**Chemical Properties**

**Product Name:** DMH-1  
**Cas No.:** 1206711-16-1  
**M.Wt:** 380.44  
**Formula:** C24H20N4O

**Chemical Name:**  
**Canonical SMILES:** CC(C)OC1=CC=C(C=C1)C2=CN3C(=C(C=N3)C4=CC=NC5=CC=CC=C45)N=C2

**Solubility:** $\geq 9.511 \text{mg/mL in DMSO}$  
**Storage:** Store at -20°C  
**General tips:** For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.  
**Shopping Condition:** Evaluation sample solution: ship with blue ice  
All other available size: ship with RT, or blue ice upon request

**Biological Activity**

**Targets:** TGF-β / Smad Signaling  
**Pathways:** TGF-βR1(ALK5)

**Description:**  
DMH1 is a small molecule inhibitor of bone morphogenetic protein (BMP) signaling with IC50 value of 107.9nM against ALK2 [1]. DMH1 is an analog of dorsomorphin. It exclusively targets BMP and has no effect on VEGF signaling. DMH1 shows potent and specific inhibitory activity against purified human BMP type-I.
receptor ALK2 with IC50 value of 107.9nM. It shows no significant inhibition of purified KDR, ALK5, AMPK and PDGFRβ. In cells respectively transfected with the active forms of ALK2, ALK3 and ALK6, DMH1 effectively inhibits signaling by ALK2 and ALK3 with IC50 values of both less than 0.5μM. In addition, DMH1 has no effect on the p38/MAP kinase signaling or the Activin A-induced Smad2 activation [1].

Moreover, DMH1 is found to have antitumor effect in lung cancer through blocking BMP signaling. In the NSCLC cell line A549 cells, DMH1 inhibits the phosphorylation of Smad 1/5/8 and decreases the expression of Id1, Id2 and Id3 genes. It decreases cell migration and invasion in A549 and H460 cell line. Besides that, DMH1 reduces cell proliferation and induces cell death in A549 cells. In the A549 tumor xenograft in mice, treatment of DMH1 significantly suppresses tumor growth [2].

Reference:

Protocol

Cell experiment:

Cell lines A549 and H460 cells
Preparation method The solubility of this compound in DMSO is >10 mM. General tips for obtaining a higher concentration: Please warm the tube at 37°C for 10 minutes and/or shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.
Reacting conditions
Applications DMH1 blocked BMP signaling in NSCLC cells and decreased NSCLC cell migration and invasion, DMH1 reduces NSCLC cell proliferation and induces cell death

Animal experiment [3]:

Animal models Xenograft model
Dosage form 5 mg/kg DMH1 every other day.
Applications The rate for doubling tumor size in DMH1-treated mice was about one day longer than the controls (5.6 versus 4.7 days in the DMH1 treated and control mice, respectively). MH1 treatment resulted in a
A statistically significant reduction in tumor volumes by about 50% compared to the vehicle control group. In a word, DMH1 attenuated xenograft lung tumor growth in mice.

Other notes
Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal.

Reference:

Caution

FOR RESEARCH PURPOSES ONLY.
NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

Specific storage and handling information for each product is indicated on the product datasheet. Most ApexBio products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Short-term storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.

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