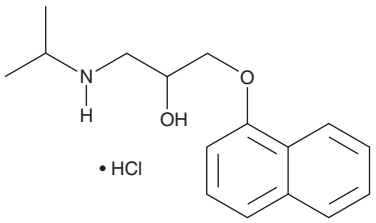
PRODUCT INFORMATION

(±)-Propranolol (hydrochloride)

Item No. 23349

CAS Registry No.: 318-98-9
Formal Name: 1-[(1-methylethyl)amino]-3-(1-naphthalenyloxy)-2-propanol, monohydrochloride
Synonyms: ICI 45520, NSC 91523
MF: $C_{16}H_{21}NO_2$ • HCl
FW: 295.8
Purity: ≥98%
UV/Vis.: λ_{max}: 215 nm
Supplied as: A crystalline solid
Storage: 4°C
Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

(±)-Propranolol (hydrochloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the (±)-propranolol (hydrochloride) in the solvent of choice, which should be purged with an inert gas. (±)-Propranolol (hydrochloride) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of (±)-propranolol (hydrochloride) in these solvents is approximately 11, 16, and 14 mg/ml, respectively.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of (±)-propranolol (hydrochloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of (±)-propranolol (hydrochloride) in PBS (pH 7.2) is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

(±)-Propranolol is a β-adrenergic receptor (β-AR) antagonist (K_ds = 6.91, 0.832, and 117.49 nM for human β_1-, β_2-, and β_3-ARs, respectively).[1] It reduces mean blood pressure, resting heart rate, and contractility and increases AV conduction time in dogs.[2] (±)-Propranolol restores normal sinus rhythm in dogs with ouabain-induced arrhythmias (ED_{50} = 3.8 mg/kg).[3] It also acts as a non-specific serotonin receptor antagonist, reducing tranylcypromine/L-tryptophan-induced hyperactivity in rats.[4] Formulations containing (±)-propranolol have been used for the treatment of hypertension, angina pectoris, and cardiac ischemia.

References

1. Baker, J.G. The selectivity of β-adrenoceptor antagonists at the human β1, β2 and β3 adrenoceptors. *Br. J. Pharmacol.* **144(3)**, 317-322 (2005).
2. Fitzgerald, J.D. and O'Donnell, S.R. A comparison of the haemodynamic effects of propranolol, 4-hydroxypropranolol and practolol in anaesthetized dogs. *Br. J. Pharmacol.* **45(2)**, 207-217 (1972).
3. Basil, B., Jordan, R., Loveless, A.H., *et al.* A comparison of the experimental anti-arrhythmic properties of acebutolol (M and B 17,803), propranolol and practolol. *Br. J. Pharmacol.* **50(3)**, 323-333 (1974).
4. Costain, D.W. and Green, A.R. β-Adrenoceptor antagonists inhibit the behavioural responses of rats to increased brain 5-hydroxytryptamine. *Br. J. Pharmacol.* **64(2)**, 193-200 (1978).

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