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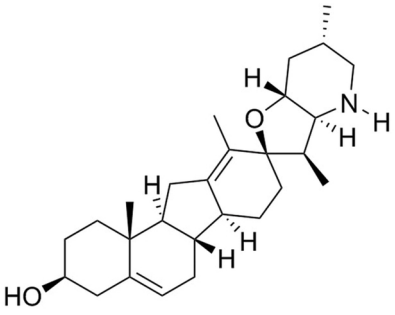
Cyclopamine

Hedgehog pathway inhibitor; Inhibits Smoothened (SMO)

Catalog #72072	1 mg
Catalog #72074	5 mg

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.).

Alternative Names:	11-Deoxojervine, Jervine
CAS Number:	4449-51-8
Chemical Formula:	$C_{27}H_{41}NO_2$
Molecular Weight:	411.6 g/mol
Purity:	≥ 95%
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,11boctadecahydro-3',6',10,11b-tetramethyl-spiro[9H-benzo[a]fluorene-9,2'(3'H)-furo[3,2-b]pyridin]-3-ol
Structure:	

Properties

Product Format: A crystalline solid

Stability and Storage: Product stable at -20°C as supplied. Protect from prolonged exposure to light.
Stable as supplied for 12 months from date of receipt.

Preparation: 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 Dev 16(21): 2743–8.

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

Lai K et al. (2003) Sonic hedgehog regulates adult neural progenitor proliferation in vitro and in vivo. Nat Neurosci 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 Res 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.

Related Products

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