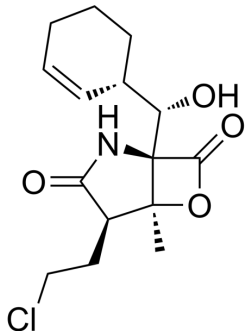
Marizomib

Cat. No.:	HY-10985
CAS No.:	437742-34-2
Molecular Formula:	$C_{15}H_{20}ClNO_4$
Molecular Weight:	313.78
Target:	Proteasome
Pathway:	Metabolic Enzyme/Protease
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 6 months -20°C 1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (318.69 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.1869 mL	15.9347 mL	31.8695 mL
5 mM	0.6374 mL	3.1869 mL	6.3739 mL
10 mM	0.3187 mL	1.5935 mL	3.1869 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (6.63 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (6.63 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Marizomib (Salinosporamide A) is a second-generation, irreversible, brain-penetrant, pan-proteasome inhibitor. Marizomib inhibits the CT-L (β5), CT-T-laspase-like (C-L, β1) and trypsin-like (T-L, β2) activities of the 20S proteasome (IC_{50}=3.5, 28, and 430 nM, respectively)[1][2][3].

IC_{50} & Target

IC50: 3.5 nM (CT-L), 28 nM (CT-T-laspase-like), 430 nM (trypsin-like)[1]

In Vitro

Marizomib (Salinosporamide A) (0.1-10000 nM; 72 hours) effectively reduces survival of D-54 and U-251 cells in a dose-dependent manner. The IC_{50}s are ⊠52 nM for U-251 and ⊠20 nM for D-54[1].

?Marizomib (24 hours; 60 nM) induces apoptosis and caspase-3 activation in glioma cells[1].

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

Cell Proliferation Assay[1]

Cell Line:	U-251 and D-54 cells
Concentration:	0.1, 1, 10, 100, 1000, 10000 nM
Incubation Time:	72 hours
Result:	Effectively reduced survival of D-54 and U-251 cells in a dose-dependent manner.

Apoptosis Analysis[1]

Cell Line:	D-54 cells
Concentration:	60 nM
Incubation Time:	24 hours
Result:	Induces D-54 cells apoptosis.

Western Blot Analysis[1]

Cell Line:	D-54 cells
Concentration:	60 nM
Incubation Time:	24 hours
Result:	Led to increased activity of caspase-3 in a dose-dependent manner.

In Vivo

Marizomib (Salinosporamide A) (0.15 mg/kg; i.v; twice a week for three weeks) significantly decreases tumor growth, and is not associated with any toxicity[3].

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

Animal Model:	CB-17 SCID-male mice (4-6 weeks old)[3]
Dosage:	0.15 mg/kg
Administration:	i.v; twice a week for three weeks
Result:	Significantly decreased tumor growth, and was not associated with any toxicity.

CUSTOMER VALIDATION

- ACS Catal. September 8, 2021.
- J Exp Clin Cancer Res. 2022 Oct 22;41(1):311.
- Cell Death Dis. 2022 Oct 8;13(10):860.
- Biochem Pharmacol. 2022 Oct 29;206:115326.
- Int J Mol Sci. 2022, 23(5), 2655.

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REFERENCES

[1]. Di K, et al. Marizomib activity as a single agent in malignant gliomas: ability to cross the blood-brainbarrier. Neuro Oncol. 2016 Jun;18(6):840-8.

[2]. Kale AJ, et al. Molecular mechanisms of acquired proteasome inhibitor resistance. J Med Chem. 2012 Dec 13;55(23):10317-27.

[3]. Singh AV, et al. Pharmacodynamic and efficacy studies of the novel proteasome inhibitor NPI-0052 (marizomib) in a human plasmacytoma xenograft murine model. Br J Haematol. 2010 May;149(4):550-9.

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