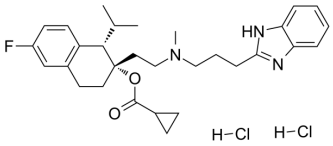
NNC 55-0396

Cat. No.:	HY-50722
CAS No.:	357400-13-6
Molecular Formula:	$C_{30}H_{40}Cl_2FN_3O_2$
Molecular Weight:	564.56
Target:	Calcium Channel
Pathway:	Membrane Transporter/Ion Channel; Neuronal Signaling
Storage:	-20°C, sealed storage, away from moisture * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (177.13 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	1.7713 mL	8.8565 mL	17.7129 mL
	5 mM	0.3543 mL	1.7713 mL	3.5426 mL
	10 mM	0.1771 mL	0.8856 mL	1.7713 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 (3.68 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (3.68 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (3.68 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

NNC 55-0396 is a highly selective T-type calcium channel blocker with an IC_{50} value of 6.8 μM for Cav3.1 T-type channels. NNC 55-0396 can be used for the research of neurological disease research[1][2].

IC_{50} & Target

T-type calcium channel

In Vitro

NNC 55-0396 (0.1-1000 μM) shows no inhibition to the HVA $Ca2^+$ currents in INS-1 cells[1].
NNC 55-0396 (1-100 μM) blocks more than 50% of the T-type $Ca2^+$ current at 8 μM in HEK 293/α1G cells[1].
NNC 55-0396 blocks T-type $Ca2^+$ current with an IC_{50} value of 6.8 μM[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo	NNC 55-0396 (20 mg/kg; i.p. once) suppresses tremor in GABAA subunit α1-null mice and harmaline mouse models[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	GABAA receptor α1 subunit null mouse model[2]
Dosage:	20 mg/kg
Administration:	Intraperitoneal injection; 20 mg/kg, once
Result:	Suppressed tremor in GABAA subunit α1-null mice.

CUSTOMER VALIDATION

- Br J Pharmacol. 2021 Jul 3.
- Int J Mol Sci. 2023 Jan 16;24(2):1771.
- Fish Physiol Biochem. 2020 Oct;46(5):1825-1831.
- J Reprod Dev. 2023 Feb 9.

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REFERENCES

[1]. Arnulfo Quesadaa, Peter H. Bui, Gregg E. Homanics et al. Comparison of mibefradil and derivative NNC 55-0396 effects on behavior, cytochrome P450 activity, and tremor in mouse models of essential tremor. European Journal of Pharmacology. 2011,659 (1): 30-36.

[2]. Hideto Miwa, Jinsoo Koh, Yoshinori Kajimoto, et al. Effects of T-type calcium channel blockers on a parkinsonian tremor model in rats. Pharmacology Biochemistry and Behavior. 2011,97(4): 656-659.

[3]. Huang L, Keyser BM, Tagmose TM, et al. NNC 55-0396 [(1S,2S)-2-(2-(N-[(3-benzimidazol-2-yl)propyl]-N-methylamino)ethyl)-6-fluoro-1,2,3,4-tetrahydro-1-isopropyl-2-naphtyl cyclopropanecarboxylate dihydrochloride]: a new selective inhibitor of T-type calcium channels. J Pharmacol Exp Ther. 2004 Apr;309(1):193-9.

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