

Small Molecules

Cyclopamine

Hedgehog pathway inhibitor; Inhibits Smoothened (SMO)

Catalog # 72072
72074

1 mg
5 mg



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Product Description

Cyclopamine is a steroid alkaloid that inhibits the Hedgehog pathway at the point of the pathway activator Smoothened. Cyclopamine binds to the heptahelical bundle of Smoothened, a G protein-coupled receptor, and prevents it from signaling further downstream (Chen et al.).

Molecular Name:

Cyclopamine

Alternative Names:

11-Deoxojervine; Jervine

CAS Number:

4449-51-8

Chemical Formula:

C₂₇H₄₁NO₂

Molecular Weight:

411.6 g/mol

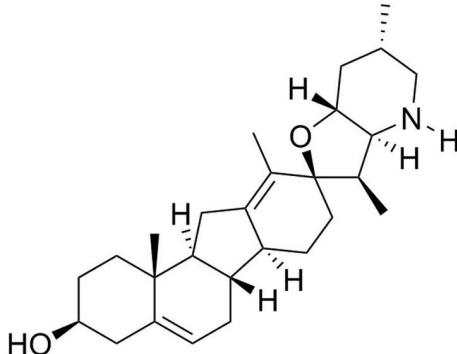
Purity:

≥ 98%

Chemical Name:

(2'R,3S,3'R,3'aS,6'S,6aS,6bS,7'aR,11aS,11bR)-1,2,3,3'a,4,4',5',6,6',6a,6b,7,7',7'a,8,11,11a,11b-octadecahydro-3',6',10,11b-tetramethyl-spiro[9H-benzo[a]fluorene-9,2'(3'H)-furo[3,2-b]pyridin]-3-ol

Structure:



Properties

Physical Appearance:

A crystalline solid

Storage:

Product stable at -20°C as supplied. Protect from prolonged exposure to light. For product expiry date, please contact techsupport@stemcell.com.

Solubility:

· Absolute ethanol ≤ 20 mM

For example, to prepare a 10 mM stock solution in absolute ethanol, resuspend 1 mg in 243 µL of absolute ethanol.

Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in absolute ethanol at -20°C. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application.

Compound has low solubility in aqueous media. For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. Avoid final ethanol concentration above 0.1% due to potential cell toxicity.

Published Applications

MAINTENANCE AND SELF-RENEWAL

- Reduces proliferation of rat neural progenitor cells and mouse neurospheres (Lai et al., Palma and Ruiz i Altaba).
- Reduces proliferation of mouse mammospheres (Liu et al.).
- Inhibits the growth of human and mouse medulloblastoma cells, and human glioblastoma cells (Bar et al., Berman et al.).

DIFFERENTIATION

- Promotes differentiation of pancreatic cells from human embryonic stem cells (D'Amour et al.).

CANCER RESEARCH

- Inhibits the growth of human and mouse medulloblastoma cells, and human glioblastoma cells (Bar et al., Berman et al.).

References

Bar EE et al. (2007) Cyclopamine-mediated hedgehog pathway inhibition depletes stem-like cancer cells in glioblastoma. *Stem Cells* 25(10): 2524–33.

Berman DM et al. (2002) Medulloblastoma growth inhibition by hedgehog pathway blockade. *Science* 297(5586): 1559–61.

Chen JK et al. (2002) Inhibition of Hedgehog signaling by direct binding of cyclopamine to Smoothened. *Genes & Development* 16(21): 2743–8.

D'Amour KA et al. (2006) Production of pancreatic hormone-expressing endocrine cells from human embryonic stem cells. *Nature Biotechnology* 24(11): 1392–401.

Lai K et al. (2003) Sonic hedgehog regulates adult neural progenitor proliferation in vitro and in vivo. *Nature Neuroscience* 6(1): 21–7.

Liu S et al. (2006) Hedgehog signaling and Bmi-1 regulate self-renewal of normal and malignant human mammary stem cells. *Cancer Research* 66(12): 6063–71.

Palma V & Ruiz i Altaba A. (2004) Hedgehog-GLI signaling regulates the behavior of cells with stem cell properties in the developing neocortex. *Development* 131(2): 337–45.

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