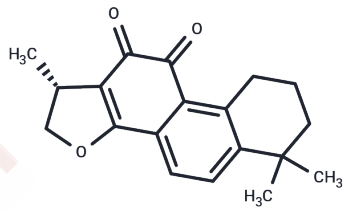
Data Sheet (Cat.No.T2814)

TargetMol

Cryptotanshinone

Chemical Properties



CAS No. : 35825-57-1

Formula: C19H20O3

Molecular Weight: 296.36

Appearance: no data available

Storage: keep away from direct sunlight
Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Biological Description

Description	Cryptotanshinone (Cryptotanshinon), a STAT3 inhibitor (IC50: 4.6 μM) in a cell-free assay, strongly inhibits phosphorylation of STAT3 Tyr705, with a little effect on STAT3 Ser727, but no inhibition for STAT1 nor STAT5.
Targets(IC50)	STAT,Autophagy
In vitro	In ob/ob mice (C57BL/6J-Lepob), db/db mice (C57BL/KsJ-Leprdb), and ZDF rats, treatment with Cryptotanshinone (600 mg/kg/day) for 3 days significantly reduced blood glucose levels, maintaining this reduction throughout the monitoring period. In ob/ob mice (C57BL/6J-Lepob) and diet-induced obese mice, Cryptotanshinone significantly reduced body weight and food intake in a dose-dependent manner. It also notably decreased fat in adipose tissues and significantly lowered serum cholesterol and triglyceride levels, with AMPK activity in skeletal muscle being 2.5-3 times higher than that in the control mice.
In vivo	In DU145 cells, Cryptotanshinone treatment (7 μM) for 30 minutes significantly inhibits the phosphorylation of STAT3 at Tyr705 without affecting the phosphorylation at Ser727. After 4 hours, it markedly inhibits the phosphorylation of JAK2 (IC50: 5 μM) but does not affect the phosphorylation of downstream kinases c-Src and EGFR. This suggests that the inhibition of STAT3 phosphorylation at Tyr705 is due to binding to the STAT3 SH2 domain. Cryptotanshinone, a natural product isolated from the root of Salvia miltiorrhiza, significantly inhibits STAT3-dependent luciferase activity, blocks phosphorylation at Tyr705, and dimerization of STAT3. It notably suppresses the proliferation of the DU145 cell line, which possesses constitutively active STAT3 (GI50: 7 μM), by inhibiting STAT3 activity, leading to the downregulation of cyclin D1, Bcl-xL, and anti-apoptotic genes, and subsequently causing cell accumulation in the G0-G1 phase. Cryptotanshinone exhibits mild inhibitory effects on the growth of PC3, LNCaP, and MDA-MB-468 cells.
Kinase Assay	STAT3-dependent dual-luciferase assay: HCT-116 cells are transiently transfected with reporter plasmid having the STAT3-binding element for regulating luciferase assay. Cells are treated with Cryptotanshinone for 24 hours at a concentration range of 0.2 to 50 μM. After treatment, cells are harvested in 20 μL of passive lysis buffer and luciferase activity is evaluated by the Dual Luciferase Reporter Assay kit on Wallac Victor2. The concentration of Cryptotanshinone that inhibits the luciferase activity by 50% represents IC50 value.

Cell Research	Cells are exposed to Cryptotanshinone for 24 or 48 hours. For the determination of cell proliferation, the cell proliferation reagent WST-1 is added and WST-1 formazan is quantitatively measured at 450 nm using an ELISA reader.(Only for Reference)

Solubility Information

Solubility	DMSO: 4.17 mg/mL (14.06 mM),Sonication is recommended. 10% DMSO+40% PEG300+5% Tween 80+45% Saline: 0.42 mg/mL (1.42 mM),Solution. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.3743 mL	16.8714 mL	33.7427 mL
5 mM	0.6749 mL	3.3743 mL	6.7485 mL
10 mM	0.3374 mL	1.6871 mL	3.3743 mL
50 mM	0.0675 mL	0.3374 mL	0.6749 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.

Reference

Man Y, et al. Cryptotanshinone inhibits lung tumor growth by increasing CD4+ T cell cytotoxicity through activation of the JAK2/STAT4 pathway. Oncol Lett. 2016 Nov;12(5):4094-4098.
Huang Y, Yu S H, Zhen W X, et al. Tanshinone I, a new EZH2 inhibitor restricts normal and malignant hematopoiesis through upregulation of MMP9 and ABCG2. Theranostics. 2021, 11(14): 6891
Han P, Hou Y, Zhao Y, et al. Low-dose decitabine modulates T cell homeostasisand restores immune tolerance in immune thrombocytopenia. Blood. 2021
Chen L, et al. Cryptotanshinone inhibits lung tumorigenesis and induces apoptosis in cancer cells in vitro and in vivo. Mol Med Rep. 2014 Jun;9(6):2447-52.
Wang W, et al. Cryptotanshinone Attenuates Oxidative Stress and Inflammation through the Regulation of Nrf-2 and NF-κB in Mice with Unilateral Ureteral Obstruction. Basic Clin Pharmacol Toxicol. 2018 Dec;123(6):714-720.
Chen C, Lu M, Lin S, et al. The nuclear gene rpl18 regulates erythroid maturation via JAK2-STAT3 signaling in zebrafish model of Diamond-Blackfan anemia. Cell Death & Disease. 2020, 11(2): 1-11
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Luo P Q, Zhang L X, Chen Z M, et al.Effects and mechanisms of trifluridine alone or in combination with cryptotanshinone in inhibiting malignant biological behavior of gastric cancer.Cell Cycle.2023: 1-15.