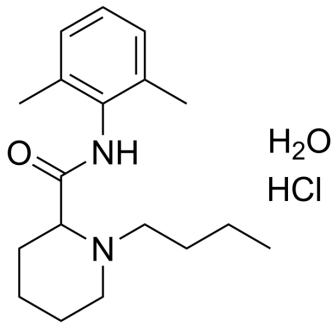
Bupivacaine hydrochloride monohydrate

Cat. No.:	HY-W415121
CAS No.:	73360-54-0
Molecular Formula:	$C_{18}H_{31}ClN_2O_2$
Molecular Weight:	342.9
Target:	iGluR; Sodium Channel; Calcium Channel; Potassium Channel
Pathway:	Membrane Transporter/Ion Channel; Neuronal Signaling
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	Bupivacaine hydrochloride monohydrate is a NMDA receptor inhibitor. Bupivacaine hydrochloride monohydrate can block sodium, L-calcium, and potassium channels. Bupivacaine hydrochloride monohydrate potently blocks SCN5A channels with the IC_{50} of 69.5 μM. Bupivacaine hydrochloride monohydrate can be used for the research of chronic pain[1][2][3].
IC_{50} & Target	NMDA Receptor
In Vitro	Bupivacaine inhibits NMDA receptor-mediated synaptic transmission in the dorsal horn of the spinal cord, an area critically involved in central sensitization[1]. Bupivacaine influences the voltage dependency of channel activation and steady-state inactivation by shifting the membrane potential of half-maximal activation/inactivation toward somewhat more negative membrane potentials. In their inactivated state, SCN5A channels are slightly sensitive toward Bupivacaine IC_{50}=2.18±0.16 μM[2]. Bupivacaine reversibly inhibits the SK2 channel in a dose-dependent manner with the IC $_{50}$ of 16.5 μM[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Nat Commun. 2023 Jun 3;14(1):3224.
- Stem Cell Res Ther. 2021 Feb 4;12(1):107.
- Sci Rep. 2022 Jan 26;12(1):1378.

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REFERENCES

[1]. Meaghan A Paganelli, et al. Actions of Bupivacaine, a widely used local anesthetic, on NMDA receptor responses. J Neurosci. 2015 Jan 14;35(2):831-42.

[2]. Alexander P Schwoerer, et al. A Comparative Analysis of Bupivacaine and Ropivacaine Effects on Human Cardiac SCN5A Channels. Anesth Analg. 2015 Jun;120(6):1226-34.

[3]. Carsten Stoetzer, et al. Inhibition of Voltage-Gated Na^+ Channels by Bupivacaine Is Enhanced by the Adjuvants Buprenorphine, Ketamine, and Clonidine. Reg Anesth Pain Med.Jul/Aug 2017;42(4):462-468.

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