Purmorphamine

Cat. No.: HY-15108

CAS No.: 483367-10-8

Molecular Formula: $C_{31}H_{32}N_6O_2$

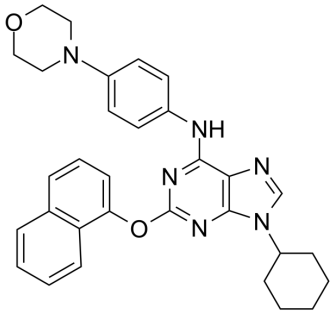
Molecular Weight: 520.62

Target: Smo; Autophagy

Pathway: Stem Cell/Wnt; Autophagy

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 50 mg/mL (96.04 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.9208 mL	9.6039 mL	19.2079 mL
5 mM	0.3842 mL	1.9208 mL	3.8416 mL
10 mM	0.1921 mL	0.9604 mL	1.9208 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (4.80 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Purmorphamine is a smoothened/Smo receptor agonist with an EC_{50} of 1 μM.

IC_{50} & Target

IC50: 1.5 μM (Smoothened)

In Vitro

Purmorphamine (10, 20 μM) in combination with sirolimus significantly decreases cell numbers according to the MTT assay. Purmorphamine induces up-regulation of alkaline phosphatase activity and expression of RUNX-2 at day 14. Up-regulation of osteocalcin is detected at the 3 and 5 μM doses of purmorphamine on day 14 post-induction. Matrix mineralization remains unchanged in the presence or absence of purmorphamine[1]. Purmorphamine induces STAT3 phosphorylation in mouse ES cell line ES14 and mesenchymal stem cell line C3H10T1/2[2]. Purmorphamine up-regulates the expressionof markers of the osteoblast phenotype-ALP activity and bone-like nodule formationd-in human bonemarrow mesenchymal cells[3].

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

PROTOCOL

Cell Assay [1]

To determine non-toxic doses of the small molecules, 5×10^5 passaged-3 human MSCs are seeded in each well of a six-well culture plate and incubated in expansion medium (as mentioned above) at 37°Cand 5% CO_2. Two days later, the medium is exchanged with osteogenic medium (OM) that consisted of α-MEM supplemented with 10% FBS, 10 nM dexamethasone, 50 μg/mL ascorbic acid 2-phosphate, and 10 mM beta-glycerol phosphate. This OM is supplemented with different concentrations of purmorphamine (1, 3, 5, 10, and 20 μM) and sirolimus (0.1, 1, 10, 100, and 200 nM). The cultures are maintained for an additional two days and then assessed for the presence of viable cells with the MTT assay, by the addition of MTT solution (5 mg/mL in PBS) to the medium at a ratio of 1:5. Cells are then incubated at 37°C and 5% CO_2. Two hours later, the medium is removed and 500 μL of DMSO is added to the treated cells in order to dissolve the formazone precipitate. The optical absorption rate is read at 570 nm. Cell viability is calculated as percent value relative to the control group which is only treated with OM.

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

CUSTOMER VALIDATION

- J Exp Clin Cancer Res. 2018 Nov 27;37(1):287.
- Pharmacol Res. 2021 Jan 26;105460.
- Cancer Med. 2018 Nov;7(11):5704-5715.
- Burns Trauma. 2019 Sep 23;7:29.
- Biochem Biophys Res Commun. 12 August 2021.

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REFERENCES

[1]. F. Faghihia, et al. The effect of purmorphamine and sirolimus on osteogenic differentiation of human bone marrow-derived mesenchymal stem cells. Biomedicine & Pharmacotherapy. 2013, 67(1): 31-38.

[2]. Gu D, et al. A role for transcription factor STAT3 signaling in oncogene smoothened-driven carcinogenesis. J Biol Chem. 2012 Nov 2;287(45):38356-66.

[3]. Beloti MM, et al. Purmorphamine enhances osteogenic activity of human osteoblasts derived from bone marrow mesenchymal cells. Cell Biol Int. 2005 Jul;29(7):537-41.

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