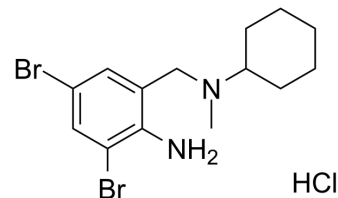


## Bromhexine hydrochloride

<b>Cat. No.:</b>	HY-B0372A
<b>CAS No.:</b>	611-75-6
<b>Molecular Formula:</b>	C <sub>14</sub> H <sub>21</sub> Br <sub>2</sub> ClN <sub>2</sub>
<b>Molecular Weight:</b>	412.59
<b>Target:</b>	Autophagy; SARS-CoV; HIV
<b>Pathway:</b>	Autophagy; Anti-infection
<b>Storage:</b>	4°C, sealed storage, away from moisture * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



### SOLVENT & SOLUBILITY

<b>In Vitro</b>	DMSO : 20 mg/mL (48.47 mM; Need ultrasonic)					
	H <sub>2</sub> O : 3.33 mg/mL (8.07 mM; Need ultrasonic)					
	<b>Preparing Stock Solutions</b>	<b>Solvent</b>	<b>Mass</b>	<b>1 mg</b>	<b>5 mg</b>	<b>10 mg</b>
		<b>Concentration</b>				
		<b>1 mM</b>		2.4237 mL	12.1186 mL	24.2371 mL
<b>5 mM</b>			0.4847 mL	2.4237 mL	4.8474 mL	
	<b>10 mM</b>		0.2424 mL	1.2119 mL	2.4237 mL	
Please refer to the solubility information to select the appropriate solvent.						
<b>In Vivo</b>	1. Add each solvent one by one: PBS Solubility: 2.22 mg/mL (5.38 mM); Clear solution; Need ultrasonic and warming and heat to 60°C					
	2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) Solubility: ≥ 2 mg/mL (4.85 mM); Clear solution					
	3. Add each solvent one by one: 10% DMSO >> 90% corn oil Solubility: ≥ 2 mg/mL (4.85 mM); Clear solution					

### BIOLOGICAL ACTIVITY

<b>Description</b>	Bromhexine hydrochloride is a potent and specific TMPRSS2 protease inhibitor with an IC <sub>50</sub> of 0.75 μM. Bromhexine hydrochloride can prevent and manage SARS-CoV-2 infection. Bromhexine hydrochloride is an autophagy agonist. Bromhexine hydrochloride is a mucolytic cough suppressant and has the potential for a range of respiratory conditions <sup>[1][2][3][4]</sup> .
<b>IC<sub>50</sub> &amp; Target</b>	HIV-1
<b>In Vitro</b>	Bromhexine hydrochloride (BHH; 250μM; 24 hours) also significantly attenuates HGF-induced invasion of LNCaP and C4-2B

cells that natively express TMPRSS2<sup>[1]</sup>.

No significant toxicity is observed over a 48-hour period exposing LNCaP, DU145, PC3, or HepG2 cells to Bromhexine hydrochloride concentrations ranging from 0 $\mu$ M to 250 $\mu$ M. Bromhexine hydrochloride exposure does not induce cell death or substantially suppress the growth of DU145 cells<sup>[1]</sup>.

Bromhexine hydrochloride (20  $\mu$ M; 48 h) inhibits dendritic cells infection with HIV-1<sup>[4]</sup>.

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

#### In Vivo

Bromhexine hydrochloride (30mg/kg; ip; three times per week for 5 weeks) significantly reduces the incidence of distant metastasis to lung and liver sites from 55% in vehicle-treated animals to 20% in Wild-type C57BL/6 and TRAMP mice with PIN (prostatic intraepithelial neoplasia). The prostate glands of the mice treated with Bromhexine hydrochloride are generally substantially larger than vehicle-treated TRAMP mice<sup>[1]</sup>.

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

## CUSTOMER VALIDATION

- Int Immunopharmacol. 2021 Apr 19;96:107658.
- FEBS Lett. 2020 Jan;594(1):153-160.

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## REFERENCES

[1]. Jared M Lucas, et al. The androgen-regulated protease TMPRSS2 activates a proteolytic cascade involving components of the tumor microenvironment and promotes prostate cancer metastasis. *Cancer Discov.* 2014 Nov;4(11):1310-25.

[2]. Li Wen Shen, et al. TMPRSS2: A potential target for treatment of influenza virus and coronavirus infections. *Biochimie.* 2017 Nov;142:1-10.

[3]. Roberto Maggio, et al. Repurposing the mucolytic cough suppressant and TMPRSS2 protease inhibitor bromhexine for the prevention and management of SARS-CoV-2 infection. *Pharmacol Res.* 2020 Jul;157:104837.

[4]. Santosh Chauhan, et al. Pharmaceutical screen identifies novel target processes for activation of autophagy with a broad translational potential. *Nat Commun.* 2015 Oct 27;6:8620.

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

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