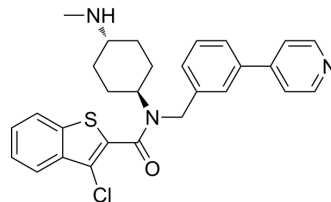


SAG

Cat. No.:	HY-12848
CAS No.:	912545-86-9
Molecular Formula:	C ₂₈ H ₂₈ ClN ₃ OS
Molecular Weight:	490.06
Target:	Smo
Pathway:	Stem Cell/Wnt
Storage:	4°C, protect from light * In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 38 mg/mL (77.54 mM)
 H₂O : < 0.1 mg/mL (ultrasonic;warming;heat to 60°C) (insoluble)
 * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	2.0406 mL	10.2028 mL	20.4057 mL
	5 mM	0.4081 mL	2.0406 mL	4.0811 mL
	10 mM	0.2041 mL	1.0203 mL	2.0406 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 10 mg/mL (20.41 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 10 mg/mL (20.41 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 10 mg/mL (20.41 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

SAG is a potent Smoothed (Smo) receptor agonist (EC₅₀=3 nM; K_d=59 nM). SAG activates the Hedgehog signaling pathway and counteracts Cyclopamine (HY-17024) inhibition of Smo^{[1][2][3]}.

IC₅₀ & Target

EC₅₀: 3 nM (Smo)^[1]

In Vitro

SAG (0.1 nM-100 μM; 30 h) induces firefly luciferase expression in Shh-LIGHT2 cells with an EC₅₀ of 3 nM and then inhibits expression at higher concentrations^[1].

SAG (1-1000 nM; 1 h) competes for the binding of BODIPY-cyclopamine to Smo-expressing Cos-1 cells, yielding an apparent dissociation constant (K_d) of 59 nM for the SAG/Smo complex^[1].
SAG (100 nM) inhibits the inhibitory effect of ShhN-induced pathway activation by Robotnikinin^[2].
SAG (250 nM; 48 h) significantly increases SMO mRNA and protein expression in MDAMB231 cells^[3].
SAG (250 nM; 24 and 48 h) increases CAXII mRNA expression in MDAMB231 cells at 24h in normoxic and hypoxic conditions in MDAMB231 cells^[3].
SAG (250 nM; 24 h) increases MDAMB231 cells migration^[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

SAG (1.0 mM) induces more osteogenesis mainly at the defect borders and a significant increase in BV/TV at the eight-week timepoint in CD-1 mice^[4].
SAG (15-20 mg/kg; i.p.) induces pre-axial polydactyly prevalently in a dose-dependent manner in mice^[5].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Pregnant C57BL/6J mice ^[5]
Dosage:	15, 17, 20 mg/kg
Administration:	A single i.p.
Result:	Effective in ca. 80% of the embryos and increased Gli1 and Gli2 mRNA expression in the limb bud, with Gli1 mRNA being the most upregulated at the dose of 20 mg/kg.

CUSTOMER VALIDATION

- Cell Res. 2022 Mar;32(3):288-301.
- Sci Adv. 2023 Jun 16;9(24):eadf6927.
- Cell Rep. 2020 Apr.
- Glia. 2021 Mar 11.
- iScience. 2022 Dec 26;26(1):105898.

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REFERENCES

- [1]. Chen JK, et al. Small molecule modulation of Smoothened activity. Proc Natl Acad Sci U S A. 2002 Oct 29;99(22):14071-6.
- [2]. Stanton BZ, et al. A small molecule that binds Hedgehog and blocks its signaling in human cells. Nat Chem Biol. 2009 Mar;5(3):154-6.
- [3]. Lee S, et al. Combining Smoothened Agonist (SAG) and NEL-like protein-1 (NELL-1) Enhances Bone Healing. Plast Reconstr Surg. 2017 Feb 13
- [4]. Fish EW, et al. Preaxial polydactyly following early gestational exposure to the smoothened agonist, SAG, in C57BL/6J mice. Birth Defects Res A Clin Mol Teratol. 2016 Nov 1
- [5]. Guerrini G, et al. Inhibition of smoothened in breast cancer cells reduces CAXII expression and cell migration. J Cell Physiol. 2018 Dec; 233(12): 9799-9811.

Caution: Product has not been fully validated for medical applications. For research use only.

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