# SCH-23390 hydrochloride

**Cat. No.:** HY-19545A

**CAS No.:** 125941-87-9

**Molecular Formula:** $C_{17}H_{19}Cl_2NO$

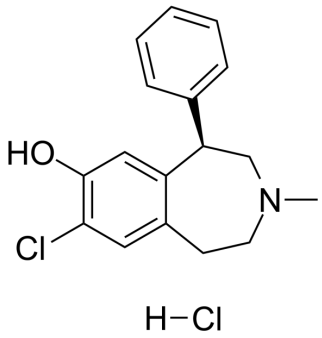
**Molecular Weight:** 324.24

**Target:** Dopamine Receptor; 5-HT Receptor; Potassium Channel

**Pathway:** GPCR/G Protein; Neuronal Signaling; Membrane Transporter/Ion Channel

**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 : ≥ 32 mg/mL (98.69 mM)

$H_2O$ : 28.57 mg/mL (88.11 mM; Need ultrasonic)

* "≥" means soluble, but saturation unknown.

**Preparing Stock Solutions**

| Solvent / Mass / Concentration | 1 mg | 5 mg | 10 mg |
|---|---|---|---|
| 1 mM | 3.0841 mL | 15.4207 mL | 30.8414 mL |
| 5 mM | 0.6168 mL | 3.0841 mL | 6.1683 mL |
| 10 mM | 0.3084 mL | 1.5421 mL | 3.0841 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 (6.42 mM); Clear solution

## BIOLOGICAL ACTIVITY

**Description**

SCH-23390 hydrochloride (R-(+)-SCH-23390 hydrochloride) is a potent and selective dopamine $D_1$-like receptor antagonist with $K_i$s of 0.2 nM and 0.3 nM for the $D_1$ and $D_5$ receptor, respectively. SCH-23390 hydrochloride is a potent and high efficacy human 5-$HT_{2C}$ receptor agonist with a $K_i$ of 9.3 nM. SCH-23390 hydrochloride also binds with high affinity to the 5-$HT_2$ and 5-$HT_{1C}$ receptors. SCH-23390 hydrochloride inhibits G protein-coupled inwardly rectifying potassium (GIRK) channels with an $IC_{50}$ of 268 nM[1][2][3].

**$IC_{50}$ & Target**

| $D_1$ Receptor | $D_5$ Receptor | 5-$HT_{2C}$ Receptor | GIRK |
|---|---|---|---|
| 0.2 nM (Ki) | 0.3 nM (Ki) | 9.3 nM (Ki) | 268 nM ($IC_{50}$) |

**In Vitro**

SCH-23390 (1 μM) treatment reverses the inhibitory effects of Isosibiricin on NLRP3 expression and the cleavages of caspase-1 and IL-1β in the LPS-induced BV-2 cells. SCH-23390 could reverse the Isosibiricin-mediated inhibition of the NLRP3/caspase-1 inflammasome pathway[4].

| | |
|---|---|
| | MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| **In Vivo** | SCH-23390 can abolish generalized seizures evoked by the chemoconvulsants. SCH-23390 has also been used in studies of other neurological disorders in which the dopamine system has been implicated, such as psychosis and Parkinson's disease. Apart from the study of neurological disorders, SCH-23390 has been extensively used as a tool in the topographical determination of brain $D_1$ receptors in rodents, nonhuman primates, and humans[1].<br>SCH-23390 is a very short-acting compound with an elimination half-life of around 25 min following administration of 0.3 mg/kg i.p. in the rat[1].<br>SCH-23390 augments dopamine-induced ductus constriction in CD-1 mouse vessels under newborn $O_2$ conditions[5].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

## PROTOCOL

| | |
|---|---|
| **Animal Administration** [5] | Rats: All rats receive acclimatization saline injections the two afternoons 1 prior to 2 their test day. At the end of the Training phase, rats (n=15 or 16 rats/group) are assigned to one 3 of three conditions (0, 1, or 10 μg/kg IP injections of SCH 23390). The day following the Training phase, rats are tested in the operant 6 conditioning chambers for saccharin cue-reactivity (saccharin seeking)[5].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

## CUSTOMER VALIDATION

- Nat Commun. 2020 Feb 18;11(1):941.
- Microbiome. 2020 Aug 20;8(1):120.
- Acta Pharmacol Sin. 2024 Apr 11.
- Int J Biol Macromol. 2023 Jul 4;125703.
- Acta Pharmacol Sin. 2020 Feb;41(2):173-180.

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## REFERENCES


[1]. Bourne JA, et al . SCH 23390: the first selective dopamine D1-like receptor antagonist. CNS Drug Rev. 2001 Winter;7(4):399-414.

[2]. Millan MJ, et al. The "selective" dopamine D1 receptor antagonist, SCH23390, is a potent and high efficacy agonist at cloned human serotonin2C receptors. Psychopharmacology (Berl). 2001 Jun;156(1):58-62.

[3]. Kuzhikandathil EV, et al. Classic D1 dopamine receptor antagonist R-(+)-7-chloro-8-hydroxy-3-methyl-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepine hydrochloride (SCH23390) directly inhibits G protein-coupledinwardly rectifying potassium channels. Mol Pharmacol. 2002 Jul;62(1):119-26.

[4]. Wang YH, et al. Isosibiricin inhibits microglial activation by targeting the dopamine D1/D2 receptor-dependent NLRP3/caspase-1 inflammasome pathway. Acta Pharmacol Sin. 2020 Feb;41(2):173-180.

[5]. Crockett SL, et al. Role of dopamine and selective dopamine receptor agonists on mouse ductus arteriosus tone and responsiveness. Pediatr Res. 2019 Dec 9.

**Caution: Product has not been fully validated for medical applications. For research use only.**

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