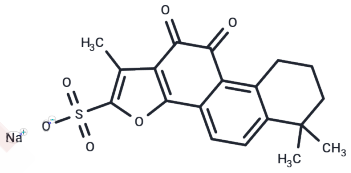
Data Sheet (Cat.No.T2946)

TargetMol

Tanshinone IIA sulfonate sodium

Chemical Properties



CAS No. : 69659-80-9

Formula: C19H17O6S·Na

Molecular Weight: 396.39

Storage: Powder: -20°C for 3 years
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Tanshinone IIA sulfonate sodium (Tanshinone IIA sodium sulfonate) is a water-soluble derivative of tanshinone IIA extracted from Savia miltiorrhiza; a potent negative allosteric modulator of the human purinergic receptor P2X7. Tanshinone IIA sulfonate sodium (12.5 μM) inhibits hypoxia-induced PKG and PPAR-γ downregulation in PASMCs and distal pulmonary arteries of rats.
Targets(IC50)	CaMK,Calcium Channel,Cytochromes P450
In vitro	Sodium Tanshinone IIA sulfonate (12.5 μM) effectively inhibits hypoxia-induced downregulation of PKG and PPAR-γ in PASMCs and distal pulmonary arteries of rats, preserving pulmonary vascular function. It prevents TRPC1 and TRPC6 reduction in hypoxic PASMCs, reversible upon PKG or PPAR-γ knockdown, implicating the PKG-PPAR-γ axis in mitigating PASMCs' proliferative response under hypoxia. A PPAR-γ agonist enhances the compound's maintenance of basal calcium levels and store-operated calcium entry (SOCE) in PASMCs. Sodium Tanshinone IIA sulfonate dose-dependently inhibits CYP3A4 activity in human liver microsomes (HLMs) and the CYP3A4 isoform with minimal impact on other CYP enzymes, suggesting a specific interaction with the CYP3A4 pathway. Kinetic parameters for CYP3A4 inhibition are detailed for both HLMs and the CYP3A4 isoform. Due to its significant CYP3A4 inhibitory effect, it has potential for drug-drug interactions with other CYP3A4 substrates.
In vivo	Sodium Tanshinone IIA sulfonate administered at dosages of 10 mg/kg and 20 mg/kg, in conjunction with Donepezil, effectively reduces escape latency, enhances the number of times subjects crossed the original platform location, and extends the duration spent in the target quadrant in experimental settings. This compound notably diminishes acetylcholinesterase (AChE) activity while boosting choline acetyltransferase (ChAT) activity within the hippocampus and cortex of SCOP-treated mice, alongside increasing superoxide dismutase (SOD) activity and reducing malondialdehyde (MDA) and reactive oxygen species (ROS) levels in the same regions. At a preventive dosage of 30 mg/kg/day, Sodium Tanshinone IIA sulfonate mitigates the characteristic alterations induced by hypoxia in a chronic hypoxia PH rat model. Moreover, when administered intraperitoneally at dosages of 20, 10, and 5 mg/kg, it effectively prevents peritoneal adhesion without impeding anastomotic healing in rats, demonstrating increased peritoneal lavage fluid tPA activity and tPA/PAI-1 ratio, alongside decreased TGF-β1 and collagen I expressions in ischemic tissues.

Solubility Information

Solubility	DMSO: 85 mg/mL (214.44 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+90% Saline: 2.5 mg/mL (6.31 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.5228 mL	12.6138 mL	25.2277 mL
5 mM	0.5046 mL	2.5228 mL	5.0455 mL
10 mM	0.2523 mL	1.2614 mL	2.5228 mL
50 mM	0.0505 mL	0.2523 mL	0.5046 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Xu QQ, et al. Sodium Tanshinone IIA Sulfonate Attenuates Scopolamine-Induced Cognitive Dysfunctions via Improving Cholinergic System. Biomed Res Int. 2016;22016:19852536.
Jiang, Q., Lu, W., Yang, K., Hadadi, C., Fu, X., & Chen, Y. et al. (2016). Sodium tanshinone IIA sulfonate inhibits hypoxia-induced enhancement of SOCE in pulmonary arterial smooth muscle cells via the PKG-PPAR-γ signaling axis. American Journal Of Physiology-Cell Physiology, 311(1), C136-C149. doi: 10.1152/ajpcell.00252.2015
Ouyang DS, et al. Kinetics of cytochrome P450 enzymes for metabolism of sodium tanshinone IIA sulfonate in vitro. Chin Med. 2016 Mar 22;11:11.
Chen D, et al. Sodium tanshinone IIA sulfonate and its interactions with human CYP450s. Xenobiotica. 2016 Dec;46 (12):1085-1092. Epub 2016 Mar 2.
Lin S, et al. [Sodium tanshinone IIA sulfonate prevents postoperative peritoneal adhesions in rats by enhancing the activity of the peritoneal fibrinolytic system]. Nan Fang Yi Ke Da Xue Xue Bao. 2016 Feb;36(2):260-4.

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