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Zuschläge

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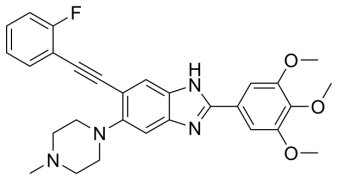
PI3K/Akt/mTOR-IN-4

Cat. No.:	HY-163511
Molecular Formula:	$C_{29}H_{29}FN_4O_3$
Molecular Weight:	500.56
Target:	Akt; Apoptosis; mTOR; PI3K; Microtubule/Tubulin
Pathway:	PI3K/Akt/mTOR; Apoptosis; Cell Cycle/DNA Damage; Cytoskeleton
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

PI3K/Akt/mTOR-IN-4 (compound 4r) is a potent PI3K/Akt/mTOR and tubulin polymerization inhibitor. PI3K/Akt/mTOR-IN-4 induce apoptosis and cell cycle arrest at G2/M phase. PI3K/Akt/mTOR-IN-4 decreases the expression of p-PI3K, p-Akt, and p-mTOR, β-tubulin[1].

In Vitro

PI3K/Akt/mTOR-IN-4 (compound 4r) (0-100 μM; 48 h) shows antiproliferative activity with IC_{50}s of 3.38, 5.03, 7.24, 21.08, 23.96 μM for SiHa, HeLa, Ca Ski, LO2, HEK-293t cells, respectively[1].

PI3K/Akt/mTOR-IN-4 (0-16 μM; 24 h) induces apoptosis and cell cycle arrest at G2/M phase[1].

PI3K/Akt/mTOR-IN-4 (4, 8,16 μM; 24 h) decreases the expression of phosphorylation of PI3K, Akt, mTOR level and β-tubulin protein in a dose-dependent manner[1].

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

Cell Proliferation Assay[1]

Cell Line:	SiHa, HeLa, Ca Ski, LO2, HEK-293t cells
Concentration:	0-100 μM
Incubation Time:	48 h
Result:	Inhibited cell proliferative with IC_{50}s of 3.38, 5.03, 7.24, 21.08, 23.96 μM for SiHa, HeLa, Ca Ski, LO2, HEK-293t cells, respectively.

Cell Cycle Analysis[1]

Cell Line:	SiHa cells
Concentration:	0-16 μM
Incubation Time:	24 h
Result:	Induced cell cycle arrest at G2/M phase with G2/M phase cells accumulating from 5.24 % (Ctrl) to 28.37 % (16 μM).

Apoptosis Analysis[1]

Cell Line:	SiHa cells

Concentration:	0-16 μM
Incubation Time:	24 h
Result:	Induced apoptosis the percentage of apoptotic cells were increased from 11.62 % (Ctrl) to 98.56 % (16 μM).

Western Blot Analysis[1]

Cell Line:	SiHa cells
Concentration:	4, 8, 16 μM
Incubation Time:	24 h
Result:	Decreased the expression of phosphorylation of PI3K, Akt, and mTOR, β-tubulin in a dose-dependent manner.

In Vivo

PI3K/Akt/mTOR-IN-4 (0-400 μM; 0-96 h) shows no toxicity for zebrafish embryos[1].

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

Animal Model:	zebrafish embryos[1]
Dosage:	0, 12.5, 25, 50, 100, 200, 400 μM
Administration:	0-96 h
Result:	Showed no toxicity for zebrafish embryos.

REFERENCES

[1]. Li SS, et al. Design, synthesis, and biological evaluation of novel benzimidazole derivatives as anti-cervical cancer agents through PI3K/Akt/mTOR pathway and tubulin inhibition. Eur J Med Chem. 2024 Apr 16;271:116425.

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