ML-9

Cat. No.: HY-100932

CAS No.: 105637-50-1

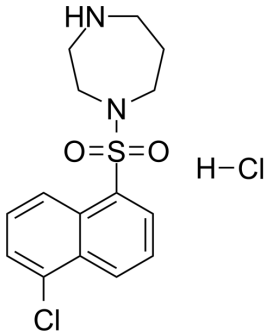
Molecular Formula: $C_{15}H_{18}Cl_2N_2O_2S$

Molecular Weight: 361.29

Target: Myosin

Pathway: Cytoskeleton

Storage: 4°C, sealed storage, away from moisture
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 83.33 mg/mL (230.65 mM; Need ultrasonic)
H_2O : ≥ 5 mg/mL (13.84 mM)
* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.7679 mL	13.8393 mL	27.6786 mL
5 mM	0.5536 mL	2.7679 mL	5.5357 mL
10 mM	0.2768 mL	1.3839 mL	2.7679 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: ≥ 2.08 mg/mL (5.76 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (5.76 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (5.76 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

ML-9 is a selective and potent inhibitor of Akt kinase, inhibits myosin light-chain kinase (MLCK) and stromal interaction molecule 1 (STIM1) activity[3]. ML-9 inhibits inhibits MLCK, PKA and PKC activity with K_i values of 4, 32 and 54 μM, respectively[1]. ML-9 induces autophagy by stimulating autophagosome formation and inhibiting their degradation[3].

In Vitro

ML9 (0-100 μM; 0-24 hours) has no reduction in cardiomyocyte viability, 50-100 μM significantly induces cell death[2].
ML9 (50 μM; 1-4 hours) significantly increases cleaved caspase-3 levels, decreased STIM1 protein levels by about 42%[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[1]	
Cell Line:	Neonatal rat ventricular myocytes (NRVM) cells
Concentration:	0, 10, 50 and 100 μM
Incubation Time:	0, 1, 4, 8 and 24 hours
Result:	Decreased cell viability at 50-100 μM concentration.

Apoptosis Analysis[1]	
Cell Line:	Neonatal rat ventricular myocytes (NRVM) cells
Concentration:	50 μM
Incubation Time:	1, 4 and 8 hours
Result:	Induced cardiomyocyte death through necrosis and apoptosis.

CUSTOMER VALIDATION

- bioRxiv. 2023 Feb 5.

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REFERENCES

[1]. Ito S, et al. ML-9, a myosin light chain kinase inhibitor, reduces intracellular Ca2+ concentration in guinea pig trachealis.Eur J Pharmacol. 2004 Feb 23;486(3):325-33.

[2]. Shaikh S, et al. The STIM1 inhibitor ML9 disrupts basal autophagy in cardiomyocytes by decreasing lysosome content.Toxicol In Vitro. 2018 Apr;48:121-127.

[3]. Kondratskyi A1, et al.Identification of ML-9 as a lysosomotropic agent targeting autophagy and cell death.Cell Death Dis. 2014 Apr 24;5:e1193.

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