

Product Data Sheet

Product Name: Nifedipine

Cat. No.: GC15024

Chemical Properties

Cas. No. 21829-25-4

Chemical Name dimethyl 2,6-dimethyl-4-(2-nitrophenyl)-1,4-dihydropyridine-3,5-dicarboxylate

SMILES CC1=C(C(C(=C(N1)C)C(=O)OC)C2=CC=CC=C2[N+](=O)[O-])C(=O)OC

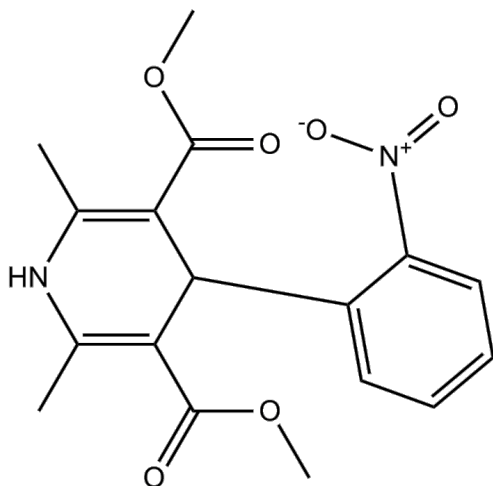
Formula $C_{17}H_{18}N_2O_6$ M.Wt 346.33

Solubility $\geq 15.75\text{mg/mL}$ in DMSO Storage 4°C , protect from light

General tips For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

Caution: Product has not been fully validated for medical applications. For research use only.

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Cell experiment: Cell viability is assessed using an MTT assay. Briefly, a total of 25 μ L 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 μ L 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.

Animal experiment: All the 30 rats are randomly distributed into three equal groups of ten animals each. Group 1 (control) receive olive oil for the 8 weeks. Group 2 and Group 3 receive a combination of CsA (30 mg/kg body weight) and Nf (50 mg/kg body weight) in olive oil for 8 weeks. In Group 3 rats, Azi (10 mg/kg body weight) is added to this regimen, in the 5th week. The total study period is 8 weeks.

References:

- [1]. 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.
- [2]. 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.
- [3]. 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
- [4]. 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.

Background

Nifedipine (BAY-a-1040) is a potent calcium channel blocker and drug of choice for cardiac insufficiencies.

Nifedipine (BAY-a-1040) (100 μ M) significantly lowers the viability of the WKPT-0293 Cl.2 Cells, and treatment of nifedipine (10 or 100 μ M) plus FAC induces a significant reduction in cell viability, but

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there are no significant differences in viability between the control cells and the cells treated with 100 μ M of FAC or 1 and 10 μ M of nifedipine. Nifedipine (BAY-a-1040) (1, 10, or 100 μ M) significantly increases iron level in WKPT-0293 Cl.2 cells. Nifedipine treatment also increases expression of TfR1, DMT1+IRE and DMT1-IRE in WKPT-0293 Cl.2 cells. In addition, co-treatment with nifedipine (100 μ M) and FAC (100 μ M) increases TfR1, DMT1+IRE and DMT1-IRE expression in WKPT-0293 Cl.2 cells[2]. Nifedipine plus ritodrine produces a significantly greater inhibition of contractility than each drug alone in the midrange of concentrations. The combination of nifedipine plus nitroglycerin or nifedipine plus atosiban produces a significantly greater inhibition than nitroglycerin or atosiban alone but not greater than nifedipine. The combination of nifedipine plus NS-1619 (Ca²⁺-activated K⁺ [BKCa] channel opener) reduces the inhibitory effect of each drug[3]. Nifedipine (BAY-a-1040) (2 μ M) significantly inhibits *P. capsici* mycelial growth and sporulation. Nifedipine (BAY-a-1040)-induced inhibition of mycelial growth is calcium-dependent. Nifedipine (0.5 μ M) increases *P. capsici* sensitivity to H₂O₂ in a calcium-dependent manner. Nifedipine inhibition of *P. capsici* virulence and expression of genes involved in pathogenicity[4].

In Nifedipine (BAY-a-1040) (50 mg/kg)- and CsA-treated rats, the BL dimensions (BLi and BLk), MD dimensions (MDk) and vertical dimensions (VHi and VHk) are significantly increased ($P < 0.05$) at the end of the 4th week[1].

References:

- [1]. 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.
- [2]. 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.
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