Retro-2

Cat. No.: HY-122571

CAS No.: 1201652-50-7

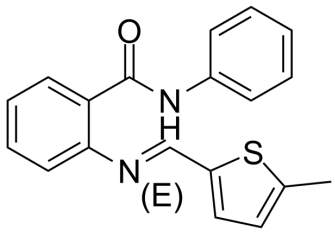
Molecular Formula: $C_{19}H_{16}N_2OS$

Molecular Weight: 320.41

Target: Filovirus; Parasite; Autophagy

Pathway: Anti-infection; Autophagy

Storage: 4°C, protect from light
* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 250 mg/mL (780.25 mM; Need ultrasonic)

Preparing Stock Solutions	Concentration / Solvent / Mass	1 mg	5 mg	10 mg
	1 mM	3.1210 mL	15.6050 mL	31.2100 mL
	5 mM	0.6242 mL	3.1210 mL	6.2420 mL
	10 mM	0.3121 mL	1.5605 mL	3.1210 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 (6.49 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.08 mg/mL (6.49 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (6.49 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Retro-2 is a selective inhibitor of retrograde protein trafficking at the endosome-trans-Golgi network interface. Retro-2 is an ebolavirus (EBOV) infection inhibitor with an EC_{50} of 12.2 μM in HeLa cells. Retro-2 induces cell autophagy[1][2][3].

IC_{50} & Target

EC50: 12.2 μM (Ebolavirus)[3]

In Vitro

Retro-2 (1 μM; 1-4 hours) induces autophagy in GFP-LC3-expressing HeLa cells and promoted the dramatic cytoplasmic accumulation of large autophagosomes[2].
Retro-2 (1 μM; 0.5-4 hours) treatment hows an increase over time of the abundance of LC3-II protein in cells[2].
Retro-2 impairs the trafficking between autophagosomes and lysosomes. Retro-2 abolishes autolysosomes formation[2].

Retro-2 (20 μM; pretreatment for 30 min) inhibits HeLa cell intoxication by ricin, Shiga-like toxins 1 (Stx1) and 2 (Stx2)[1]. Retro-2 blocked invasion of cells by the intracellular parasite Leishmania, as well as replication of non-enveloped viruses, including polyoma-, papilloma-, and adeno-associated viruses[3].

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

Cell Autophagy Assay[2]

Cell Line:	HeLa cells
Concentration:	1 μM
Incubation Time:	1 hour, 2 hours, 4 hours
Result:	Resulted in a large significant increase in the number of small and large vesicles.

Western Blot Analysis[2]

Cell Line:	HeLa cells
Concentration:	1 μM
Incubation Time:	0.5 hour, 2 hours, 4 hours
Result:	Showed an increase over time of the abundance of LC3-II protein in cells.

In Vivo

Retro-2 (2-200 mg/kg; i.p; daily; for 21 days) treatment clearly protects from lethal nasal exposure to ricin in mice. 200 mg/kg of Retro-2 fully protects mice against ricin challenge[1].

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

Animal Model:	Female Balb/c mice (Pathogen-free 6-week-old) injected with ricin (2 μg/kg)[1]
Dosage:	2 mg/kg, 10 mg/kg, 20 mg/kg, 200 mg/kg
Administration:	Intraperitoneal injection; daily; for 21 days
Result:	Protected mice against ricin challenge.

REFERENCES

[1]. Bahne Stechmann, et al. Inhibition of retrograde transport protects mice from lethal ricin challenge. Cell. 2010 Apr 16;141(2):231-42.

[2]. Valérie Nicolas, et al. Small Trafficking Inhibitor Retro-2 Disrupts the Microtubule-Dependent Trafficking of Autophagic Vacuoles. Front Cell Dev Biol. 2020 Jun 18;8:464.

[3]. Olena Shtanko, et al. Retro-2 and its dihydroquinazolinone derivatives inhibit filovirus infection. Antiviral Res. 2018 Jan;149:154-163.

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