SB-3CT

Cat. No.: HY-12354

CAS No.: 292605-14-2

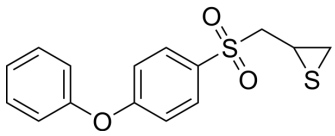
Molecular Formula: $C_{15}H_{14}O_3S_2$

Molecular Weight: 306.4

Target: MMP

Pathway: Metabolic Enzyme/Protease

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



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 50 mg/mL (163.19 mM)
* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Concentration \ Solvent \ Mass	1 mg	5 mg	10 mg
1 mM	3.2637 mL	16.3185 mL	32.6371 mL
5 mM	0.6527 mL	3.2637 mL	6.5274 mL
10 mM	0.3264 mL	1.6319 mL	3.2637 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 20% Cremophor EL >> 70% ddH2O
   Solubility: 5 mg/mL (16.32 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: 2.5 mg/mL (8.16 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (8.16 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (8.16 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

SB-3CT is a potent and competitive matrix metalloproteinase MMP-2 and MMP-9 inhibitor with K_i values of 13.9 and 600 nM, respectively. SB-3CT has high selectivity for gelatinases. SB-3CT shows blood-brain barrier permeability and has neuroprotective effects and anticancer activity[1][2][3].

IC_{50} & Target

MMP-2	MMP-9
13.9 nM (Ki)	600 nM (Ki)

In Vitro	SB-3CT has shown efficacy in an animal model of severe traumatic brain injury (TBI). SB-3CT inhibits MMP-9 with an inhibition constant K_i of 400±15 nM[1]. ?Inhibition of PC3 tumor growth by SB-3CT could also be a direct consequence of reduced extracellular matrix degradation within the bone tissue by the tumor cells themselves and/or by osteoclasts. Indeed, SB-3CT treatment is associated with a reduced osteolytic response, indicating that SB-3CT helps to preserve bone integrity[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	SB-3CT (i.p.; 50 mg/kg; every other day; five weeks) inhibits intraosseous growth of human PC3 cells within the marrow of human fetal femur fragments previously implanted in SCID mice[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Five-week-old male C.B.-17.SCID mice[3]
Dosage:	50 mg/kg
Administration:	IP; every other day; five weeks
Result:	Inhibited intraosseous growth of human PC3 cells within the marrow of human fetal femur fragments previously implanted in SCID mice.

CUSTOMER VALIDATION

- Science. 2018 Sep 28;361(6409):eaao4227.
- Cancer Cell. 2023 Apr 10;41(4):757-775.e10.
- Cancer Lett. 2019 Jun 28;452:38-50.
- Oncogene. 2019 Apr;38(14):2565-2579.
- J Cell Biol. 2023 Nov 6;222(11):e202209114.

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REFERENCES

[1]. Lee M, et al. Water-Soluble MMP-9 Inhibitor Reduces Lesion Volume after Severe Traumatic Brain Injury. ACS Chem Neurosci. 2015 Oct 21;6(10):1658-64.

[2]. Stephen Brown, et al. Potent and Selective Mechanism-Based Inhibition of GelatinasesJ. Am. Chem. Soc.2000122286799-6800

[3]. Bonfil RD, et al. Inhibition of human prostate cancer growth, osteolysis and angiogenesis in a bone metastasis model by a novel mechanism-based selective gelatinase inhibitor. Int J Cancer. 2006, 118(11), 2721-2726.

[4]. Cui J, et al. Inhibition of MMP-9 by a selective gelatinase inhibitor protects neurovasculature from embolic focal cerebral ischemia. Mol Neurodegener. 2012, 15, 7-21.

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