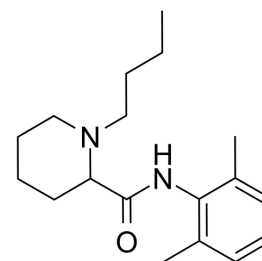


## Bupivacaine hydrochloride

<b>Cat. No.:</b>	HY-B0405A
<b>CAS No.:</b>	18010-40-7
<b>Molecular Formula:</b>	C <sub>18</sub> H <sub>29</sub> ClN <sub>2</sub> O
<b>Molecular Weight:</b>	324.89
<b>Target:</b>	Sodium Channel; iGluR; Calcium Channel; Potassium Channel
<b>Pathway:</b>	Membrane Transporter/Ion Channel; Neuronal Signaling
<b>Storage:</b>	4°C, sealed storage, away from moisture and light * In solvent : -80°C, 2 years; -20°C, 1 year (sealed storage, away from moisture and light)



HCl

### SOLVENT & SOLUBILITY

<b>In Vitro</b>	DMSO : 25 mg/mL (76.95 mM; Need ultrasonic)																					
	H <sub>2</sub> O : 12.5 mg/mL (38.47 mM; Need ultrasonic)																					
	<table border="1"> <thead> <tr> <th rowspan="2">Solvent</th> <th rowspan="2">Mass</th> <th colspan="3">Concentration</th> </tr> <tr> <th>1 mg</th> <th>5 mg</th> <th>10 mg</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Preparing Stock Solutions</td> <td>1 mM</td> <td>3.0780 mL</td> <td>15.3898 mL</td> <td>30.7796 mL</td> </tr> <tr> <td>5 mM</td> <td>0.6156 mL</td> <td>3.0780 mL</td> <td>6.1559 mL</td> </tr> <tr> <td>10 mM</td> <td>0.3078 mL</td> <td>1.5390 mL</td> <td>3.0780 mL</td> </tr> </tbody> </table>	Solvent	Mass	Concentration			1 mg	5 mg	10 mg	Preparing Stock Solutions	1 mM	3.0780 mL	15.3898 mL	30.7796 mL	5 mM	0.6156 mL	3.0780 mL	6.1559 mL	10 mM	0.3078 mL	1.5390 mL	3.0780 mL
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Please refer to the solubility information to select the appropriate solvent.																						
<b>In Vivo</b>	<ol style="list-style-type: none"> <li>Add each solvent one by one: PBS Solubility: 13 mg/mL (40.01 mM); Clear solution; Need ultrasonic</li> <li>Add each solvent one by one: 10% DMSO &gt;&gt; 40% PEG300 &gt;&gt; 5% Tween-80 &gt;&gt; 45% saline Solubility: ≥ 2.5 mg/mL (7.69 mM); Clear solution</li> <li>Add each solvent one by one: 10% DMSO &gt;&gt; 90% corn oil Solubility: ≥ 2.5 mg/mL (7.69 mM); Clear solution</li> </ol>																					

### BIOLOGICAL ACTIVITY

<b>Description</b>	Bupivacaine hydrochloride is a NMDA receptor inhibitor. Bupivacaine can block sodium, L-calcium, and potassium channels. Bupivacaine potently blocks SCN5A channels with the IC <sub>50</sub> of 69.5 μM. Bupivacaine hydrochloride can be used for the research of chronic pain <sup>[1][2][3]</sup> .
<b>IC<sub>50</sub> &amp; Target</b>	Sodium Channel <sup>[1]</sup>
<b>In Vitro</b>	Bupivacaine hydrochloride inhibits NMDA receptor-mediated synaptic transmission in the dorsal horn of the spinal cord, an

area critically involved in central sensitization<sup>[1]</sup>.

Bupivacaine hydrochloride 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 hydrochloride  $IC_{50}=2.18\pm 0.16 \mu M$ <sup>[2]</sup>.

Bupivacaine hydrochloride reversibly inhibits the SK2 channel in a dose-dependent manner with the  $IC_{50}$  of  $16.5 \mu M$ <sup>[3]</sup>.

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

#### Cell Viability Assay<sup>[3]</sup>

Cell Line:	HEK 293 cells transfected with the SK2 gene (transfected cells were named SK2 cells)
Concentration:	10, 100, 1000 $\mu M$
Incubation Time:	
Result:	The $IC_{50}$ value was $16.5 \mu M$ .

## 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]. Casati A, et, al. Bupivacaine, levobupivacaine and ropivacaine: are they clinically different? Best Pract Res Clin Anaesthesiol. 2005 Jun;19(2):247-68.

[2]. Dan J, et, al. Inhibition of gastric cancer by local anesthetic bupivacaine through multiple mechanisms independent of sodium channel blockade. Biomed Pharmacother. 2018 Jul;103:823-828.

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

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