Clonidine (hydrochloride)
Item No. 15949

Clonidine (hydrochloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the clonidine (hydrochloride) in the solvent of choice. Clonidine (hydrochloride) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide, which should be purged with an inert gas. The solubility of clonidine (hydrochloride) in these solvents is approximately 2, 3, and 0.3 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 clonidine (hydrochloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of clonidine (hydrochloride) in PBS, pH 7.2, is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Clonidine is an agonist of α2-adrenergic receptors (α2-ARs; Kᵢₛ = 61.66, 69.18, and 134.9 nM for α₂A-, α₂B-, and α₂C-ARs, respectively).1 It stimulates [³⁵S]GTPγS binding to HEK293 cell membranes expressing the human receptors with EC₅₀ values of 26.92, 56.23, and 912.01 nM for α₂A-, α₂B-, and α₂C-ARs, respectively. Clonidine also binds to I₁-imidazoline sites in a variety of cell and tissue types (Kᵢᵣ = 4-15 nM).2,3 It induces relaxation of isolated mesenteric artery rings precontracted with norepinephrine (Item No. 16673) when used at a concentration of 10 µM.1 Clonidine (10 µM) also induces membrane hyperpolarization and reduces norepinephrine-induced depolarization in isolated mesenteric artery rings. Clonidine (0.1 and 1 µg/kg) reduces mean blood pressure and heart rate when administered via microinjection to the nucleus reticularis lateralis (NRL) of anesthetized normotensive cats.3 Formulations containing clonidine have been used in the treatment of hypertension.

References