Ipratropium bromide

**Cat. No.:** HY-B0241  
**CAS No.:** 22254-24-6  
**Molecular Formula:** C$_{20}$H$_{30}$BrNO$_3$  
**Molecular Weight:** 412.36  
**Target:** mAChR  
**Pathway:** GPCR/G Protein; Neuronal Signaling  
**Storage:** Powder: -20°C 3 years, 4°C 2 years, In solvent: -80°C 6 months, -20°C 1 month

**SOLVENT & SOLUBILITY**

**In Vitro**

H$_2$O: 100 mg/mL (242.51 mM; Need ultrasonic)  
DMSO: ≥ 35 mg/mL (84.88 mM)  

* "≥" means soluble, but saturation unknown.

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent</th>
<th>Mass Concentration</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 mM</td>
<td>2.4251 mL</td>
<td>12.1253 mL</td>
<td>24.2507 mL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 mM</td>
<td>0.4850 mL</td>
<td>2.4251 mL</td>
<td>4.8501 mL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 mM</td>
<td>0.2425 mL</td>
<td>1.2125 mL</td>
<td>2.4251 mL</td>
</tr>
</tbody>
</table>

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

**In Vivo**

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
Solubility: ≥ 2.5 mg/mL (6.06 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
Solubility: ≥ 2.5 mg/mL (6.06 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil  
Solubility: ≥ 2.5 mg/mL (6.06 mM); Clear solution

**BIOLOGICAL ACTIVITY**

**Description**

Ipratropium bromide (Sch 1000) is a muscarinic receptor antagonist, with binding IC$_{50}$ values of 2.9 nM, 2 nM, and 1.7 nM for M1, M2, and M3 receptors, respectively. Ipratropium bromide can be used in the research for COPD (chronic obstructive pulmonary disease) and asthma$^{[1][2][3]}$.

**In Vivo**

Ipratropium bromide (0.01-1.0 μg/kg) potentiates vagally induces bronchoconstriction$^{[2]}$. 
Ipratropium bromide (0.04 mg/20 mL and 0.20 mg/20 mL) can protect the lungs against the cadmium-induced acute neutrophilic inflammation by reducing the parenchyma inflammatory infiltration of neutrophils[4]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model: Guinea-pigs of the Dunkin Hartley strain[2].

Dosage: 0.1-1 μg/kg.

Administration: Injected intraperitoneally.

Result: 0.3 μg/kg had little blocking effect on post-junctional muscarinic receptors while doses greater than 0.5 μg/kg inhibited ACh-induced bronchoconstriction.

Animal Model: Male Sprague-Dawley rats (n = 114) weighing between 300 and 350 g[4].

Dosage: 0.04 mg/20 mL and 0.20 mg/20 mL.

Administration: Inhalation.

Result: Had no significant effects on any parameters recorded in healthy rats but exerted a protective effect against the inflammatory reaction elicited by cadmium.

REFERENCES


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

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