Sphingosine-1-phosphate

Cat. No.: HY-108496

CAS No.: 26993-30-6

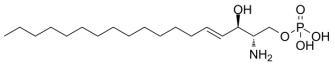
Molecular Formula: $C_{18}H_{38}NO_5P$

Molecular Weight: 379.47

Target: Endogenous Metabolite; LPL Receptor

Pathway: Metabolic Enzyme/Protease; GPCR/G Protein

Storage: -20°C, sealed storage, away from moisture
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

1M NaOH : 33.33 mg/mL (87.83 mM; Need ultrasonic)
Methanol : 3.85 mg/mL (10.15 mM; ultrasonic and warming and adjust pH to 3 with 1M HCl and heat to 60°C)
DMSO : < 1 mg/mL (ultrasonic;warming;adjust pH to 4 with HCl;heat to 80°C) (insoluble or slightly soluble)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.6353 mL	13.1763 mL	26.3525 mL
	5 mM	0.5271 mL	2.6353 mL	5.2705 mL
	10 mM	0.2635 mL	1.3176 mL	2.6353 mL

Please refer to the solubility information to select the appropriate solvent.

BIOLOGICAL ACTIVITY

Description

Sphingosine-1-phosphate (S1P) is an agonist of $S1P_{1-5}$ receptors and a ligand of GPR3, GPR6 and GPR12. Sphingosine-1-phosphate is an intracellular second messenger and mobilizes Ca^{2+} as an extracellular ligand for G protein-coupled receptors[1]. Sphingosine-1-phosphate is an important lipid mediator generated from Sphingomyelin (HY-113498) or other membrane phospholipids[2].

IC_{50} & Target

Human Endogenous Metabolite

In Vitro

S1P (1 μM) induces a significant Ca^{2+} releases in HEK293 cells under serum starvation conditions (1% FCS)[1].
In a functional Ca^{2+} assay, Suramin (HY-B0879) alone does not exert any effect on intracellular Ca^{2+} release via gpr3, gpr6 or gpr12. In contrast, S1P (1 μM) induces Ca^{2+} release of gpr3, gpr6 and gpr12 in the presence of Suramin (HY-B0879) various concentrations in transfected HEK293 cells[2].
In a functional Ca^{2+} assay,S1P (3-3000 nM) in the presence Suramin (300 μM), exhibits nanomolar EC_{50} values for gpr3 (EC_{50} =29 nM), gpr6 (EC_{50}=15 nM) and gpr12 (EC_{50}=24 nM), rat gpr3 (EC_{50}=68 nM),respectively in HEK293 cells[2].
S1P increases intracellular calcium levels in TAg-Jurkat cells expressing S1P1 and G_{qi5}, which allows for phospholipase C stimulation by G_i proteins, when used at a concentration of 200 nM, as well as in TAg-Jurkat cells expressing S1P2 and S1P3

receptors (EC_{50}s = 8 and 11 nM, respectively)[3].

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

CUSTOMER VALIDATION

- Genome Biol. 2023 Aug 31;24(1):199.
- Stem Cell Reports. 2022 Jan 28;S2213-6711(22)00051-0.
- Chem Biol Interact. 2023 May 9;110541.
- FASEB J. 2024 Jan 31;38(2):e23417.
- Metabolites. 2023 Nov 4, 13(11), 1132.

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REFERENCES

[1]. Teresa Sanchez, et al. Structural and Functional Characteristics of S1P Receptors. J Cell Biochem. 2004 Aug 1;92(5):913-22.

[2]. Kirsten Uhlenbrock, et al. Sphingosine 1-phosphate Is a Ligand of the Human gpr3, gpr6 and gpr12 Family of Constitutively Active G Protein-Coupled Receptors. Cell Signal. 2002 Nov;14(11):941-53.

[3]. S An, et al. Transduction of Intracellular Calcium Signals Through G Protein-Mediated Activation of Phospholipase C by Recombinant Sphingosine 1-phosphate Receptors. Mol Pharmacol. 1999 May;55(5):787-94

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