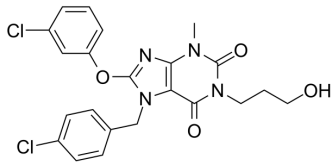
HC-070

Cat. No.:	HY-112302
CAS No.:	1628291-95-1
Molecular Formula:	$C_{22}H_{20}Cl_2N_4O_4$
Molecular Weight:	475.32
Target:	TRP 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 : ≥ 62.5 mg/mL (131.49 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.1038 mL	10.5192 mL	21.0385 mL
5 mM	0.4208 mL	2.1038 mL	4.2077 mL
10 mM	0.2104 mL	1.0519 mL	2.1038 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 (5.26 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (5.26 mM); Clear solution

BIOLOGICAL ACTIVITY

Description	HC-070 is an antagonist of TRPC4/TRPC5, with IC_{50}s of 9.3 nM and 46 nM for hTRPC5 and hTRPC4 in cells, respectively.
IC_{50} & Target	IC50: 9.3 nM (hTRPC5, cell assay), 46 nM (hTRPC4, cell assay)[1]
In Vitro	HC-070 is an antagonist of TRPC4/TRPC5, with IC_{50}s of 9.3 nM and 46 nM for hTRPC5 and hTRPC4, respectively. HC-070 weakly inhibits TRPC3 (IC_{50}, 1 μM), and is at least 400-fold selective for human TRPC4 and TRPC5-containing channels versus the other channels examined. HC-070 inhibits lanthanum-activated hTRPC5-, mTRPC5-, rTRPC5-mediated currents with IC_{50} s of 0.52 nM, 0.55 nM, and 0.32 nM in whole-cell manual patch clamp. Furthermore, HC-070 blocks M2R-activated human TRPC1/TRPC4 channels with an IC_{50} of 1.3 nM and La^{3+}- and M1R-activated human TRPC1/5 channels with IC_{50}s of 1.4 nM

	and 4.4 nM. HC-070 inhibits human TRPC5 currents activated via muscarinic type 1 (M1R) with an IC_{50} of 2.0 nM. HC-070 also suppresses hTRPC4 currents via M2R with an IC_{50} of 0.49 nM. HC-070 (20 nM) reduces CCK-4 evoked neuronal activity in the amygdala slices[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	HC-070 (1 mg/kg, p.o.) affects mice with increased evoked anxiety (CCK-4), but shows no effects in the absence of CCK-4. HC-070 (0.3, 1 or 3 mg/kg, p.o.) decreases anxiety in a standard EPM (more light/high anxiety). HC-070 (1 mg/kg) reduces the increased capacity for fear memory in mice subjected to chronic social stress on days 1-15. In addition, HC-070 (1, 3, 10 mg/kg, p.o.) causes reduction in marble burying behavior. HC-070 (0.3, 1, 3, 10 mg/kg, p.o.) also reduces time of immobility in a tail suspension test but does not impact locomotor activity in mice[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Animal Administration [1]	Mice[1] The room is illuminated with fluorescent lighting on a 12-hour light/dark cycle. The light cycle is reversed, so that the dark cycle is from 6 am-6 pm daily and studies are performed when animals are more active. Groups of male C57/BL6 mice (10 weeks old) are dosed PO with 0.5% methyl cellulose or HC-070 at 0.3, 1 or 3 mg/kg (n = 10). The positive control, 1.5 mg/kg diazepam, is administered IP 30 minutes prior to testing (n = 10). Immediately following dosing, mice are returned to their home cage. At 60 minutes post vehicle or HC-070 administration, and 30 minutes post diazepam administration, mice are placed onto the elevated plus maze, one at a time, and their session recorded for 5 minutes. Videos are manually scored for number of open arm entries by a scorer blinded to treatment. All animals that fall off the maze during the test are removed from analysis[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Sci Transl Med. 2021 May 26;13(595):eabd7702.
- Neurochem Int. 2023 Sep 4;105609.
- bioRxiv. 2020 Jul.

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REFERENCES

[1]. Just S, et al. Treatment with HC-070, a potent inhibitor of TRPC4 and TRPC5, leads to anxiolytic and antidepressant effects in mice. PLoS One. 2018 Jan 31;13(1):e0191225.

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