Propranolol hydrochloride

Cat. No.: HY-B0573
CAS No.: 318-98-9
Molecular Formula: C₁₆H₂₂ClNO₂
Molecular Weight: 295.8
Target: Adrenergic Receptor; Autophagy
Pathway: GPCR/G Protein; Autophagy
Storage: Powder -20°C 3 years
          4°C  2 years
          In solvent -80°C 6 months
                      -20°C 1 month

Solvent & Solubility

In Vitro

DMSO : ≥ 150 mg/mL (507.10 mM)
H₂O : 33.33 mg/mL (112.68 mM; Need ultrasonic)

* “≥” means soluble, but saturation unknown.

Preparing Stock Solutions

<table>
<thead>
<tr>
<th>Concentration</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mM</td>
<td>3.3807 mL</td>
<td>16.9033 mL</td>
<td>33.8066 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td>0.6761 mL</td>
<td>3.3807 mL</td>
<td>6.7613 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td>0.3381 mL</td>
<td>1.6903 mL</td>
<td>3.3807 mL</td>
</tr>
</tbody>
</table>

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

BIOLOGICAL ACTIVITY

Description
Propranolol hydrochloride is a nonselective β-adrenergic receptor (βAR) antagonist with an IC₅₀ of 12 nM.

IC₅₀ & Target
IC₅₀: 12 nM (βAR) [1]

In Vitro
In cultured endothelial or tumor cells, propranolol has been shown to both reduce cAMP levels and simultaneously activate the mitogen-activated protein kinase (MAPK) pathway downstream of βAR inhibition [2]. It displays high affinity for 5-HT₁B receptors (Kᵢ = 17 nM), and milder affinity for SHT₁D receptors (Kᵢ = 10.2 μM) [3].

In Vivo
Chronic administration of propranolol increased the beta(1)-adrenoceptors but decreased the beta(2)-adrenoceptors without changing total amount of plasma membrane beta-adrenoceptors [4].
Male Wistar rats weighing 250–300 g are used in the study. Propranolol is dissolved with tap water, and given ad lib. The daily consumption of propranolol is estimated to be 40 mg/kg based on a mean intake of 35 mL/day of water for a 250 g rat. The treatment period of β-adrenoceptor antagonists is changed from 1 to 3 or 6 weeks and the effects are examined [4].

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

REFERENCES


