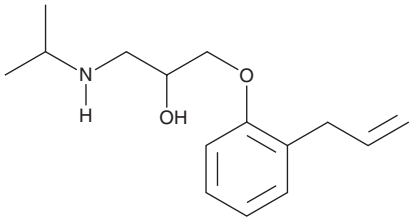
PRODUCT INFORMATION

Alprenolol

Item No. 25338

CAS Registry No.: 13655-52-2
Formal Name: 1-[(1-methylethyl)amino]-3-[2-(2-propen-1-yl) phenoxy]-2-propanol
Synonyms: (±)-Alprenolol, dl-Alprenolol, (RS)-Alprenolol
MF: $C_{15}H_{23}NO_2$
FW: 249.4
Purity: ≥98%
UV/Vis.: λ_{max}: 218, 272 nm
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years



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

Laboratory Procedures

Alprenolol is supplied as a crystalline solid. A stock solution may be made by dissolving the alprenolol in the solvent of choice, which should be purged with an inert gas. Alprenolol is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of alprenolol in these solvents is approximately 5, 15, and 20 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 alprenolol can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of alprenolol in PBS, pH 7.2, is approximately 1 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Alprenolol is a non-selective β-adrenergic receptor (β-AR) antagonist that is also an antagonist of the serotonin (5-HT) receptor subtypes 5-HT_{1A} and 5-HT_{1B}.[1,2] It binds to β_1-, β_2-, and β_3-ARs expressed in CHO cells (K_ds = 15, 0.91, and 117 nM, respectively, for the human receptors) and to 5-HT_{1A} and 5-HT_{1B} receptors in rat hippocampal and striatal membranes (K_is = 34 and 134 nM, respectively).[1,2] *In vivo*, alprenolol (40 mg/kg, i.v.) completely blocks the hyperactivity response of rats to 2-PCPA (Item No. 10010494) and L-tryptophan.[3] Alprenolol (10 µg, i.v.) inhibits decreases in heart rate and left ventricular systolic pressure induced by the β_2-AR antagonist ICI 118551 (Item No. 15591) in transgenic mice overexpressing the β_2-AR.[4] It also reduces the level of abnormal prion fibrils (PrP^{Sc}) in the brain of mice intracerebrally infected with prion disease to less than 20% of control levels when administered in drinking water at a dose of 50 mg/L.[5]

References

1. Baker, J.G. *Br. J. Pharmacol.* **144(3)**, 317-322 (2005).
2. Langlois, M., Brémont, B., Rousselle, D., *et al. Eur. J. Pharmacol.* **244(1)**, 77-87 (1993).
3. Costain, D.W. and Green, A.R. *Br. J. Pharmacol.* **64(2)**, 193-200 (1978).
4. Bond, R.A., Leff, P., Johnson, T.D., *et al. Nature* **374(6519)**, 272-276 (1995).
5. Miyazaki, Y., Ishikawa, T., Kamatari, Y.O., *et al. Mol. Neurobiol.* (2018).

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