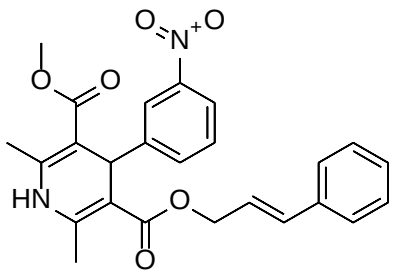
Product data sheet

MedKoo Cat#: 319565 Name: Pranidipine CAS: 99522-79-9 Chemical Formula: $C_{25}H_{24}N_2O_6$ Exact Mass: 448.1634 Molecular Weight: 448.475	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Pranidipine, also known as OPC-13340 and FRC 8411, is a potent and selective calcium channel blocker potentially for the treatment of angina pectoris and hypertension. Pranidipine enhances nitric oxide-induced vascular relaxation. pranidipine prevents the left ventricular remodeling process accompanied by systolic and diastolic dysfunction, and inhibits abnormal cardiac gene expression after myocardial infarction.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	180.0	401.36
Ethanol	2.0	4.46

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.23 mL	11.15 mL	22.30 mL
5 mM	0.45 mL	2.23 mL	4.46 mL
10 mM	0.22 mL	1.11 mL	2.23 mL
50 mM	0.05 mL	0.22 mL	0.45 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Koshita M, Takano H, Nakahira Y, Suzuki H. Pranidipine enhances relaxation produced by endothelium-derived relaxing factor in carotid artery. Eur J Pharmacol. 1999 Dec 3;385(2-3):191-7. doi: 10.1016/s0014-2999(99)00702-5. PMID: 10607875.
2. Mori T, Takeuchi T, Ohura M, Miyakoda G, Fujiki H, Orito K, Yoshida K, Hirano T, Yamamura Y, Sumida T, Nakaya Y, Satake H, Hata F. Pranidipine, a new 1,4-dihydropyridine calcium channel blocker, enhances cyclic GMP-independent nitric oxide-induced relaxation of the rat aorta. Mol Cell Biochem. 1998 Jan;178(1-2):335-43. doi: 10.1023/a:1006827801386. PMID: 9546618.

In vivo study

1. Veeraveedu PT, Watanabe K, Ma M, Gurusamy N, Palaniyandi SS, Wen J, Prakash P, Wahed MI, Kamal FA, Mito S, Kunisaki M, Kodama M, Aizawa Y. Comparative effects of pranidipine with amlodipine in rats with heart failure. Pharmacology. 2006;77(1):1-10. doi: 10.1159/000091746. Epub 2006 Feb 27. PMID: 16508340.
2. Nakayama N, Ikezono K, Mori T, Yamashita S, Nakayama S, Tanaka Y, Hosokawa T, Minami Y, Masutani K, Yamamura Y, et al. Antihypertensive activity of OPC-13340, a new potent and long-acting dihydropyridine calcium antagonist, in rats. J Cardiovasc Pharmacol. 1990 May;15(5):836-44. doi: 10.1097/00005344-199005000-00021. PMID: 1692946.

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7. Bioactivity

Biological target:

Pranidipine (OPC-13340) is a potent, long acting 1,4-dihydropyridine calcium channel blocker with antihypertensive activity.

In vitro activity

Pranidipine also prolonged glyceryl trinitrate-induced relaxation in the endothelium denuded rat aorta. Furthermore, pranidipine enhanced relaxation of the aorta induced by glyceryl trinitrate even in the presence of methylene blue, a guanylyl cyclase inhibitor. This action was not modified by iberiotoxin or by charybdotoxin, two inhibitors of the calcium-activated potassium channel. The results strongly suggest that pranidipine enhances cyclic GMP-independent NO-induced relaxation of smooth muscle by a mechanism other than through NO-induced hyperpolarization.

Reference: Mol Cell Biochem. 1998 Jan;178(1-2):335-43. https://pubmed.ncbi.nlm.nih.gov/9546618/

In vivo activity

Among 6 compounds tested, (OPC-13340, nifedipine, nitrendipine, nisoldipine, nicardipine and diltiazem), OPC-13340 was the most potent and long-acting when administered orally to spontaneously hypertensive rats (SHR). Tachycardia after administration of OPC-13340 was less or diminished earlier than that of nicardipine. Oral administration of OPC-13340 (3 mg/kg) once daily for 13 days did not cause any rebound phenomena in SHR. The compound inhibited Ca- or K-induced contractions in isolated rat aorta and shortened action potential duration in guinea pig papillary muscle, suggesting Ca channel blocking action. OPC-13340 might be useful as a drug for once-daily therapy of essential hypertension.

Reference: J Cardiovasc Pharmacol. 1990 May;15(5):836-44. https://pubmed.ncbi.nlm.nih.gov/1692946/