ML218

Cat. No.: HY-103309

CAS No.: 1346233-68-8

Molecular Formula: $C_{19}H_{26}Cl_2N_2O$

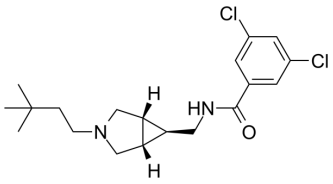
Molecular Weight: 369.33

Target: Calcium Channel

Pathway: Membrane Transporter/Ion Channel; Neuronal Signaling

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 125 mg/mL (338.45 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.7076 mL	13.5380 mL	27.0761 mL
	5 mM	0.5415 mL	2.7076 mL	5.4152 mL
	10 mM	0.2708 mL	1.3538 mL	2.7076 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: ≥ 6.25 mg/mL (16.92 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

ML218 is a potent, selective and orally active T-type Ca^{2+} channels (Cav3.1, Cav3.2, Cav3.3) inhibitor with IC_{50}s of 310 nM and 270 nM for Cav3.2 and Cav3.3, respectively. ML218 inhibits the burst activity in subthalamic nucleus (STN) neurons. ML218 has no significant inhibition of L- or N-type calcium channels, K_{ATP} or hERG potassium channels. ML218 can penetrate the blood-brain barrier[1].

IC_{50} & Target

IC50: 310 nM (Cav3.2), 270 nM (Cav3.3), and 150 nM (Ca^{2+} flux)[1]

In Vitro

In plasma protein binding studies (equilibrium dialysis), ML218 possesses good free fraction in both rat and human. Intrinsic clearance experiments in liver microsomes indicated that ML218 is highly cleared in rat (CL_{int} = 115 mL/min/kg), but low to moderately cleared in human liver microsomes (CL_{int} = 12.7 mL/min/kg)[1].

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

In Vivo

ML218 (0.03-30 mg/kg; oral administration; once; male Sprague-Dawley rats) treatment reverses cataleptic behavior in rats induced by a 0.75 mg/kg dose of haloperidol[1].

Free brain and plasma concentrations of ML218 increases in a dose proportional manner across the dose range (3 mg/kg: [plasma] = 98 nM, [brain] = 1.66 μM; 10 mg/kg: [plasma] = 282 nM, [brain] = 5.03 μM; 30 mg/kg: 1.2 μM, [brain] = 17.7 μM)[1].

Noncompartmental pharmacokinetic analysis indicates ML218 (1 mg/kg, IV) has a mean residence time (MRT) of nearly 7 h, a value which is consistent with its terminal half-life ($t_{1/2}$ = 7 h)[1].

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Animal Model:	Male Sprague-Dawley rats (275-299 g) induced by haloperidol[1]
Dosage:	0.03 mg/kg, 0.1 mg/kg, 0.3 mg/kg, 1 mg/kg, 3 mg/kg, 10 mg/kg, 30 mg/kg
Administration:	Oral administration; once
Result:	Reversed cataleptic behavior in rats induced by a 0.75 mg/kg dose of haloperidol.

REFERENCES

[1]. Xiang Z, et al. The Discovery and Characterization of ML218: A Novel, Centrally Active T-Type Calcium Channel Inhibitor with Robust Effects in STN Neurons and in a Rodent Model of Parkinson's Disease. ACS Chem Neurosci. 2011 Dec 21;2(12):730-742.

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