trans-ACPD

Cat. No.: HY-19434

CAS No.: 67684-64-4

Molecular Formula: $C_7H_{11}NO_4$

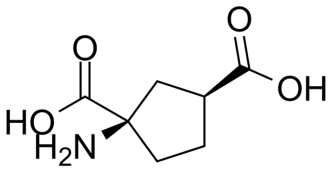
Molecular Weight: 173.17

Target: mGluR

Pathway: GPCR/G Protein; 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 : 50 mg/mL (288.73 mM; Need ultrasonic)

H_2O : 3.57 mg/mL (20.62 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	5.7747 mL	28.8734 mL	57.7467 mL
5 mM	1.1549 mL	5.7747 mL	11.5493 mL
10 mM	0.5775 mL	2.8873 mL	5.7747 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 5 mg/mL (28.87 mM); Clear solution; Need ultrasonic and warming and heat to 60°C
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (14.44 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (14.44 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

trans-ACPD, a metabotropic receptor agonist, produces calcium mobilization and an inward current in cultured cerebellar Purkinje neurons.

IC_{50} & Target

mGluR

In Vitro

Excitatory amino acid (EAA) analogues activate receptors that are coupled to the increased hydrolysis of phosphoinositides

	(PIs). In these studies, hippocampal slices are prepared from neonatal rats (6-11 days old) to characterize the effects of EAA analogues on these receptors. The concentrations of trans-ACPD required to evoke half-maximal stimulation (EC_{50} value) is 51 μM. DL-2-Amino-3-phosphonopropionate (DL-AP3) is also equipotent as an inhibitor of PI hydrolysis stimulated by ibotenate, quisqualate, and trans-ACPD (IC_{50} values are 480-850 μM)[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Intrathecal injection of NMDA, kainate, and trans-ACPD, TNF-α, or IL-1β causes significant ($p<0.001$) biting behaviour in mice compared to animals injected intrathecally with saline. In all groups, systemic pre-treatment with GM (100 mg/kg, i.p.) significantly ($p<0.001$) reduces the biting behaviour compared to mice treated with saline (10 mL/kg, i.p.). The greatest effect of GM is observed on the pro-inflammatory cytokines and NMDA, with the following inhibition percentages: TNF-α (92±7%), IL-1β (91±5%), NMDA (69±1%), and trans-ACPD (71±12%). By contrast, at the same dose, GM has no significant effect on the kainate-mediated biting response[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Animal Administration [3]	Mice[3] Male Swiss mice (25-35 g) are used. Intrathecal injections are given to fully conscious mice. Briefly, the animals are manually restrained, and a 30-gauge needle connected by a polyethylene tube to a 25 μL Hamilton gas-tight syringe is inserted through the skin and between the vertebrae into the subdural space of the L5-L6 spinal segments. Intrathecal injections (5 μL/site) are administered over a period of 5 s. Biting behaviour is defined as a single head movement directed at the flanks or hind limbs, resulting in contact of the animal's snout with the target organ. The nociceptive response is elicited by NMDA (450 pmol/site, a selective agonist of the NMDA glutamatergic ionotropic receptor), kainate (110 pmol/site, a selective agonist of the kainate subtype of glutamatergic ionotropic receptors), and trans-ACPD (50 nmol/site, a non-selective agonist of metabotropic glutamate receptors, which is active at group I and group II), TNF-α (0.1 pmol/site) and IL-1β (1 pmol/site) or saline (5 μL/site, i.t.). The amount of time the animal spent biting or licking the caudal region is taken as evidence of nociception and is evaluated following local post injections of the following agonists: NMDA (5 min), kainate (4 min), and trans-ACPD TNF-α, and IL-1β (15 min). Animals received GM (100 mg/kg, i.p.) 0.5 h before intrathecal injection of 5 μL of the drugs, while control animals received a similar volume of saline (10 mL/kg, i.p.). MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Linden DJ, et al. Trans-ACPD, a metabotropic receptor agonist, produces calcium mobilization and an inward current in cultured cerebellar Purkinje neurons. J Neurophysiol. 1994 May;71(5):1992-8.

[2]. Littman L, et al. Multiple mechanisms for inhibition of excitatory amino acid receptors coupled to phosphoinositide hydrolysis. J Neurochem. 1992 Nov;59(5):1893-904.

[3]. Córdova MM, et al. Polysaccharide glucomannan isolated from Heterodermia obscurata attenuates acute and chronic pain in mice. Carbohydr Polym. 2013 Feb 15;92(2):2058-64.

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