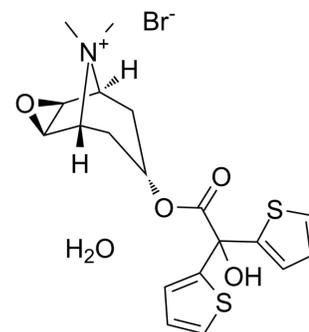


## Tiotropium bromide monohydrate

<b>Cat. No.:</b>	HY-B0460
<b>CAS No.:</b>	411207-31-3
<b>Molecular Formula:</b>	C <sub>19</sub> H <sub>24</sub> BrNO <sub>5</sub> S <sub>2</sub>
<b>Molecular Weight:</b>	490.43
<b>Target:</b>	mAChR
<b>Pathway:</b>	GPCR/G Protein; Neuronal Signaling
<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

#### In Vitro

DMSO : 100 mg/mL (203.90 mM); ultrasonic and warming and heat to 60°C

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	2.0390 mL	10.1951 mL	20.3903 mL
	5 mM	0.4078 mL	2.0390 mL	4.0781 mL
	10 mM	0.2039 mL	1.0195 mL	2.0390 mL

Please refer to the solubility information to select the appropriate solvent.

#### In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
Solubility: ≥ 2.5 mg/mL (5.10 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
Solubility: ≥ 2.5 mg/mL (5.10 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
Solubility: ≥ 2.5 mg/mL (5.10 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

Tiotropium bromide monohydrate is an anticholinergic and bronchodilator and a muscarinic receptor antagonist. Target: mAChR. Tiotropium bromide (Ba 679 BR) is a novel potent and long-lasting muscarinic antagonist that has been developed for the treatment of chronic obstructive airways disease (COPD). Binding studies with [3H]tiotropium bromide in human lung have confirmed that this is a potent muscarinic antagonist with equal affinity for M1-, M2- and M3-receptors and is approximately 10-fold more potent than ipratropium bromide. In vitro tiotropium bromide has a potent inhibitory effect against cholinergic nerve-induced contraction of guinea-pig and human airways, that has a slower onset than atropine or ipratropium bromide. Tiotropium bromide dissociates slowly from M3-receptors (on airway smooth muscle) but rapidly from M2 autoreceptors (on cholinergic nerve terminals) [1]. Tiotropium bromide is a quaternary ammonium derivative that binds to muscarinic receptors. However, although tiotropium binds with high affinity to muscarinic receptors of M1-, M2- and M3-

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subtypes, it dissociates very slowly from M1- and M3-receptors but more rapidly from M2-receptors, thereby giving it a unique kinetic selectivity [2].

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## REFERENCES

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- [1]. Barnes, P.J., et al., Tiotropium bromide (Ba 679 BR), a novel long-acting muscarinic antagonist for the treatment of obstructive airways disease. *Life Sci*, 1995. 56(11-12): p. 853-9.
- [2]. Hansel, T.T. and P.J. Barnes, Tiotropium bromide: a novel once-daily anticholinergic bronchodilator for the treatment of COPD. *Drugs Today (Barc)*, 2002. 38(9): p. 585-600.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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