Nepicastat hydrochloride

Cat. No.: HY-13289A

CAS No.: 170151-24-3

Molecular Formula: $C_{14}H_{16}ClF_2N_3S$

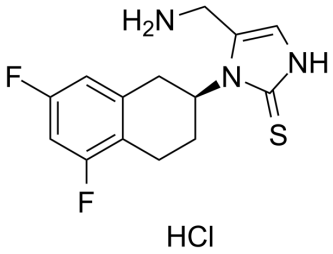
Molecular Weight: 331.81

Target: Dopamine β-hydroxylase

Pathway: Metabolic Enzyme/Protease

Storage: 4°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 : 6 mg/mL (18.08 mM; Need ultrasonic)

H_2O : 2 mg/mL (6.03 mM; Need ultrasonic and warming)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.0138 mL	15.0689 mL	30.1377 mL
5 mM	0.6028 mL	3.0138 mL	6.0275 mL
10 mM	0.3014 mL	1.5069 mL	3.0138 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: ≥ 0.6 mg/mL (1.81 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 0.6 mg/mL (1.81 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 0.6 mg/mL (1.81 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Nepicastat hydrochloride (SYN-117 hydrochloride) is a selective, potent, and orally active inhibitor of dopamine-beta-hydroxylase. Nepicastat hydrochloride produces concentration-dependent inhibition of bovine (IC_{50}=8.5 nM) and human (IC_{50}=9 nM) dopamine-beta-hydroxylase. Nepicastat hydrochloride can cross the blood-brain barrier (BBB)[1][2][3].

IC_{50} & Target

IC50: 8.5 nM (bovine dopamine-beta-hydroxylase), 9 nM (human dopamine-beta-hydroxylase)[2]

In Vivo

Nepicastat hydrochloride (SYN-117 hydrochloride) (3-100 mg/kg; p.o.; three consecutive times, 12 hours apart times) produces dose-dependent decreases in noradrenaline content, increases in dopamine content and increases in

dopamine/noradrenaline ratio in the artery (mesenteric or renal), left ventricle[3].

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

Animal Model:	15-16 weeks male spontaneously hypertensive rats (SHRs)[3]
Dosage:	3, 10, 30, 100 mg/kg
Administration:	Oral administration; three consecutive times, 12 hours apart
Result:	Produced dose-dependent decreases in noradrenaline content, increases in dopamine content and increases in dopamine/noradrenaline ratio in the artery (mesenteric or renal), left ventricle and cerebral cortex.

CUSTOMER VALIDATION

- Commun Biol. 2022 Jan 25;5(1):96.
- bioRxiv. 2021 Mar 4.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. Beliaev A, et al. Synthesis and biological evaluation of novel, peripherally selective chromanyl imidazolethione-based inhibitors of dopamine beta-hydroxylase.J Med Chem. 2006 Feb 9;49(3):1191-7.

[2]. Stanley WC, et al. Cardiovascular effects of nepicastat (RS-25560-197), a novel dopamine beta-hydroxylase inhibitor. J Cardiovasc Pharmacol. 1998 Jun;31(6):963-70.

[3]. Stanley WC, et al. Catecholamine modulatory effects of nepicastat (RS-25560-197), a novel, potent and selective inhibitor of dopamine-beta-hydroxylase. Br J Pharmacol. 1997 Aug;121(8):1803-9.

[4]. Sabbah HN, et al. Effects of dopamine beta-hydroxylase inhibition with nepicastat on the progression of left ventricular dysfunction and remodeling in dogs with chronic heart failure.

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