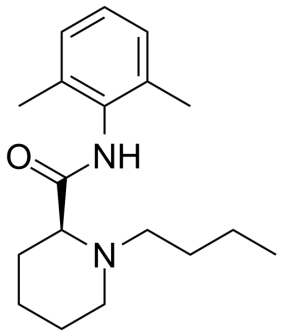
Levobupivacaine

Cat. No.:	HY-B0653
CAS No.:	27262-47-1
Molecular Formula:	$C_{18}H_{28}N_2O$
Molecular Weight:	288.43
Target:	Sodium Channel; Ferroptosis
Pathway:	Membrane Transporter/Ion Channel; Apoptosis
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Levobupivacaine ((S)-(-)-Bupivacaine) is a long-acting amide local anaesthetic. Levobupivacaine exerts anaesthetic and analgesic effects through reversible blockade of neuronal sodium channel. Levobupivacaine can inhibit impulse transmission and conduction in cardiovascular and other tissues, possessing certain cardiac and CNS toxicity. Levobupivacaine is metabolized by hepatic cytochrome P450 (CYP450) enzymes in vivo. Levobupivacaine can also induce ferroptosis by miR-489-3p/SLC7A11 signaling in gastric cancer[1][2][3].

IC_{50} & Target

Sodium channels, Ferroptosis[1][2]

In Vitro

Levobupivacaine (0-4 mM; 24 h) does not affect the viability of GES-1 cells but inhibits the viability of HGC27 and SGC7901 cells[2].

Levobupivacaine (2 mM; 24, 48 or 72 h) enhances Erastin-induced inhibitory impact on HGC27 and SGC7901 cell viabilities; induces the levels of Fe^{2+}, iron, and lipid ROS[2].

Levobupivacaine (2 mM; 24 h) enhances the expression of miR-489-3p in HGC27 and SGC7901 cells, increases the levels of Fe^{2+} and iron[2].

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

Cell Viability Assay[2]

Cell Line:	GES-1, HGC27 and SGC790
Concentration:	0, 0.5, 1, 2 and 4 mM
Incubation Time:	24 h
Result:	Did not affect the viability of normal gastric epithelial GES-1 cell lines but inhibited the viability of HGC27 and SGC7901 cells in a dose-dependent manner.

Cell Viability Assay[2]

Cell Line:	HGC27 and SGC7901 (incubated with 5 μM erastin)
Concentration:	2 mM
Incubation Time:	24, 48 or 72 h
Result:	Enhanced erastin-induced inhibitory impact on HGC27 and SGC7901 cell viabilities;

	induced the levels of Fe^{2+}, iron, and lipid ROS.

RT-PCR[2]

Cell Line:	HGC27 and SGC7901 (incubated with 5 μM erastin)
Concentration:	2 mM
Incubation Time:	24 h
Result:	Enhanced the expression of miR-489-3p in HGC27 and SGC7901 cells, increased the levels of Fe^{2+} and iron.

In Vivo

Levobupivacaine (40 μmol/kg; IP; once daily for 25 days) significantly inhibits SGC7901 cell growth, and enhances the lipid ROS accumulation[2].

Levobupivacaine (5 or 36 mg/kg; IP; single dosage) increases the latency to partial seizures and prevents the occurrence of generalized seizures at low dosage; reduces the latency to N-methyl-d-aspartate (NMDA)-induced seizures and increased seizure severity at high dosage[3].

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

Animal Model:	CD1 mice (30-35 g; induced epileptic seizures by injecting with NMDA)[3]
Dosage:	5 or 36 mg/kg
Administration:	IP; single dosage
Result:	Increased the latency to partial seizures and prevented the occurrence of generalized seizures at 5 mg/kg; reduced the latency to NMDA-induced seizures and increased seizure severity at 36 mg/kg.

Animal Model:	SCID nude mice (6-8 weeks; subcutaneously injected with 5×10^6 SGC7901 cells)[2]
Dosage:	40 μmol/kg
Administration:	IP; once daily for 25 days
Result:	Significantly inhibited SGC7901 cell growth, and enhanced the lipid ROS accumulation.

CUSTOMER VALIDATION

- Stem Cell Res Ther. 2021 Feb 4;12(1):107.

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REFERENCES

[1]. Sanford M, et al. Levobupivacaine: a review of its use in regional anaesthesia and pain management. Drugs. 2010 Apr 16;70(6):761-91.

[2]. Mao SH, et al. Levobupivacaine Induces Ferroptosis by miR-489-3p/SLC7A11 Signaling in Gastric Cancer. Front Pharmacol. 2021 Jun 9;12:681338.

[3]. Marganella C, et al. Comparative effects of levobupivacaine and racemic bupivacaine on excitotoxic neuronal death in culture and N-methyl-D-aspartate-induced seizures in mice. Eur J Pharmacol. 2005 Aug 22;518(2-3):111-5.

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