MDL-28170

Cat. No.: HY-18236

CAS No.: 88191-84-8

Molecular Formula: $C_{22}H_{26}N_2O_4$

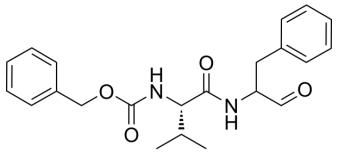
Molecular Weight: 382.45

Target: Proteasome

Pathway: Metabolic Enzyme/Protease

Storage:

Powder	-20°C	3 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 30 mg/mL (78.44 mM; Need ultrasonic and warming)

Preparing Stock Solutions	Concentration \ Solvent \ Mass	1 mg	5 mg	10 mg
	1 mM	2.6147 mL	13.0736 mL	26.1472 mL
	5 mM	0.5229 mL	2.6147 mL	5.2294 mL
	10 mM	0.2615 mL	1.3074 mL	2.6147 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: ≥ 2.25 mg/mL (5.88 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.25 mg/mL (5.88 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

MDL-28170 (Calpain Inhibitor III) is a potent, selective and membrane-permeable cysteine protease inhibitor of calpain that rapidly penetrates the blood-brain barrier following systemic administration[1][2]. MDL-28170 also block γ-secretase[4].

IC_{50} & Target

Calpain[1].

In Vitro

MDL-28170 significantly and time-dependently improves the recovery of synaptic responses in hippocampal slices following prolonged, moderate hypoxia without hypoxic depolarization[1].

?MDL-28170 dose-dependently inhibits brain cysteine proteinase activity (in vitro K_i= 0.01 μM)[2].

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

In Vivo

Treatment with MDL-28170 (50 mg/kg, i.p.) completely prevents the striatal damage in four animals in each of the two

treatment groups. The numbers of necrotic neurons are reduced by 85% and 68% in animals in which MDL-28170 injections are initiated at 0.5 and 3 h of recirculation, respectively[2].

?MDL-28170 (30 mg/kg, i.p.) reduces the functional and structural deterioration of corpus callosum following fluid percussion injury[3].

?MDL-28170 (10 mg/kg, i.p.) significantly improves nerve function parameters in diabetic rats. MDL-28170 (3 and 10 mg/kg, i.p.) improves nociceptive behavior in diabetic rats[5].

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

CUSTOMER VALIDATION

- J Extracell Vesicles. 2022 Dec;11(12):e12279.
- Emerg Microbes Infect. 2022 Dec;11(1):483-497.
- Eur J Pharmacol. 2022 Apr 21;924:174940.
- Sci Rep. 2022 Jul 16;12(1):12197.
- Neurosci Lett. 2023 Sep 23;137494.

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REFERENCES

[1]. Chen ZF, et al. Neuronal recovery after moderate hypoxia is improved by the calpain inhibitor MDL28170. Brain Res. 1997 Sep 19;769(1):188-92.

[2]. Li PA, et al. Postischemic treatment with calpain inhibitor MDL 28170 ameliorates brain damage in a gerbil model of global ischemia. Neurosci Lett. 1998 May 8;247(1):17-20.

[3]. Ai J, et al. Calpain inhibitor MDL-28170 reduces the functional and structural deterioration of corpus callosum following fluid percussion injury. J Neurotrauma. 2007 Jun;24(6):960-78.

[4]. De Strooper B, et al. A presenilin-1-dependent gamma-secretase-like protease mediates release of Notch intracellular domain. Nature. 1999 Apr 8;398(6727):518-22.

[5]. Kharatmal SB, et al. Calpain inhibitor, MDL 28170 confer electrophysiological, nociceptive and biochemical improvement in diabetic neuropathy. Neuropharmacology. 2015 Oct;97:113-21.

Caution: Product has not been fully validated for medical applications. For research use only.

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