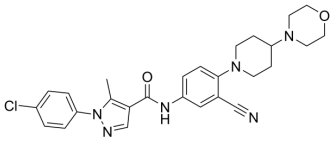
Y-320

Cat. No.:	HY-15898
CAS No.:	288250-47-5
Molecular Formula:	$C_{27}H_{29}ClN_6O_2$
Molecular Weight:	505.01
Target:	Interleukin Related; Apoptosis
Pathway:	Immunology/Inflammation; Apoptosis
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 : 5.5 mg/mL (10.89 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	1.9802 mL	9.9008 mL	19.8016 mL
	5 mM	0.3960 mL	1.9802 mL	3.9603 mL
	10 mM	0.1980 mL	0.9901 mL	1.9802 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: ≥ 0.5 mg/mL (0.99 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 0.5 mg/mL (0.99 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 0.5 mg/mL (0.99 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Y-320 is a potent, orally active phenylpyrazoleanilide immunomodulator. Y-320 inhibits IL-17 production by CD4 T cells stimulated with IL-15 with IC_{50} values of 20 to 60 nM. Y-320 enhances TP53, DMD, and COL17A1 PTC readthrough by G418 and increases cellular protein levels and protein synthesis. Y-320 concomitants use of with a low dose of Paclitaxel (HY-B0015) significantly sensitized multidrug resistance (MDR) tumors by inducing G2/M phase arrest and apoptosis. Y-320 can be used for research of rheumatoid arthritis (RA) and cancer[1][2][2].

IC_{50} & Target	IL-15	IL-17

In Vitro

Y-320 (0-100 nM; 48 h) inhibits IL-17 production by murine and human CD4 T Cells stimulated with IL-15 with IC_{50} values of 25.7, 52.4 and 57.4 nM for murine CD4 T cells, murine Th17 cells and human CD4 T cells, respectively[1].
Y-320 (0-100 nM; 48 h) inhibits phosphorylation of JAK1/JAK3 in murine CD4 T cells stimulated with IL-15/CXCL12/anti-CD3 mAb[1].
Y-320 (0.25-2 μM; 48 h) enhances PTC readthrough by G418 in different cell lines[2].
Y-320 (0-2 μM; 48 h; HDQ-P1 cells) increases cellular protein levels and ribosome biogenesis in a concentration-dependent manner[2].
Y-320 (0-2 μM; 48 h; $Tsc2^{-/-}$ cells) causes a small decrease in phospho-S6K combination with G418 (100 μM)[2].
Y-320 (1 μM; 48 h; HDQ-P1 cells) up-regulates CXC chemokine expression including CXCL10, CXCL8, and CXCL2[2].
Y-320 (500 nM; 72 h) reverses the resistance to paclitaxel in MDR cancer cells. Y-320 has the reversal index (RI) combined with Paclitaxel (0-1000 nM) are 5.5 (Bads-200), 9.4 (Bats-72) and 1.7 (Huh7-TS-48)[3].
Y-320 (500 nM; 72 h; Bads-200 cells) enhances Paclitaxel-induced G2/M arrest and enhances Paclitaxel-induced (500 nM) tumor cell apoptosis[3].
Y-320 (0-20 μM; 72 h; Bads-200 cells) is a substrate of P-gp reverses MDR by inhibiting P-gp function[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Cycle Analysis[3]

Cell Line:	Bads-200 cells
Concentration:	500 nM
Incubation Time:	72 hours
Result:	Increased the percentage of cells at G2/M phase, from 6.3% to 42.5%.

Apoptosis Analysis[3]

Cell Line:	Bads-200 cells
Concentration:	500 nM
Incubation Time:	72 hours
Result:	Increased the ratio of apoptotic Bads-200 cells (30.8% versus 2.2%).

In Vivo

Y-320 (0-3 mg/kg; p.o.; daily, for 42 d) ameliorates collagen-induced arthritis (CIA) in DBA/1J mice with a reduction of IL-17 mRNA in arthritic joints[1].
Y-320 (5 mg/kg; i.v.; every three days, for 18 d; Homozygous nude athymic mice with Bats-72 xenograft) sensitizes MDR xenograft tumor to Paclitaxel in vivo[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Type II collagen-induced arthritis (CIA) in DBA/1J mice[1]
Dosage:	0, 0.1, 0.3, 1, and 3 mg/kg
Administration:	Oral administration; daily, for 42 days
Result:	Inhibited the development of CIA and the increase in paw thickness in a dose-dependent manner. Inhibited joint destructions in a dose-dependent manner. Improved inflammation and damage in the arthritic ankle joints in CIA mice.

Animal Model:	Homozygous nude athymic mice with Bats-72 xenograft (female, 4-5 weeks old)[3]

Dosage:	5 mg/kg; Paclitaxel (5 mg/kg)
Administration:	Intravenous injection; every three days, for 18 days
Result:	Inhibited tumor growth in Bats-72 xenografts without severe adverse effects.

CUSTOMER VALIDATION

- Am J Transl Res. 2020 Feb 15;12(2):551-562.
- bioRxiv. 2020 Jun.

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REFERENCES

[1]. Ushio H, et, al. A new phenylpyrazoleanilide, y-320, inhibits interleukin 17 production and ameliorates collagen-induced arthritis in mice and cynomolgus monkeys. Pharmaceuticals (Basel). 2013 Dec 23;7(1):1-17.

[2]. Hosseini-Farahabadi S, et, al. Small molecule Y-320 stimulates ribosome biogenesis, protein synthesis, and aminoglycoside-induced premature termination codon readthrough. PLoS Biol. 2021 May 3;19(5):e3001221.

[3]. Hong J, et, al. Y-320, a novel immune-modulator, sensitizes multidrug-resistant tumors to chemotherapy. Am J Transl Res. 2020 Feb 15;12(2):551-562.

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