# PI3K/Akt/mTOR-IN-4

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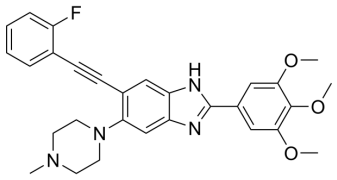
| **Cat. No.:** | HY-163511 |
| **Molecular Formula:** | $C_{29}H_{29}FN_4O_3$ |
| **Molecular Weight:** | 500.56 |
| **Target:** | Akt; Apoptosis; mTOR; PI3K; Microtubule/Tubulin |
| **Pathway:** | PI3K/Akt/mTOR; Apoptosis; Cell Cycle/DNA Damage; Cytoskeleton |
| **Storage:** | Please store the product 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]

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| 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]

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| 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]

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| Cell Line: | SiHa cells |

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| 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]

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| 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.

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| 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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