Data Sheet (Cat.No.T1247)

TargetMol

Clonidine hydrochloride

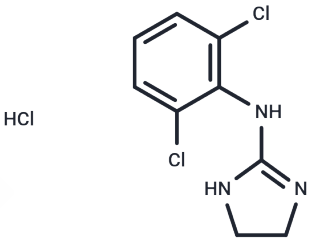
Chemical Properties

CAS No. : 4205-91-8

Formula: C9H10Cl3N3

Molecular Weight: 266.55

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.



Biological Description

Description	Clonidine hydrochloride (Catapres) is a centrally active α-adrenergic agonist used predominantly as an antihypertensive agent.
Targets(IC50)	Adrenergic Receptor
In vitro	Clonidine, at concentrations of 0.01, 0.1, or 1 μM, significantly elevates CGRP (α and β) mRNA expression in endothelial cells in a dose-dependent manner. Additionally, a 24-hour treatment with 1 μM clonidine notably augments NO levels in these cells. This indicates that the NO pathway plays a crucial role in modulating the clonidine-induced CGRP production[2].
In vivo	Administered intraperitoneally at a dose of 50 μg/kg, clonidine markedly reduces rat body temperature, peaking at 1 hour and persisting for 3 hours; this effect is notably counteracted by a pre-administration of phentolamine into the cerebral ventricles[1]. Additionally, clonidine (0.003-0.05 mg/kg, i.p.) effectively inhibits PCP-induced dopamine release in the prefrontal cortex, an effect that is blocked by the alpha-2A receptor antagonist BRL-44408[3]. In normotensive rats treated with DMSO, clonidine (0.6 μg intracisternally) does not alter blood pressure, but following central adenosine A1R inhibition with DPCPX, it significantly lowers blood pressure. Conversely, in DMSO-treated aortic-banded rats, clonidine prominently decreases blood pressure, a response that remains unchanged after DPCPX pretreatment. Additionally, in SO rats with central A1R blockage, clonidine not only reduces blood pressure but also significantly elevates pERK1/2 levels in the RVLM, an effect not observed in DMSO-pretreated SO rats. Similarly, clonidine boosts RVLM pERK1/2 levels in vehicle-treated aortic-banded rats, unaffected by DPCPX[4].

Solubility Information

Solubility	H2O: 26.7 mg/mL (100.17 mM),Sonication is recommended. DMSO: 23.33 mg/mL (87.53 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.7516 mL	18.7582 mL	37.5164 mL
5 mM	0.7503 mL	3.7516 mL	7.5033 mL
10 mM	0.3752 mL	1.8758 mL	3.7516 mL
50 mM	0.075 mL	0.3752 mL	0.7503 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Bugajski J, et al. The involvement of central alpha-adrenergic and histamine H2-receptors in the hypothermia induced by clonidine in the rat. Neuropharmacology. 1980 Jan;19(1):9-15.
Himmel H M, Faelker T M E. Pupillary function test in rat: Establishment of imaging setup and pharmacological validation within modified Irwin test. Journal of Pharmacological and Toxicological Methods. 2019: 106588
Xu C, Zhou Y, Liu Y, et al.Specific pharmacological and Gi/o protein responses of some native GPCRs in neurons. Nature Communications.2024, 15(1): 1990.
Zhang YM, et al. Clonidine induces calcitonin gene-related peptide expression via nitric oxide pathway in endothelial cells. Peptides. 2009 Sep;30(9):1746-52.
Jentsch JD, et al. Clonidine and guanfacine attenuate phencyclidine-induced dopamine overflow in rat prefrontal cortex: mediating influence of the alpha-2A adrenoceptor subtype. Brain Res. 2008 Dec 30;1246:41-6.
Nassar N, et al. Brainstem adenosine A1 receptor signaling masks phosphorylated extracellular signal-regulated kinase 1/2-dependent hypotensive action of clonidine in conscious normotensive rats. J Pharmacol Exp Ther. 2009 Jan;328(1):83-9.
Himmel H M, Faelker T M E. Pupillary function test in rat: Establishment of imaging setup and pharmacological validation within modified Irwin test. Journal of pharmacological and toxicological methods. 2019: 106588.