Nicardipine

Cat. No.: HY-12515

CAS No.: 55985-32-5

Molecular Formula: $C_{26}H_{29}N_3O_6$

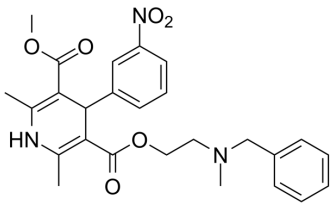
Molecular Weight: 479.53

Target: Calcium Channel

Pathway: Membrane Transporter/Ion Channel; Neuronal Signaling

Storage: 4°C, protect from light

* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (208.54 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.0854 mL	10.4269 mL	20.8538 mL
	5 mM	0.4171 mL	2.0854 mL	4.1708 mL
	10 mM	0.2085 mL	1.0427 mL	2.0854 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 (5.21 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Nicardipine (YC-93 free base) is a calcium channel blocker with an IC_{50} of 1 μM for blocking cardiac calcium channels. Nicardipine acts as an agent for chronic stable angina and for controlling blood pressure[1].

IC_{50} & Target

IC50: 1 μM (cardiac calcium channels)[1]

In Vitro

Nicardipine (0.1-10 μM; 24-48 h) reduces viability and proliferation of vascular smooth muscle cells (VSMCs) and inhibits their ability to migrate[2].

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

Cell Viability Assay[2]

Cell Line:	VSMCs were isolated from New Zealand rabbit aortic preparations
Concentration:	0.1 μM, 1 μM, 3 μM, 10 μM

Incubation Time:	24-48 hours
Result:	Treatment reduced significantly cell viability and inhibited VSMCs proliferation in the presence of 10% FBS in a dose-dependent way, from 205.4±17.5% to 176.6±17%, 160.6±5.7%, 150.4±11.2%, 61.22±7.83% after 0.1 μM, 1 μM, 3 μM, 10 μM treatment, respectively.

In Vivo

Nicardipine (0.3-10 mg/kg; p.o.) shows antihypertensive properties[3].

LD_{50}s of Nicardipine are 643 mg/kg (oral) and 557 mg/kg (oral); 18.1 mg/kg (intravenous) 25.0 mg/kg (intravenous); 735 mg/kg (subcutaneous) and 683 mg/kg (subcutaneous); 171 mg/kg (intraperitoneally) and 155 mg/kg (intraperitoneally) for male and female Sprague-Dawley rats, respectively[3].

LD_{50}s of Nicardipine are 187 mg/kg (oral) and 15.5 mg/kg (intravenous) for male Wistar rats, respectively[3].

LD_{50}s of Nicardipine are 634 mg/kg (oral) and 650 mg/kg (oral); 20.7 mg/kg (intravenous) 19.9 mg/kg (intravenous); 540 mg/kg (subcutaneous) and 710 mg/kg (subcutaneous); 144 mg/kg (intraperitoneally) and 161 mg/kg (intraperitoneally) for male and female mice, respectively[3].

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

Animal Model:	In conscious normotensive rats (NR)[3]
Dosage:	0.3-10 mg/kg
Administration:	P.o.
Result:	Induced a dose-dependent hypotensive response (maximal decrease in mean blood pressure, supine position) without any postural hypotensive response.

CUSTOMER VALIDATION

- Biosci Rep. 2019 Jul 2;39(7):BSR20190516.
- Int J Clin Exp Med. 2019;12(5):5184-5190.
- Research Square Preprint. 2023 Jul 21.

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REFERENCES

[1]. Charnet P, et al. Electrophysiological analysis of the action of nifedipine and nicardipine on myocardial fibers. Fundam Clin Pharmacol. 1987;1(6):413-31.

[2]. R Stamatiou, et al. The dihydropyridine calcium antagonist nicardipine reduces aortic smooth muscle cell viability, proliferation and migration. Cardiovascular Research, 2018 Apr,114(1):S43.

[3]. Sherrin H. Baky. Nic ardipine Hydrochloride.

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