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 inhibition². It displays high affinity for 5-HT₁B receptors (Kᵢ = 17 nM), and milder affinity for 5HT₁D 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-adrenoceptors⁴.

**PROTOCOL** (Extracted from published papers and Only for reference)

**Animal Administration:** 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 examined⁴.

**References:**


