Atpenin A5

Cat. No.: HY-126653

CAS No.: 119509-24-9

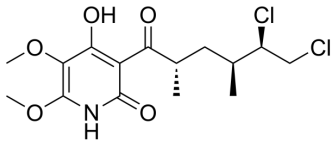
Molecular Formula: $C_{15}H_{21}Cl_2NO_5$

Molecular Weight: 366.24

Target: Potassium Channel

Pathway: Membrane Transporter/Ion Channel

Storage: -20°C, protect from light, stored under nitrogen
* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light, stored under nitrogen)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (273.05 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	2.7304 mL	13.6523 mL	27.3045 mL
	5 mM	0.5461 mL	2.7304 mL	5.4609 mL
	10 mM	0.2730 mL	1.3652 mL	2.7304 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: ≥ 2.5 mg/mL (6.83 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (6.83 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (6.83 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Atpenin A5 is a potent and highly specific complex II inhibitor (IC_{50} ~10 nM), and is an effective mK_{ATP} channel agonist and cardioprotective agent[1].

In Vitro

Atpenin A5 shows the inhibition profile for submitochondrial particles (SMPs), mitochondria, and cardiomyocytes, with IC50 values of 8.3, 9.3, and 8.5 nM, respectively. Atpenin A5 (AA5) is a potent and specific complex II inhibitor. Atpenin A5 (1 nM) also activates the mKATP channel and protects against simulated ischemia-reperfusion (IR) injury in isolated cardiomyocytes[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Atpenin A5 is a potent inhibitor of succinate dehydrogenase (SDH). Succinate dehydrogenase inhibition by Atpenin A5 promotes cardiomyocyte mitosis and regeneration in the postnatal heart after myocardial infarction (MI). Atpenin A5-injected mice demonstrated myocardial thickness at the infarct zone and a significant reduction in scar size compared with controls[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Neonatal mice[2]
Dosage:	100 μg/kg
Administration:	Injected daily
Result:	Demonstrated myocardial thickness at the infarct zone and a significant reduction in scar size compared with controls.

REFERENCES

[1]. Andrew P Wojtovich, et al. The complex II inhibitor atpenin A5 protects against cardiac ischemia-reperfusion injury via activation of mitochondrial KATP channels. Basic Res Cardiol. 2009 Mar;104(2):121-9.

[2]. Jiyoung Bae, et al. Malonate Promotes Adult Cardiomyocyte Proliferation and Heart Regeneration. Circulation. 2021 May 18;143(20):1973-1986.

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