Desipramine hydrochloride

Cat. No.: HY-B1272

CAS No.: 58-28-6

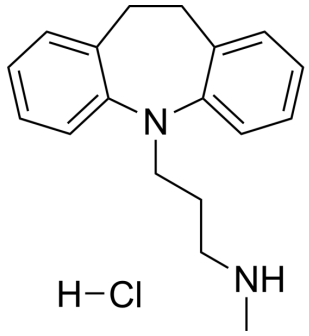
Molecular Formula: $C_{18}H_{23}ClN_2$

Molecular Weight: 302.84

Target: Dopamine Transporter; Serotonin Transporter

Pathway: Neuronal Signaling

Storage: 4°C, sealed storage, away from moisture
* In solvent : -80°C, 1 year; -20°C, 6 months (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (330.21 mM)

H_2O : 100 mg/mL (330.21 mM; Need ultrasonic)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Mass / Solvent / Concentration	1 mg	5 mg	10 mg
1 mM	3.3021 mL	16.5104 mL	33.0207 mL
5 mM	0.6604 mL	3.3021 mL	6.6041 mL
10 mM	0.3302 mL	1.6510 mL	3.3021 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 (8.26 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (8.26 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (8.26 mM); Clear solution
4. Add each solvent one by one: PBS
   Solubility: 1 mg/mL (3.30 mM); Clear solution; Need ultrasonic and warming and heat to 60°C

BIOLOGICAL ACTIVITY

Description

Desipramine hydrochloride is an inhibitor of norepinephrine transporter (NET), 5-HT transporter (SERT) and dopamine transporter (DAT) with K_is of 4, 61 and 78,720 nM, respectively.

IC_{50} & Target

Ki: 4 nM (NET), 61 nM (SERT), 78720 nM (DAT)[1]

In Vivo	Treatment of rats with Desipramine hydrochloride for 14 days reduces norepinephrine transporter (NET) expression in a dose-dependent manner, as indicated by a reduction of the specific binding of ^{3}H-nisoxetine to the NET in preparations of cerebral cortex ($F_{(3,16)}$=4.33, p<0.05) and hippocampus ($F_{(3,16)}$=4.34, p<0.05). This NET down regulation is observed 2 days after discontinuation of chronic Desipramine hydrochloride treatment, a time when plasma and brain concentrations of Desipramine hydrochloride and desmethyldesipramine are undetectable (ie below the 25 ng detection limit of the assay)[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Animal Administration [2]	Rats are anesthetized with ketamine (100 mg/kg) and xylazine (10 mg/kg) and implanted subcutaneously with osmotic minipumps preloaded with either vehicle (50% saline, 40% DMSO, and 10% ethanol) or Desipramine hydrochloride at a concentration that delivered 5, 10, or 15 mg/kg per day of the free base. Minipumps are removed, under anesthesia, 14 days later. Rats are tested for antidepressant-like behavior in the forced-swim test 2 to 8 days after pump removal and discontinuation of Desipramine hydrochloride treatment. Following the completion of the behavioral tests, rats are killed by decapitation, their brains are removed, and cerebral cortex and hippocampus are dissected for neurochemical analyses[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Sci Total Environ. 2024 Mar 1:923:171405.
- Biochim Biophys Acta Mol Basis Dis. 2023 Mar 28;1869(5):166700.
- Glia. 2022 Jul 1.
- Neural Regen Res. 2021;16:1660-70.
- Pharmaceutics. 2022, 14(8), 1523.

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REFERENCES

[1]. Torres GE, et al. Plasma membrane monoamine transporters: structure, regulation and function. Nat Rev Neurosci. 2003 Jan;4(1):13-25.

[2]. Zhao Z, et al. Norepinephrine transporter regulation mediates the long-term behavioral effects of the antidepressant desipramine. Neuropsychopharmacology. 2008 Dec;33(13):3190-200.

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