Product Datasheet

DIF-3

Catalog No. **BP-06763** · CAS **113411-17-9** · Form **free base** · Physical state **solid** · Color **White to off-white** · Version **1.0** · Revision **2026-11-16**

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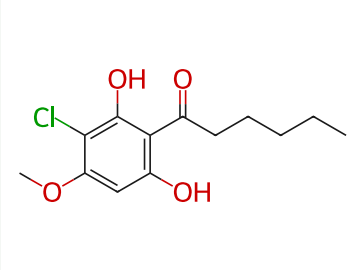
Target	Research area
Wnt; CDK; GSK-3	**Infection; Cancer**

Molecular formula	**$C_{13}H_{17}ClO_4$**
Molecular weight	**272.7250**

STRUCTURE



DESCRIPTION

DIF-3 is an orally active anticancer agent. DIF-3 reduces the expression levels of cyclin D1 and c-Myc by facilitating their degradation via activation of GSK-3β. DIF-3 inhibits Wnt/β-catenin signaling pathway-related proteins in cells. DIF-3 induces reactive oxygen species (ROS) and autophagy. DIF suppresses the growth of Trypanosoma. cruzi in HT1080 cells. DIF-3 exerts antitumor effects both in vitro and in vivo .

BIOLOGICAL ACTIVITY

In Vitro

DIF-3 (10-30 μM, 24-48 h) inhibits proliferation in a dose-dependent manner in human colon cancer cells[1].

DIF-3 (30 μM, 24 h) arrests the cell cycle at G0/G1 phase in human colon cancer cells[1].

DIF-3 (10-30 μM, 1-24 h) induces proteolysis of cyclin D1 and c-Myc in human colon cancer cells via activation of GSK-3β[1].

DIF-3 (10-30 μM, 1-24 h) inhibits Wnt/β-catenin signaling pathway-related proteins in human colon cancer cells[1].

DIF-3 (10 μM, 4 h) inhibits lysophosphatidic acide (LPA) stimulated migration of murine osteosarcoma LM8 cells[2].

DIF-3 (20 μM, 0.25-24 h) inhibits mTOR signaling and induces autophagy in K562 CML cells[3].

DIF-3 (20 μM) induces mitochondrial membrane potential (MMP) (0-10 min), a decrease of ATP content (6 h) and an induction of ROS production (0-30 min) in K562 cells[3].

DIF-3 (10 μM, 3 d) suppresses the growth of Trypanosoma. cruzi in HT1080 cells with an IC50 of 3.95 μM[4].

In Vivo

DIF-3 (150 mg/kg; p.o.; once a day for 5 days/week over 4 weeks) inhibits oxidative stress (0.2% KBrO3)-induced tumors in Mutyh-/- mice[1].

SOLUBILITY

soluble in DMSO

REFERENCES

[1]. Naoya Kubokura , et al. Differentiation-inducing factor-3 inhibits intestinal tumor growth in vitro and in vivo. J Pharmacol Sci. 2015 Apr;127(4):446-55.

[2]. Kubohara Y, et al. Derivatives of Dictyostelium differentiation-inducing factors inhibit lysophosphatidic acid-stimulated migration of murine osteosarcoma LM8 cells. Biochem Biophys Res Commun. 2015 Aug 7;463(4):800-5.

[3]. Dubois A, et al. Differentiation inducing factor 3 mediates its anti-leukemic effect through ROS-dependent DRP1-mediated mitochondrial fission and induction of caspase-independent cell death. Oncotarget. 2016 May 3;7(18):26120-36.

[4]. Nakajima-Shimada J, et al. Derivatives of Dictyostelium discoideum differentiation-inducing factor-3 suppress the activities of Trypanosoma cruzi in vitro and in vivo. Biochem Pharmacol. 2013 Jun 1;85(11):1603-10.