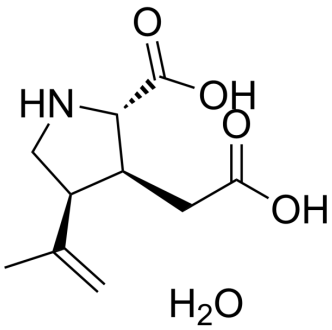
Kainic acid hydrate

Cat. No.:	HY-N2309A
CAS No.:	58002-62-3
Molecular Formula:	$C_{10}H_{17}NO_5$
Molecular Weight:	231.25
Target:	mGluR
Pathway:	GPCR/G Protein; Neuronal Signaling
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Kainic acid hydrate is a potent excitotoxic agent. Kainic acid hydrate also is an agonist for a subtype of ionotropic glutamate receptor. Kainic acid hydrate induces seizures[1][2].

In Vivo

Kainic acid hydrate (5 mg/kg; i.p.; hourly at least 3 h until status epilepticus) induces seizures in rats[1].The kainic acid induced seizures model is a good tool to study temporal lobe epilepsy. The model can be reproduced in a variety of species through either systemic, intrahippocampal or intra-amygdaloid administrations. The systemic Kainic acid administration induced model is similar with human temporal lobe epilepsy (TLE)[4][6].Kainic acid (5 nmoles, injections into the neostriatum, substantia nigra or cerebellum) shows that more than half of the compound disappeared from the injection site and the brain by 1/2 hour post injection, and less than radioactivity of 7 pmol/mg of tissue were found in other areas[3].

Induction of epilepsy model[5]

Background

Kainic acid, an analog of L-glutamate and an ionotropic KA receptor agonist, can damage hippocampal pyramidal neurons.

Specific Mmodeling Methods

Mice: C57BL/6J • male • 7 weeks old • 22 g body weight

Administration: 10 μg in 5 μL • i.c.v.

Note

(1) The right lateral brain ventricle is localized with a stereotactic instrument.

(2) After the operation, skin was sutured, and keep the mice under a warming place until they wake up.

(3) 48 hours after lateral ventricle injection, the mice are anaesthetized using Isoflurane and then sequentially intracardially perfused with saline and PFA (4%, 30 mL). Rapidly remove The mouse brain processed for paraffin embedding or frozen sections.

Modeling Record

Electroencephalogram (EEG) recording: Had higher local maximal amplitude and reduced spike frequency compared to the control group.

Histology analysis: Showed Triangulated pyknotic nuclei and cytoplasmic shrinkage in the hippocampal neuron, and induced neuronal loss.

Correlated Product(s):
Sitagliptin (HY-13749)

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

Animal Model:	8 weeks, 200-250 g male adult Wistar rats[1]
Dosage:	5 mg/kg
Administration:	I.p.; hourly at least 3 h until status epilepticus
Result:	Induced seizures in rats.

CUSTOMER VALIDATION

- Nat Neurosci. 2023 Apr;26(4):542-554.
- Nat Chem Biol. 2024 Jun 19.
- J Neuroinflammation. 2021 May 11;18(1):112.
- Biochem Biophys Res Commun. 2021 Feb 8;545:195-202.
- Brain Res. 12 August 2022, 148052.

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REFERENCES

[1]. Cincioğlu-Palabiyik M, et al. Chronic levetiracetam decreases hippocampal and testicular aromatase expression in normal but not kainic acid-induced experimental model of acute seizures in rats. Neuroreport. 2017 Sep 27;28(14):903-909.

[2]. Wang Q, et al. Kainic acid-mediated excitotoxicity as a model for neurodegeneration. Mol Neurobiol. 2005;31(1-3):3-16.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com
Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA