AC-73

Cat. No.: HY-122214

CAS No.: 775294-71-8

Molecular Formula: $C_{21}H_{21}NO_2$

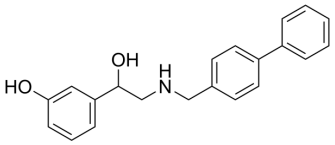
Molecular Weight: 319.4

Target: Autophagy

Pathway: Autophagy

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 : ≥ 250 mg/mL (782.72 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.1309 mL	15.6544 mL	31.3087 mL
5 mM	0.6262 mL	3.1309 mL	6.2617 mL
10 mM	0.3131 mL	1.5654 mL	3.1309 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 (6.51 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (6.51 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (6.51 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

AC-73 is a first specific, orally active inhibitor of cluster of differentiation 147 (CD147), which specifically disrupts CD147 dimerization, thereby mainly suppressing the CD147/ERK1/2/STAT3/MMP-2 pathways. AC-73 inhibits the motility and invasion of hepatocellular carcinoma cells[1]. AC-73 is also an anti-proliferative agent and an inducer of autophagy in leukemic cells[2].

IC_{50} & Target

CD147[1]

In Vitro

AC-73 (5-10 μM; 24 hours; SMMC-7721 and Huh-7 cells) treatment significantly decreases the migration ability of SMMC-7721 and Huh-7 cells in a dose-dependent manner and decreases the invasion of two HCC cells in a dose-dependent manner at 24 hours. AC-73 treatment reduces HCC metastases. There are no obvious effects on cell viability when two HCC cells are treated with AC-73 at a maximum concentration of 20 μM. The possible binding sites of AC-73 on CD147 included Glu64 and Glu73 in the N-terminal IgC2 domain, which two residues are located in the dimer interface of CD147[1].

AC-73 (5-10 μM; 24 hours; SMMC-7721 cells) treatment could significantly inhibit both MMP-2 and MMP-9 mRNA expression at the concentration of 10 μM, especially MMP-2, but no obvious effect on MMP-1, MMP-3, MMP-7, MMP-11 nor MMP-13. AC-73 could dose dependently reduce the expression of MMP-2 mRNA level and secretion of the protein level using RT-qPCR analysis and gelatin zymography experiments[1].

AC-73 (5-20 μM; 6 hours; SMMC-7721 cells) treatment dose-dependently suppresses the phosphorylation of ERK1/2 and STAT3[1].

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

RT-PCR[1]

Cell Line:	SMMC-7721 cells
Concentration:	5 μM or 10 μM
Incubation Time:	24 hours
Result:	Significantly inhibited both MMP-2 and MMP-9 mRNA expression at the concentration of 10 μM. Dose dependently reduced the expression of MMP-2 mRNA level and secretion of the protein level using RT-qPCR analysis and gelatin zymography experiments.

Western Blot Analysis[1]

Cell Line:	SMMC-7721 cells
Concentration:	5 μM, 10 μM or 20 μM
Incubation Time:	6 hours
Result:	The phosphorylation of ERK1/2 and STAT3 was dose-dependently suppressed.

In Vivo

AC-73 (25-50 mg/kg; for 4 weeks; Male BALB/c nu/nu mice) treatment significantly decreases the incidence of metastatic foci in nude mice. AC-73 inhibits the phosphorylation of ERK1/2 and STAT3 in a dose-dependent manner. MMP-2 is also reduced by AC-73. AC-73 could not inhibit tumor cell proliferation in vivo[1].

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

Animal Model:	Male BALB/c nu/nu mice (4-6 weeks) with SMMC-7721 cells[1]
Dosage:	25 mg/kg, 50 mg/kg
Administration:	Injected; daily; for 3 weeks
Result:	Significantly decreased the incidence of metastatic foci in nude mice. Inhibited the phosphorylation of ERK1/2 and STAT3 in a dose-dependent manner. MMP-2 was also reduced.

CUSTOMER VALIDATION

- J Crohns Colitis. 2022 Jul 14;jjac084.
- Cancer Lett. 2021 Aug 30;S0304-3835(21)00428-6.

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REFERENCES

[1]. Fu ZG, et al. A novel small-molecule compound targeting CD147 inhibits the motility and invasion of hepatocellular carcinoma cells. Oncotarget. 2016 Feb 23;7(8):9429-47.

[2]. Spinello I, et al. The small-molecule compound AC-73 targeting CD147 inhibits leukemic cell proliferation, induces autophagy and increases the chemotherapeutic sensitivity of acute myeloid leukemia cells. Haematologica. 2019 May;104(5):973-985.

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