Small Molecules

(Z)-Guggulsterone

Retinoic acid receptor (RAR) pathway inhibitor; Inhibits farnesoid X receptor (FXR)

Catalog # 73702

1 mg

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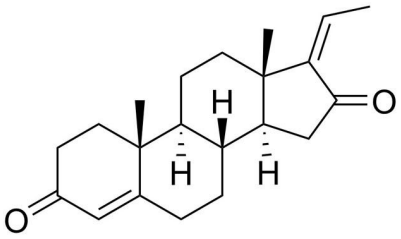
Product Description

(Z)-Guggulsterone is a plant steroid found in the resin of the guggul plant Commiphora mukul that acts as a selective antagonist of farnesoid X receptor (FXR; Cui et al.). It decreases chenodeoxycholic acid (CDCA)-induced FXR activation (IC_{50} = 10 µM) in the presence of 100 µM CDCA (Urizar et al.; Cui et al.).

Molecular Name:	(Z)-Guggulsterone
Alternative Names:	Not applicable
CAS Number:	39025-23-5
Chemical Formula:	$C_{21}H_{28}O_2$
Molecular Weight:	312.5 g/mol
Purity:	≥ 95%
Chemical Name:	(8R,9S,10R,13S,14S,17Z)-17-ethylidene-10,13-dimethyl-1,2,6,7,8,9,11,12,14,15-decahydrocyclopenta[a]phenanthrene-3,16-dione
Structure:	

Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect product from prolonged exposure to light. For long-term storage store with a desiccant. For product expiry date, please contact techsupport@stemcell.com.
Solubility:	· DMSO ≤ 800 µM · Absolute ethanol ≤ 3.2 µM · DMF ≤ 30 mM For example, to prepare a 10 mM stock solution in DMF, resuspend 1 mg in 320 µL of DMF. 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 DMSO 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 DMSO concentration above 0.1% due to potential cell toxicity.

Published Applications

DIFFERENTIATION
· Induces differentiation of human pluripotent stem cell-derived neural stem cells into dopaminergic neurons (Gonzalez et al.).
METABOLISM
· Decreases hepatic low-density lipoprotein cholesterol and triglyceride levels in rodents fed with a high cholesterol diet (Urizar et al.).
CANCER RESEARCH
· Regulates growth and metastasis of tumor cells in human multiple myeloma cells by the expression of STAT3-regulated antiapoptotic (Bcl-2, Bcl-xL, and Mcl-1), proliferative (cyclin D1), and angiogenic (VEGF) gene products (Ahn et al.).
· Inhibits tube formation in HUVEC and migration in HUVEC or a human prostate cancer cell line (Xiao et al.).

References

Ahn KS et al. (2008) Guggulsterone, a farnesoid X receptor antagonist, inhibits constitutive and inducible STAT3 activation through induction of a protein tyrosine phosphatase SHP-1. Cancer Res 68(11): 4406–15.
Cui J et al. (2003) Guggulsterone is a farnesoid X receptor antagonist in coactivator association assays but acts to enhance transcription of bile salt export pump. J Biol Chem 278(12): 10214–20.
Gonzalez R et al. (2013) Deriving dopaminergic neurons for clinical use. A practical approach. Sci Rep 3: 1463.
Urizar NL et al. (2002) A natural product that lowers cholesterol as an antagonist ligand for FXR. Science 296(5573): 1703–6.
Xiao D & Singh S V. (2008) z-Guggulsterone, a constituent of Ayurvedic medicinal plant Commiphora mukul, inhibits angiogenesis in vitro and in vivo. Mol Cancer Ther 7(1): 171–80.

Related Small Molecules

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This product is hazardous. Please refer to the Safety Data Sheet (SDS).