Product Data Sheet

Product Name: IC87201
Cat. No.: GC30847

Chemical Properties

Cas. No.	866927-10-8		
SMILES	OC1=C(Cl)C=C(Cl)C=C1CNC2=CC=C3N=NNC3=C2		
Formula	$C_{13}H_{10}Cl_2N_4O$	M.Wt	309.15
Solubility	DMSO : ≥ 28 mg/mL (90.57 mM)	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure	IC87201		

Protocol

Animal experiment:

MK-801 is dissolved in saline and administered intraperitoneally (i.p.) in a within subjects dosing paradigm in order of increasing dose (0.1, 0.2, and 0.3 mg/kg). IC87201 (1, 4 and 10 mg/kg) and ZL006 (10 mg/kg) are dissolved in a vehicle containing 3% DMSO with the remaining 97% comprised of 1:1:18 of emulphor:ethanol:0.9% NaCl. Active compounds are compared with equivalent volumes of the appropriate vehicle in each case. MK-801, IC87201, and ZL006 are administered 30 min prior to behavioral testing. All drugs are administered intraperitoneally (i.p.) in a volume of 1 mL/kg[2].

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References:

[1]. Bach A, et al. Biochemical investigations of the mechanism of action of small molecules ZL006 and IC87201 as potential inhibitors of the nNOS-PDZ/PSD-95-PDZ interactions. Sci Rep. 2015 Jul 16;5:12157.
[2]. Smith AE, et al. Source memory in rats is impaired by an NMDA receptor antagonist but not by PSD95-nNOS protein-protein interaction inhibitors. Behav Brain Res. 2016 May 15;305:23-9.
[3]. Doucet MV, et al. Small-molecule inhibitors at the PSD-95/nNOS interface protect against glutamate-induced neuronal atrophy in primary cortical neurons. Neuroscience. 2015 Aug 20;301:421-38.

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Background

IC87201 is an inhibitor of the protein-protein interaction between neuronal nitric oxide synthase (nNOS) and post-synaptic density protein 95 (PSD-95).[1] It inhibits the binding of PSD-95 to nNOS (IC_{50} = 31 ?M). IC87201 inhibits NMDA-induced cGMP production, a marker of PSD-95-dependent NOS activation, in primary rat hippocampal neurons (IC_{50} = 2.7 ?M). IC87201 (10 ?M) reduces MPP^+-induced production of reactive oxygen species (ROS), cytochrome *c* release, and apoptosis in primary rat cortical neurons.[2] *In vivo*, IC87201 decreases thermal hyperalgesia in mice (ED_{50} = 0.1 mg/kg), as well as mechanical allodynia in a rat model of neuropathic pain induced by chronic constriction injury (CCI). It also reduces immobility time in the forced swim and tail suspension tests in mice when administered at a dose of 1 mg/kg.[3]

1.Florio, S.K., Loh, C., Huang, S.M., et al.Disruption of nNOS-PSD95 protein-protein interaction inhibits acute thermal hyperalgesia and chronic mechanical allodynia in rodentsBr. J. Pharmacol.158(2)494-506(2009) 2.Hu, W., Guan, L.-S., Dang, X.-B., et al.Small-molecule inhibitors at the PSD-95/nNOS interface attenuate MPP+-induced neuronal injury through Sirt3 mediated inhibition of mitochondrial dysfunctionNeurochem. Int.7957-64(2014) 3.Doucet, M.V., Levine, H., Dev, K.K., et al.Small-molecule inhibitors at the PSD-95/nNOS interface have antidepressant-like properties in miceNeuropsychopharmacology38(8)1575-1584(2013)

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