Amlodipine

Cat. No.: HY-B0317

CAS No.: 88150-42-9

Molecular Formula: $C_{20}H_{25}ClN_2O_5$

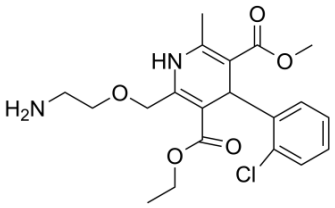
Molecular Weight: 408.88

Target: Calcium Channel

Pathway: Membrane Transporter/Ion Channel; Neuronal Signaling

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 120 mg/mL (293.48 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	2.4457 mL	12.2285 mL	24.4571 mL
	5 mM	0.4891 mL	2.4457 mL	4.8914 mL
	10 mM	0.2446 mL	1.2229 mL	2.4457 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 3 mg/mL (7.34 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 3 mg/mL (7.34 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 3 mg/mL (7.34 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Amlodipine, an antianginal agent and an orally active dihydropyridine calcium channel blocker, works by blocking the voltage-dependent L-type calcium channels, thereby inhibiting the initial influx of calcium. Amlodipine can be used for the research of high blood pressure and cancer[1][2][3].

IC_{50} & Target

L-type calcium channel

In Vitro

Amlodipine (20-40 μM; 48 h) reduces BrdU incorporation to 68.6% and 26.3% at concentrations of 20 and 30 μM in A431 cells,

	respectively[3]. Amlodipine (30 μM; pretreated for 1 h) significantly attenuates the uridine 5′-triphosphate (UTP)-induced increases of $[Ca^{2+}]_i$ in A431 cells[3]. Amlodipine (30 μM) inhibits the store-operated Ca^{2+}influx evoked by Thapsigargin in Fluo-3-loaded cells[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Amlodipine (5 mg/kg/day; s.c. for 2 weeks) significantly decreases systolic blood pressure (SBP) in VSMC ATP2B1 KO mice[4]. Amlodipine (10 mg/kg; i.p. once daily for 20 days) causes a significant retardation of tumor growth and prolongs the survival of A431 tumor-bearing mice[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	$ATP2B1^{loxP/loxP}$ mice[4]
Dosage:	5 mg/kg/day
Administration:	Subcutaneously implanted osmotic pump for 2 weeks
Result:	Significantly decreased the blood pressure.

CUSTOMER VALIDATION

- Exp Mol Med. 2021 Apr 2.
- Biochem Biophys Res Commun. 2020 Feb 19;522(4):862-868.
- J Chem Thermodyn. 2021, 106495.
- Dissolut Technol. 2021 Jun.

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REFERENCES

[1]. Kishen G. Bulsara, et al. Amlodipine.

[2]. Haria M, et al. Amlodipine. A reappraisal of its pharmacological properties and therapeutic use in cardiovascular disease [published correction appears in Drugs 1995 Nov;50(5):896]. Drugs. 1995;50(3):560-586.

[3]. Yoshida J, et, al. Antitumor effects of amlodipine, a Ca2+ channel blocker, on human epidermoid carcinoma A431 cells in vitro and in vivo. Eur J Pharmacol. 2004 May 25;492(2-3):103-12.

[4]. Okuyama Y, et, al. The effects of anti-hypertensive drugs and the mechanism of hypertension in vascular smooth muscle cell-specific ATP2B1 knockout mice. Hypertens Res. 2018 Feb;41(2):80-87.

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