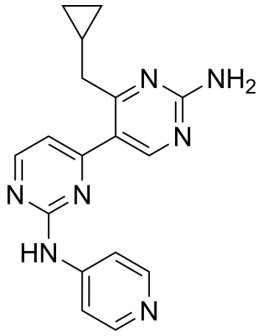
Vps34-PIK-III

Cat. No.:	HY-12794
CAS No.:	1383716-40-2
Molecular Formula:	$C_{17}H_{17}N_7$
Molecular Weight:	319.36
Target:	PI3K; Autophagy
Pathway:	PI3K/Akt/mTOR; Autophagy
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 2 years -20°C 1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 31 mg/mL (97.07 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	3.1313 mL	15.6563 mL	31.3126 mL
	5 mM	0.6263 mL	3.1313 mL	6.2625 mL
	10 mM	0.3131 mL	1.5656 mL	3.1313 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 (7.83 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (7.83 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (7.83 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Vps34-PIK-III is an orally active and selective VPS34 inhibitor (IC_{50}=18 nM). Vps34-PIK-III effectively inhibits autophagy and can be used as a molecular tool. vps34-PIK-III is also a PI3K inhibitor that inhibits the expression of genes in liver cancer stem cells (CSCs)[1][2][3].

IC_{50} & Target	Vps34	PI(3)Kδ	PI(3)Kγ	PI(3)Kα
	18 nM (IC_{50})	1.2 μM (IC_{50})	3.04 μM (IC_{50})	3.96 μM (IC_{50})

In Vitro

Vps34-PIK-III (1, 5, 10 μM; 24 h) inhibits autophagy and LC3 lipidation in DLD1 cells[1].
Vps34-PIK-III (1, 5, 10 μM; 24 h) leads to an increase in the lipidated and nonlipidated forms of LC3 in DLD1 cells[1].
Vps34-PIK-III (5 μM; 24 h) significantly decreases the expression of stemness genes in HCC cells[2].
Vps34-PIK-III (5 μM; 24 h) suppresses liver CSCs via AMPK activation in Huh7 and MHCC97H cells[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[1]

Cell Line:	DLD1 cells
Concentration:	1, 5, 10 μM
Incubation Time:	24 h
Result:	Prevented the degradation of autophagy substrates p62, NCOA4, NBR1, NDP52, and FTH1.

RT-PCR[1]

Cell Line:	HCC cells
Concentration:	5 μM
Incubation Time:	24 h
Result:	Inhibited stemness genes expression.

Western Blot Analysis[1]

Cell Line:	Huh7 and MHCC97H cells
Concentration:	5 μM
Incubation Time:	24 h
Result:	Inhibited liver CSCs by activating AMPK.

In Vivo

Vps34-PIK-III (10 mg/kg; p.o.; single) rapidly absorbed and shows moderate mean systemic clearance (30 mL/min/kg, approximately 33% of hepatic blood flow), with good oral bioavailability (F% = 47)[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	C57BL/6 mice[1].
Dosage:	10 mg/kg; 2 mg/kg
Administration:	Oral administration; intravenous injection; single
Result:	Pharmacokinetic Parameters of Vps34-PIK-III in C57BL/6 mice[1].

	IV (2 mg/kg)	PO (10 mg/kg)
T_{max} (h)		0.7
C_{max} (nM)		2994
AUC_{inf} (nM•h)	2855	6725

$t_{1/2}$ (h)	1.2	
CL (mL/min/kg)	30	
Vdss (L/kg)	1.5	
F (%)		47%

CUSTOMER VALIDATION

- Cell Rep. 2022 Dec 20;41(12):111868.
- Front Cardiovasc Med. 22 September 2021.
- Mol Immunol. 2021 Feb 5.
- J Biochem. 2023 Jun 5;mvad041.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. Honda A, et al. Potent, Selective, and Orally Bioavailable Inhibitors of VPS34 Provide Chemical Tools to Modulate Autophagy in Vivo. ACS Med Chem Lett. 2015 Nov 13;7(1):72-6.

[2]. Liu F, et al. PIK3C3 regulates the expansion of liver CSCs and PIK3C3 inhibition counteracts liver cancer stem cell activity induced by PI3K inhibitor. Cell Death Dis. 2020 Jun 8;11(6):427.

[3]. Dowdle WE, et al. Selective VPS34 inhibitor blocks autophagy and uncovers a role for NCOA4 in ferritin degradation and iron homeostasis in vivo. Nat Cell Biol. 2014 Nov;16(11):1069-79.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA