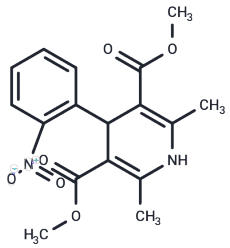
Data Sheet (Cat.No.T1146)

TargetMol

Nifedipine

Chemical Properties



CAS No. : 21829-25-4

Formula: C17H18N2O6

Molecular Weight: 346.33

Appearance: no data available

Storage: keep away from direct sunlight
Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Biological Description

Description	Nifedipine (Procardia) is a dihydropyridine calcium channel blocking agent. Nifedipine inhibits the transmembrane influx of extracellular calcium ions into myocardial and vascular smooth muscle cells, causing dilatation of the main coronary and systemic arteries and decreasing myocardial contractility. This agent also inhibits the drug efflux pump P-glycoprotein which is overexpressed in some multi-drug resistant tumors and may improve the efficacy of some antineoplastic agents.
Targets(IC50)	CaMK,Calcium Channel,Autophagy,Potassium Channel
In vitro	Nifedipine causes a significant concentration-dependent increase in eNOS protein expression by cultured human coronary artery endothelial cells. [1] Nifedipine antagonizes L-type Ca+ channels found throughout the cardiovascular system, but also blocks Kv channels, which are members of the same supergene family. [2] Nifedipine dose-dependently decreases the values of [(3)H]-thymidine incorporation and total cellular protein content as well as the levels of phosphorylated extracellular signal-regulated protein kinase (ERK) 1/2, mitogen-activated protein kinase kinase (MEK) 1/2, and even the phosphorylation of Pyk2, in vascular smooth muscle cells (VSMC). Nifedipine suppresses the levels of proliferative cell nuclear antigen (PCNA) dose-dependently in both VSMC and balloon-injured thoracic aortae in VSMC. [3]
In vivo	Nifedipine (3 mg/kg) slightly lowers the level of systolic and/or diastolic blood pressure or increased the heart rate in rats. [3] Nifedipine (1 μm) produces a maximal inhibition of the store-operated pathway in choroidal arteriolar smooth muscle. [4] Nifedipine (20 and 40 mg/kg) markedly prevents the HCl plus ethanol-induced gastric mucosal injury and the increase in the content of thiobarbituric acid-reactive substances in the injured mucosa in rats. Nifedipine (20 and 40 mg/kg) dose-dependently promotes the ulcer healing and inhibites the increase in the content of thiobarbituric acid-reactive substances in the ulcerated mucosa in rats. [5]
Cell Research	Cell viability is assessed using an MTT assay. Briefly, a total of 25 μL MTT (1 g/L in PBS) is added to each well before incubation is conducted at 37°C for 4 h. The assay is stopped by the addition of a 100 μL lysis buffer (20% SDS in 50% N'Ndimethylformamide, pH 4.7). Optical density (OD) is measured at the 570 nm wavelength by the use of an ELX-800 microplate assay reader and the results are expressed as a percentage of the absorbance measured in the control cells.

Solubility Information

Solubility	Ethanol: 12 mg/mL (34.65 mM),Sonication is recommended. DMSO: 60 mg/mL (173.25 mM),Sonication is recommended. H2O: < 1 mg/mL (insoluble or slightly soluble) (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.8874 mL	14.4371 mL	28.8742 mL
5 mM	0.5775 mL	2.8874 mL	5.7748 mL
10 mM	0.2887 mL	1.4437 mL	2.8874 mL
50 mM	0.0577 mL	0.2887 mL	0.5775 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.

Reference

Ding Y, et al. J Pharmacol Exp Ther,2000, 292(2), 606-609.
Wang B, Pei J, Zhang H, et al.Dihydropyridine-derived calcium channel blocker as a promising anti-hantavirus entry inhibitor.Interventions for emerging infectious diseases.2023, 16648714.
Cui S, Suo N, Yang Y, et al.The aminosteroid U73122 promotes oligodendrocytes generation and myelin formation. Acta Pharmacologica Sinica.2023: 1-12.
Zhang X, et al. J Pharmacol Exp Ther,1997, 281(3), 1247-1256.
Hirata A, et al. Br J Pharmacol,2000, 131(8), 1521-1530.
Li T, Wan Z, Wang Q, et al.Utilizing Tissues Self-Assembled in Fiber Optic-Based “Chinese Guzheng Strings” for Contractility Sensing and Drug Efficacy Evaluation: A Practical Approach.Small.2406144
Curtis TM, et al. J Physiol,2001, 532(Pt 3), 609-623.
Suzuki Y, et al. Jpn J Pharmacol,1998, 78(4), 435-441.
Ratre MS, et al. Effect of azithromycin on gingival overgrowth induced by cyclosporine A + nifedipine combination therapy: A morphometric analysis in rats. J Indian Soc Periodontol. 2016 Jul-Aug;20(4):396-401.
Liu P, et al. The L-type Ca(2+) Channel Blocker Nifedipine Inhibits Mycelial Growth, Sporulation, and Virulence of Phytophthora capsici. Front Microbiol. 2016 Aug 4;7:1236.
Carvajal JA, et al. The Synergic In Vitro Tocolytic Effect of Nifedipine Plus Ritodrine on Human Myometrial Contractility. Reprod Sci. 2017 Apr;24(4):635-640.
Yu SS, et al. Nifedipine Increases Iron Content in WKPT-0293 Cl.2 Cells via Up-Regulating Iron Influx Proteins. Front Pharmacol. 2017 Feb 13;8:60