductal carcinoma of the breast.
- Insulin-like growth factor receptor and sphingosine kinase are prognostic and therapeutic targets in breast cancer.
- Predictive Value of Sphingosine Kinase 1 Expression in Papillary Thyroid Carcinoma.
- Overexpression of sphingosine kinase 1 is predictive of poor prognosis in human breast cancer.
- Sphingosine kinase 2 activates autophagy and protects neurons against ischemic injury through interaction with Bcl-2 via its putative BH3 domain.
- Sphingosine kinase 1 expression enhances colon tumor growth.
- Sphingosine-1-phosphate is involved in the occlusive arteriopathy of pulmonary arterial hypertension.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.