ZX-29

Cat. No.: HY-135887

CAS No.: 2254805-62-2

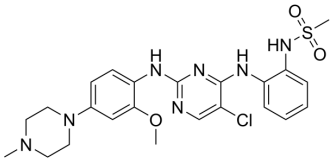
Molecular Formula: $C_{23}H_{28}ClN_7O_3S$

Molecular Weight: 518.03

Target: Anaplastic lymphoma kinase (ALK); Apoptosis; Autophagy

Pathway: Protein Tyrosine Kinase/RTK; Apoptosis; 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 : 50 mg/mL (96.52 mM; ultrasonic and warming and heat to 60°C)

Preparing Stock Solutions	Concentration / Solvent / Mass	1 mg	5 mg	10 mg
	1 mM	1.9304 mL	9.6519 mL	19.3039 mL
	5 mM	0.3861 mL	1.9304 mL	3.8608 mL
	10 mM	0.1930 mL	0.9652 mL	1.9304 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 (4.83 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

ZX-29 is a potent and selective ALK inhibitor with an IC_{50} of 2.1 nM, 1.3 nM and 3.9 nM for ALK, ALK L1196M and ALK G1202R mutations, respectively. ZX-29 is inactive against EGFR. ZX-29 induces apoptosis by inducing endoplasmic reticulum (ER) stress and overcomes cell resistance caused by an ALK mutation. ZX-29 also induces protective autophagy and has antitumor effect[1].

IC_{50} & Target

IC50: 2.1 nM (ALK), 1.3 nM (ALK L1196M) and 3.9 nM (ALK G1202R)[1]

In Vitro

ZX-29 (0-81 nM; 24-72 hours; NCI-H2228 cells) treatment leads to a time- and dose-dependent decrease in NCI-H2228 cell viability[1].
ZX-29 (10 nM; 24 hours; NCI-H2228 cells) treatment causes typical signs of autophagy and the formation of autophagosomes. ZX-29 enhances the expression level of LC3 and Beclin1[1].
ZX-29 (10 nM; 0-48 hours; NCI-H2228 cells) inhibits the proliferation of NCI-H2228 cells and arrests the cells in G1 phase[1].
ZX-29 (10-40 nM; 24-48 hours; NCI-H2228 cells) treatment induces apoptosis of NCI-H2228 cells. ZX-29 dose-dependently upregulates the expression levels of proapoptotic protein Bax, increases the production of activated forms of caspase 3, and

downregulates the expression level of antiapoptotic protein Bcl-2[1].
ZX-29 (30-300 nM; 24 hours; NCI-H2228 cells) treatment significantly down-regulates the expression of p-ALK and its downstream signaling proteins, including p-Akt and p-STAT3, in a dose-dependent manner[1].
ZX-29 (20 nM; 0-48 hours; NCI-H2228 cells) treatment significantly increases the mRNA level of CHOP[1].
ZX-29 dose-dependently inhibits colony formation of NCI-H2228 cells. With an increase in ZX-29 concentration, the cell density decreased gradually, and the cells lost their normal morphology and become sharp and slender[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[1]

Cell Line:	NCI-H2228 cells
Concentration:	0 nM, 1 nM, 3 nM, 9 nM, 10 nM, 27 nM or 81 nM
Incubation Time:	24 hours, 48 hours or 72 hours
Result:	Led to a time- and dose-dependent decrease in NCI-H2228 cell viability.

Cell Autophagy Assay[1]

Cell Line:	NCI-H2228 cells
Concentration:	10 nM
Incubation Time:	24 hours
Result:	Caused typical signs of autophagy and the formation of autophagosomes.

Cell Cycle Analysis[1]

Cell Line:	NCI-H2228 cells
Concentration:	0 hour, 12 hours, 24 hours or 48 hours
Incubation Time:	24 hours
Result:	Arrested the NCI-H2228 cells in G1 phase in a time-dependent manner.

Apoptosis Analysis[1]

Cell Line:	NCI-H2228 cells
Concentration:	10 nM, 20 nM or 40 nM
Incubation Time:	24 hours, 48 hours
Result:	Promoted NCI-H2228 cell apoptosis in a dose-dependent manner.

Western Blot Analysis[1]

Cell Line:	NCI-H2228 cells
Concentration:	30 nM, 100 nM, 300 nM
Incubation Time:	24 hours
Result:	Significantly down-regulated the expression of p-ALK and its downstream signaling proteins, including p-Akt and p-STAT3, in a dose-dependent manner.

RT-PCR[1]

Cell Line:	NCI-H2228 cells
Concentration:	20 nM
Incubation Time:	0 hour, 6 hours, 12 hours, 24 hours or 48 hours
Result:	The mRNA level of CHOP was increased significantly.

In Vivo

ZX-29 (50 mg/kg; intragastric administration; every 2 days; for a total of 7 times; female BALB/c nude mice) treatment suppresses tumor growth in a mouse xenograft model[1].

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

Animal Model:	Female BALB/c nude mice (4-week-old) with H2228 cells[1]
Dosage:	50 mg/kg
Administration:	Intragastric administration; every 2 days; for a total of 7 times
Result:	Showed significantly attenuated tumor growth.

REFERENCES

[1]. Gou W, et al. ZX-29, a novel ALK inhibitor, induces apoptosis via ER stress in ALK rearrangement NSCLC cells and overcomes cell resistance caused by an ALK mutation. Biochim Biophys Acta Mol Cell Res. 2020 Mar 26;1867(7):118712.

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