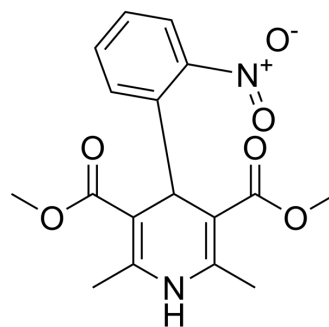


## Nifedipine

<b>Cat. No.:</b>	HY-B0284
<b>CAS No.:</b>	21829-25-4
<b>Molecular Formula:</b>	C <sub>17</sub> H <sub>18</sub> N <sub>2</sub> O <sub>6</sub>
<b>Molecular Weight:</b>	346.33
<b>Target:</b>	Calcium Channel; Autophagy
<b>Pathway:</b>	Membrane Transporter/Ion Channel; Neuronal Signaling; Autophagy
<b>Storage:</b>	4°C, protect from light * In solvent : -80°C, 1 year; -20°C, 6 months (protect from light)



### SOLVENT & SOLUBILITY

<b>In Vitro</b>	DMSO : 100 mg/mL (288.74 mM; Need ultrasonic)																	
	H <sub>2</sub> O : < 0.1 mg/mL (ultrasonic;warming;heat to 80°C) (insoluble)																	
<b>Preparing Stock Solutions</b>	<table border="1"> <thead> <tr> <th rowspan="2">Solvent Concentration</th> <th rowspan="2">Mass</th> <th>1 mg</th> <th>5 mg</th> <th>10 mg</th> </tr> </thead> <tbody> <tr> <td>1 mM</td> <td>2.8874 mL</td> <td>14.4371 mL</td> <td>28.8742 mL</td> </tr> <tr> <td>5 mM</td> <td>0.5775 mL</td> <td>2.8874 mL</td> <td>5.7748 mL</td> </tr> <tr> <td>10 mM</td> <td>0.2887 mL</td> <td>1.4437 mL</td> <td>2.8874 mL</td> </tr> </tbody> </table>	Solvent Concentration	Mass	1 mg	5 mg	10 mg	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
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Please refer to the solubility information to select the appropriate solvent.																		
<b>In Vivo</b>	1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline Solubility: ≥ 2.5 mg/mL (7.22 mM); Clear solution																	

### BIOLOGICAL ACTIVITY

<b>Description</b>	Nifedipine (BAY-a-1040) is a potent calcium channel blocker and agent of choice for cardiac insufficiencies.
<b>In Vitro</b>	Nifedipine (BAY-a-1040) (100 μM) significantly lowers the viability of the WKPT-0293 Cl.2 Cells, and treatment of nifedipine (10 or 100 μM) plus FAC induces a significant reduction in cell viability, but there are no significant differences in viability between the control cells and the cells treated with 100 μM of FAC or 1 and 10 μM of nifedipine. Nifedipine (BAY-a-1040) (1, 10, or 100 μM) 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 μM) and FAC (100 μM) increases TfR1, DMT1+IRE and DMT1-IRE expression in WKPT-0293 Cl.2 cells <sup>[2]</sup> . 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 (Ca <sup>2+</sup> -activated K <sup>+</sup> [BKCa] channel opener) reduces the inhibitory effect of each drug <sup>[3]</sup> . Nifedipine (BAY-a-1040) (2 μM) significantly inhibits P. capsici mycelial growth and sporulation. Nifedipine (BAY-a-1040)-induced inhibition of mycelial growth is calcium-dependent.

	Nifedipine (0.5 $\mu$ M) increases <i>P. capsici</i> sensitivity to H <sub>2</sub> O <sub>2</sub> in a calcium-dependent manner <sup>[4]</sup> . MCE has not independently confirmed the accuracy of these methods. They are for reference only.
<b>In Vivo</b>	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 <sup>[1]</sup> . MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## PROTOCOL

<b>Cell Assay</b> <sup>[2]</sup>	Cell viability is assessed using an MTT assay. Briefly, a total of 25 $\mu$ 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 $\mu$ 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. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
<b>Animal Administration</b> <sup>[1]</sup>	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. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## CUSTOMER VALIDATION

- Cell Stem Cell. 2024 Jan 4;31(1):52-70.e8.
- Biol Psychiatry. 2021 Jun 1;89(11):1084-1095.
- Cell Commun Signal. 2022 Aug 26;20(1):130.
- Phytomedicine. 23 August 2021, 153687.
- Sci Signal. 2020 Nov 24;13(659):eaax0273.

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## 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]. 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
- [3]. 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.
- [4]. Liu P, et al. The L-type Ca<sup>2+</sup> Channel Blocker Nifedipine Inhibits Mycelial Growth, Sporulation, and Virulence of *Phytophthora capsici*. Front Microbiol. 2016 Aug 4;7:1236.

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

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