# Pramipexole

**Cat. No.:** HY-B0410

**CAS No.:** 104632-26-0

**Molecular Formula:** $C_{10}H_{17}N_3S$

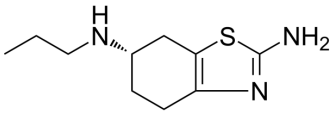
**Molecular Weight:** 211.33

**Target:** Dopamine Receptor

**Pathway:** GPCR/G Protein; Neuronal Signaling

**Storage:**

| | | |
|---|---|---|
| Powder | -20°C | 3 years |
| | 4°C | 2 years |
| In solvent | -80°C | 6 months |
| | -20°C | 1 month |



## SOLVENT & SOLUBILITY

**In Vitro**

DMSO : 100 mg/mL (473.19 mM; Need ultrasonic)

| Preparing Stock Solutions | Solvent / Mass / Concentration | 1 mg | 5 mg | 10 mg |
|---|---|---|---|---|
| | 1 mM | 4.7319 mL | 23.6597 mL | 47.3194 mL |
| | 5 mM | 0.9464 mL | 4.7319 mL | 9.4639 mL |
| | 10 mM | 0.4732 mL | 2.3660 mL | 4.7319 mL |

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

**In Vivo**

1. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: 10 mg/mL (47.32 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (11.83 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (11.83 mM); Clear solution

## BIOLOGICAL ACTIVITY

**Description**

Pramipexole is a selective and blood-brain barrier (BBB) penetrant dopamine D2-type receptor agonist, with $K_i$s 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 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 shows a low binding affinity for D1-type receptor, with an IC50 of >50,000 nM[1].<br>Pramipexole (0.01-10 μM; 72 hours) produces dose-dependent increases of dendritic arborization and soma size[3].<br>Pramipexole attenuates levodopa-induced toxicity in mesencephalic cultures[4].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| **In Vivo** | Pramipexole (0.25-1 mg/kg; i.p.) significantly reduces the infarction volume in animals[5].<br>Pramipexole improves neurological recovery[5].<br>Pramipexole prevents ischemic cell death via mitochondrial pathways in ischemic stroke[5].<br>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

- 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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