Gabapentin

Cat. No.: HY-A0057

CAS No.: 60142-96-3

Molecular Formula: $C_9H_{17}NO_2$

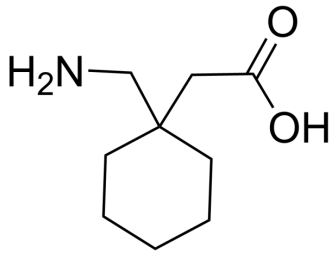
Molecular Weight: 171.24

Target: Calcium Channel

Pathway: Membrane Transporter/Ion Channel; Neuronal Signaling

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

H_2O : 50 mg/mL (291.99 mM; Need ultrasonic)
DMSO : 1 mg/mL (5.84 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	5.8398 mL	29.1988 mL	58.3976 mL
5 mM	1.1680 mL	5.8398 mL	11.6795 mL
10 mM	0.5840 mL	2.9199 mL	5.8398 mL

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

In Vivo

1. Add each solvent one by one: PBS
Solubility: 25 mg/mL (145.99 mM); Clear solution; Need ultrasonic and warming and heat to 60°C

BIOLOGICAL ACTIVITY

Description

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

In Vitro

Gabapentin (0-300 μM) 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) decreases the K^+-evoked release of endogenous aspartate and glutamate in neocortical slices by 16 and 18%, respectively[1].
?Gabapentin (0-1000 μM) 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) 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) 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.
- iScience. 2023 Jun 27.
- J Pain. 2019 May;20(5):577-591.
- J Nat Med. 2021 Sep 12.

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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.

Caution: Product has not been fully validated for medical applications. For research use only.

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