Pramipexole dihydrochloride hydrate

Cat. No.: HY-B0410A

CAS No.: 191217-81-9

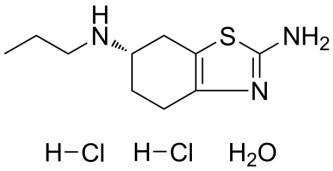
Molecular Formula: $C_{10}H_{21}Cl_2N_3OS$

Molecular Weight: 302.26

Target: Dopamine Receptor

Pathway: GPCR/G Protein; Neuronal Signaling

Storage: Store at room temperature, keep dry and cool



SOLVENT & SOLUBILITY

In Vitro

H_2O : 100 mg/mL (330.84 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	3.3084 mL	16.5420 mL	33.0841 mL
	5 mM	0.6617 mL	3.3084 mL	6.6168 mL
	10 mM	0.3308 mL	1.6542 mL	3.3084 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 100 mg/mL (330.84 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2 mg/mL (6.62 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2 mg/mL (6.62 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2 mg/mL (6.62 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Pramipexole dihydrochloride hydrate is a selective and blood-brain barrier (BBB) penetrant dopamine D2-type receptor agonist, with K_is of 2.2 nM, 3.9 nM, 0.5 nM and 1.3 nM for D2-type receptor, D_2, D_3 and D_4 receptors, respectively. Pramipexole dihydrochloride hydrate can be used for the research of Parkinson's disease (PD) and restless legs syndrome (RLS)[1][2][3].

IC_{50} & Target	D_2 Receptor	D_3 Receptor	D_4 Receptor
	3.9 nM (Ki)	0.5 nM (Ki)	1.3 nM (Ki)

In Vitro	Pramipexole dihydrochloride hydrate shows a low binding affinity for D1-type receptor, with an IC_{50} of >50,000 nM[1]. Pramipexole dihydrochloride hydrate (0.01-10 μM; 72 hours) produces dose-dependent increases of dendritic arborization and soma size[3]. Pramipexole dihydrochloride hydrate attenuates levodopa-induced toxicity in mesencephalic cultures[4]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Pramipexole dihydrochloride hydrate (0.25-1 mg/kg; i.p.) significantly reduces the infarction volume in animals[5]. Pramipexole dihydrochloride hydrate improves neurological recovery[5]. Pramipexole dihydrochloride hydrate prevents ischemic cell death via mitochondrial pathways in ischemic stroke[5]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male Wistar rats weighing 250-300 g (16-18 weeks old)[5]
Dosage:	0.25 mg/kg, 1 mg/kg
Administration:	Intraperitoneal injection
Result:	Decreased infarction volume as compared to tMCAO (transient middle cerebral artery occlusion)-only animals.

CUSTOMER VALIDATION

- Prog Neurobiol. 2023 Oct 5:102536.
- J Affect Disord. 2024 Apr 22:356:586-596.
- Neurochem Int. 2021 Jan 22;104972.
- PeerJ. 2023 Sep 11.
- J Stroke Cerebrovasc Dis. 2023 Apr 25;32(7):107142.

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REFERENCES

[1]. Kvernmo, T., et al. A review of the receptor-binding and pharmacokinetic properties of dopamine agonists. Clin Ther, 2006. 28(8): p. 1065-78.

[2]. Takashi Okura, et al. Blood-brain barrier transport of pramipexole, a dopamine D2 agonist. Life Sci. 2007 Apr 3;80(17):1564-71.

[3]. Ginetta Collo, et al. Ropinirole and Pramipexole Promote Structural Plasticity in Human iPSC-Derived Dopaminergic Neurons via BDNF and mTOR Signaling. Neural Plast. 2018; 2018: 4196961.

[4]. P M Carvey, et al. Attenuation of levodopa-induced toxicity in mesencephalic cultures by pramipexole. J Neural Transm (Vienna). 1997;104(2-3):209-28.

[5]. Syed Suhail Andrabi, et al. Pramipexole prevents ischemic cell death via mitochondrial pathways in ischemic stroke. Dis Model Mech. 2019 Aug 1; 12(8): dmm033860.

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