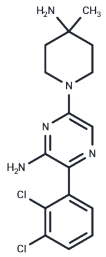
Data Sheet (Cat.No.T3564)

TargetMol

SHP099

Chemical Properties



CAS No. : 1801747-42-1

Formula: C16H19Cl2N5

Molecular Weight: 352.26

Storage: Store at low temperature
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	SHP099 is an oral, highly selective, allosteric SHP2 (PTPN11) inhibitor with an IC_{50} of 70 nM. SHP099 inhibits tumor cell proliferation and survival by stabilizing the autoinhibitory conformation of SHP2 and blocking RAS-ERK signaling. SHP099 inhibits the growth of cancer cells, such as MV4-11 and TF-1 cells (IC_{50} = 0.32 and 1.73 μM). SHP099 can be used in tumor research.
Targets(IC50)	ERK,Phosphatase
In vitro	**Methods**: RAW264.7 mouse macrophage cells were induced to differentiate into osteoclasts using RANKL (100 ng/mL). In some experiments, IL-6 (100 ng/mL) was added concurrently to simulate the post-injury inflammatory environment. Subsequently, 15 μM SHP099 was added and co-treated with the stimulant. The culture medium was changed every 2 days for a total duration of 5-6 days. **Results**: IL-6 enhanced RANKL-induced osteoclast differentiation and upregulated p-SHP2/p-TAK1 expression. SHP099 significantly reduced osteoclast numbers and downregulated mRNA and protein levels of osteoclast markers and proinflammatory cytokines. [1] **Methods**: Kmt2d KO LUSC cells were treated with SHP099 (1 μM) and/or afatinib (0.02 μM) for 7 days, followed by crystal violet staining to detect colony formation. **Results**: SHP099 significantly inhibited colony formation. [2]
In vivo	**Methods**: Bilateral proximal tibial drilling injuries were performed on 3-4-week-old C57BL/6J mice. The control group underwent no surgery. Intra-articular injection of SHP099 (30 mg/kg) was administered into the right knee as a single postoperative dose. Animals were euthanized for tissue collection 10 days post-surgery. **Results**: SHP099 treatment significantly suppressed tibial growth plate injury-induced gene upregulation, indicating its efficacy in inhibiting local osteoclastogenesis and inflammatory responses. [1] **Methods**: Kmt2d KO or Pten KO LUSC cells were injected via tail vein into B6-Albino mice. Tumor growth was monitored by MRI. When tumor volume reached 100-200 mm^3, mice were randomly assigned to receive daily SHP099 (75 mg/kg) once daily, 5 days/week. **Results**: SHP099 monotherapy significantly inhibited tumor growth.[2]

Solubility Information

Solubility	DMSO: 15.8 mg/mL (44.85 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 1 mg/mL (2.84 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.8388 mL	14.1941 mL	28.3881 mL
5 mM	0.5678 mL	2.8388 mL	5.6776 mL
10 mM	0.2839 mL	1.4194 mL	2.8388 mL
50 mM	0.0568 mL	0.2839 mL	0.5678 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Zhang Q, et al. SHP2 inhibition by SHP099 attenuates IL-6-driven osteoclastogenesis in growth plate injury. Front Immunol. 2025 Aug 15;16:1659230.

Yang N, Fan Z, Sun S, et al.Discovery of highly potent and selective KRASG12C degraders by VHL-recruiting PROTACs for the treatment of tumors with KRASG12C-Mutation.European Journal of Medicinal Chemistry.2023: 115857.

Pan Y, et al. KMT2D deficiency drives lung squamous cell carcinoma and hypersensitivity to RTK-RAS inhibition. Cancer Cell. 2023 Jan 9;41(1):88-105.e8.

Du T, Hu X, Hou Z, et al.Re-expression of epigenetically silenced PTPRR by histone acetylation sensitizes RAS-mutant lung adenocarcinoma to SHP2 inhibition.Cellular and Molecular Life Sciences.2024, 81(1): 1-14.

Hill KS, Roberts ER, Wang X, Marin E, Park TD, Son S, Ren Y, Fang B, Yoder S, Kim S, Wan L, Sarnaik AA, Koomen JM, Messina JL, Teer JK, Kim Y, Wu J, Chalfant CE, Kim M. PTPN11 plays oncogenic roles and is a therapeutic target for BRAF wild-type melanomas. Mol Cancer Res. 2018 Oct 2pii: molcanres.0777.2018. doi: 10.1158/1541-7786.MCR-18-0777. [Epub ahead of print] PubMed PMID: 30355677.

Fedele C, Ran H, Diskin B, Wei W, Jen J, Geer MJ, Araki K, Ozerdem U, Simeone DM, Miller G, Neel BG, Tang KH. SHP2 Inhibition Prevents Adaptive Resistance to MEK Inhibitors in Multiple Cancer Models. Cancer Discov. 2018 Oct;8(10): 1237-1249. doi: 10.1158/2159-8290.CD-18-044Epub 2018 Jul 2PubMed PMID: 30045908; PubMed Central PMCID: PMC6170706.