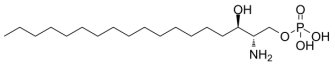
Sphinganine 1-phosphate

Cat. No.:	HY-113116
CAS No.:	19794-97-9
Molecular Formula:	$C_{18}H_{40}NO_5P$
Molecular Weight:	381.49
Target:	Endogenous Metabolite
Pathway:	Metabolic Enzyme/Protease
Storage:	Powder -20°C 3 years In solvent -80°C 6 months -20°C 1 month



BIOLOGICAL ACTIVITY

Description

Sphinganine 1-phosphate (D-erythro-Dihydrosphingosine 1-phosphate) is a polar sphingolipid metabolite that regulates cell migration, differentiation, survival and complex physiological processes[1].

IC_{50} & Target

Human Endogenous Metabolite

In Vitro

Sphinganine 1-phosphate (S1P) is a potent signaling molecule involved in cell stress responses, cancer, angiogenesis and lymphocyte trafficking. Sphinganine 1-phosphate functions primarily by activating a subgroup of the endothelial differentiation gene (EDG) family of G-protein coupled cell surface receptors. Sphinganine 1-phosphate has opposite effects in the regulation of cell metabolism. Sphinganine 1-phosphate regulates skeletal muscle differentiation and regeneration[1].

Sphinganine 1-phosphate (S1P) is involved in cancer. Sphinganine 1-phosphate regulates processes such as inflammation, which can drive tumorigenesis; neovascularization, which provides cancer cells with nutrients and oxygen; and cell growth and survival[1].

Sphinganine-1-Phosphate (1 μM) phosphorylates ERK MAPK, Akt, and HSP27 and induces HSP27 in human renal endothelial cells[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[2]

Cell Line:	Human renal endothelial cells or human kidney proximal tubule (HK-2) cells
Concentration:	1 μM
Incubation Time:	2 or 4 hours
Result:	Induced HSP27 mRNA in cultured human renal endothelial cells. Phosphorylated ERK MAPK and AKT in human renal endothelial cells in a time-dependent manner. Phosphorylated and induced HSP27.

In Vivo

Sphinganine 1-phosphate can enhance wound healing in diabetic mice[1].Sphinganine 1-phosphate provides renal and hepatic protection after liver ischemia and reperfusion (IR) injury in mice through selective activation of S1P1 receptors and pertussis toxin-sensitive G-proteins with subsequent activation of ERK and Akt. Sphinganine 1-phosphate (administered 0.1 mg/kg i.v. immediately before reperfusion and 0.2 mg/kg s.c. 2 h after reperfusion) protects against hepatic and renal injury

after liver IR[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male C57BL/6 mice (20-25 g)[2]
Dosage:	0.1 mg/kg
Administration:	Administered i.v. immediately before reperfusion and 0.2 mg/kg s.c. 2 h after reperfusion
Result:	The plasma level of alanine aminotransferase (ALT) and Creatinine (Cr) was 80±6 U/L and 0.46±0.05 mg/dL, respectively. The increases in ALT (7474±557 U/L) and Cr (0.55±0.05 mg/dL) were significantly suppressed at 24 h after reperfusion in mice treated with 0.1 mg/kg i.v. before reperfusion and 0.2 mg/kg s.c. 2 h after reperfusion.

REFERENCES

[1]. Montserrat Serra, et al. Sphingosine 1-phosphate lyase, a key regulator of sphingosine 1-phosphate signaling and function. Adv Enzyme Regul. 2010;50(1):349-62.

[2]. Sang Won Park, et al. Sphinganine-1-phosphate protects kidney and liver after hepatic ischemia and reperfusion in mice through S1P1 receptor activation. Lab Invest. 2010 Aug;90(8):1209-24.

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