Chemical Properties

Product Name: Cyclopamine
Cas No.: 4449-51-8
M.Wt: 411.62
Formula: C27H41NO2
Synonyms: 11-Deoxojervine

Chemical Name: (3S,3'R,3'aS,6'S,6aS,6bS,7'aR,9R,11aS,11bR)-3',6',10,11b-tetramethylspiro[2,3,4,6,6a,6b,7,8,11,11a-decahydro-1H-benzo[a]fluorene-9,2'-3a,4,5,6,7,7a-hexahydro-3H-furo[3,2-b]pyridine]-3-ol

Canonical SMILES: CC1CC2C(C(C3(O2)CCC4C5CC=C6CC(C5CC4=C3C)O)C)NC1

Solubility: ≥6.9mg/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: Stem Cell
Pathways: Hedgehog

Description:
Cyclopamine is a naturally occurring Hedgehog (Hh)?specific small?molecule signaling steroidal alkaloid inhibitor, causes a profound inhibition of tumor growth, has significant anti?invasive, anti?proliferative and anti?estrogenic potency in human breast cancer cells [2] [1]. The EC50 of cyclopamine is 10.57 μM, it was identified by an FXR-bla (farnesoid X receptor- b-lactamase)
Hh signaling pathway plays a critical role in embryonic development and tumorigenesis [4]. Hh signaling pathway shows saliency in regulating cellular proliferation and differentiation in a wide array of human tissues. It is related to aberrant cell survival in numerous human malignancies, ranging from BCCs and medulloblastomas to small cell lung, gastrointestinal, breast and prostate tumors [1].

Treated with cyclopamine (10 or 20 μM) only and incubated for time periods ranging from 0 to 10 days, MCF-7 cells and MDA-MB-231 cells displayed a significant reduction in proliferation rate compared with the control cells on days 3 and 6 (P-value).

Embryos exposed to cyclopamine resulted in visible external defects, including cyclopia, proboscis formation, microphthalmia, thoracic lordosis, amelia and decreased body size. Examination of gastrointestinal organs revealed severe deficits, including less length of the gut tube and mesenchymal cell numbers in foregut-derived organs. Ectopic structures in duodenum, stomach, and dorsal pancreas were also found [5].

Reference:

Protocol

Cell experiment:

Cell lines AA/C1, RG/C2, CaCo2, HT29 and SW480 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 20 μM, 48 hours for cell yield inhibition10 μM, 48 hours for apoptosis induction (measured by PARP expression)

Applications Treatment of cyclopamine significantly reduced cell yield in all the tested human colorectal tumour cell lines with a dose-dependent manner. Cyclopamine also remarkably induced apoptosis in each of
the cell lines. The CaCo2 cell line showed particular sensitivity to cyclopamine-induced apoptosis.

**Animal experiment [3]:**

<table>
<thead>
<tr>
<th>Animal models</th>
<th>C57BL/6J mice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dosage form</td>
<td>Intraperitoneal injection, 160 mg/kg/day for 31 hours.</td>
</tr>
<tr>
<td>Applications</td>
<td>Cyclopamine showed teratogenic potential in the tested animals. Affected embryos were slightly smaller than normal littermates and exhibited mild blunting of the snout as well as cleft lip and palate. Embryos exhibited unilateral and bilateral complete cleft lip with clefts extending into the primary and secondary palate. Facial clefts were often accompanied by open eyelid defects and in one embryo by forelimb syndactyly.</td>
</tr>
<tr>
<td>Other notes</td>
<td>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.</td>
</tr>
</tbody>
</table>

**Reference:**


**Product Citations**


**Caution**

**FOR RESEARCH PURPOSES ONLY.**
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.