Gabapentin hydrochloride

Cat. No.: HY-A0057A

CAS No.: 60142-95-2

Molecular Formula: $C_9H_{18}ClNO_2$

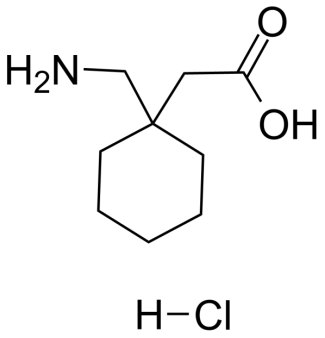
Molecular Weight: 207.7

Target: Calcium Channel

Pathway: Membrane Transporter/Ion Channel; Neuronal Signaling

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

H_2O : 50 mg/mL (240.73 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	4.8146 mL	24.0732 mL	48.1464 mL
	5 mM	0.9629 mL	4.8146 mL	9.6293 mL
	10 mM	0.4815 mL	2.4073 mL	4.8146 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 10 mg/mL (48.15 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Gabapentin hydrochloride is a potent, orally active P/Q type Ca^{2+} channel blocker. Gabapentin hydrochloride inhibits neuronal Ca^{2+} influx and reduction of neurotransmitter release. Gabapentin hydrochloride is a GABA analog that can be used to relieve neuropathic pain[1][2][3].

In Vitro

Gabapentin (0-300 μM) hydrochloride produces a concentration-dependent inhibition of the K^+-induced $[Ca^{2+}]_i$ increase in synaptosomes (IC_{50}=14 μM; maximal inhibition by 36%)[1].Gabapentin (100 μM) hydrochloride decreases the K^+-evoked release of endogenous aspartate and glutamate in neocortical slices by 16 and 18%, respectively[1].Gabapentin (0-1000 μM) hydrochloride reduces the K^+-evoked [^{3}H]-noradrenaline release in neocortical slices (IC_{50}=48 μM; maximal inhibition of 46%) but not from synaptosomes[1].

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

In Vivo

Gabapentin (5 and 10 mg/kg; i.p.; once; male BALB/c mice) hydrochloride has improving effects on spatial and emotional cognitive performance of naive mice in Morris water maze (MWM), passive avoidance (PA) and modified elevated plus maze (mEPM) tasks[2].

Gabapentin (1-100 mg/kg; i.p.; once; male mice) hydrochloride has analgesic effect and reduces writhing in a dose-dependent manner[3].

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

Animal Model:	Male BALB/c mice (35-45 g)[2]
Dosage:	5 and 10 mg/kg
Administration:	Intraperitoneal injection; once
Result:	Increased the time spent in target quadrant and decreased the distance to platform in MWM test .Decreased the transfer latency on second day in mEPM test .Prolonged retention latency in PA test .

Animal Model:	Male mice (26-30 g)[3]
Dosage:	1, 5, 10, 50 and 100 mg/kg
Administration:	Intraperitoneal injection; once
Result:	Produced 45-70% inhibition of writhing.

CUSTOMER VALIDATION

- Sci Total Environ. 2022 Jul 10;829:154437.
- Cell Rep. 2019 Dec 17;29(12):3847-3858.e5.
- ACS Pharmacol Transl Sci. 2023 Mar 6.
- iScience. 2023 Jun 27.
- J Pain. 2019 May;20(5):577-591.

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REFERENCES

[1]. Fink K, et, al. Inhibition of neuronal Ca(2+) influx by gabapentin and subsequent reduction of neurotransmitter release from rat neocortical slices. Br J Pharmacol. 2000 Jun;130(4):900-6.

[2]. Celikyurt IK, et, al. Gabapentin, A GABA analogue, enhances cognitive performance in mice. Neurosci Lett. 2011 Apr 1;492(2):124-8.

[3]. Meymandi MS, et, al. Gabapentin action and interaction on the antinociceptive effect of morphine on visceral pain in mice. Eur J Anaesthesiol. 2008 Feb;25(2):129-34.

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