Calpeptin

Cat. No.: HY-100223

CAS No.: 117591-20-5

Molecular Formula: $C_{20}H_{30}N_2O_4$

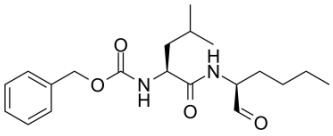
Molecular Weight: 362.46

Target: Cathepsin; Proteasome; Apoptosis

Pathway: Metabolic Enzyme/Protease; Apoptosis

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 : ≥ 155 mg/mL (427.63 mM)

H_2O : < 0.1 mg/mL (insoluble)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.7589 mL	13.7946 mL	27.5893 mL
5 mM	0.5518 mL	2.7589 mL	5.5179 mL
10 mM	0.2759 mL	1.3795 mL	2.7589 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: ≥ 2.5 mg/mL (6.90 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (6.90 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Calpeptin is a potent, cell penetrating calpain inhibitor, with an ID_{50} of 40 nM for Calpain I in human platelets[1]. Calpeptin is also an inhibitor of cathepsin K[2].

IC_{50} & Target

ID50: 40 nM (Calpain I in human platelets)[1].
Cthepsin K[2]

In Vitro

Calpeptin (0-100 nM, 24 hours) treatment suppresses the proliferation of both WI38 VA13 and IMR90 cells in a dose-dependent manner. Calpeptin (1000 pg/ml, 24 hours) inhibits IL-6-induced cell proliferation of lung fibroblasts[3].

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

Cell Proliferation Assay[3]

Cell Line:	WI38 VA13 and IMR90 cells
Concentration:	0-100 nM
Incubation Time:	24 hours
Result:	Suppressed the proliferation in a dose-dependent manner.

In Vivo

Calpeptin with Bleo (0.04 mg/mouse, i.p., 3 times weekly, 28 days) administration significantly inhibits the collagen deposition and increases of calpain activity in the NSC-125066 treated mouse lung tissues[3].

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

Animal Model:	C57BL/6 female mice (Eight-week-old)[3].
Dosage:	0.04 mg/mouse.
Administration:	Intraperitoneally three times weekly for 28 days (together with Bleo).
Result:	Inhibited the collagen deposition and increase of calpain activity in the NSC-125066 treated mouse lung tissues.

CUSTOMER VALIDATION

- J Cell Mol Med. 2020 Jul 6.
- RSC Adv. 2019, 2019, 9, 25107-25118.

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REFERENCES

[1]. Tsujinaka T, et al. Synthesis of a new cell penetrating calpain inhibitor (calpeptin). Biochem Biophys Res Commun. 1988 Jun 30;153(3):1201-8.

[2]. Catalano JG, et al. Design of small molecule ketoamide-based inhibitors of cathepsin K. Bioorg Med Chem Lett. 2004 Feb 9;14(3):719-22.

[3]. Tabata C, et al. The calpain inhibitor calpeptin prevents pulmonary fibrosis in mice. Clin Exp Immunol. 2010 Dec;162(3):560-7.

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