

## Tanshinone IIA

### Chemical Properties

CAS No. : 568-72-9

Formula: C<sub>19</sub>H<sub>18</sub>O<sub>3</sub>

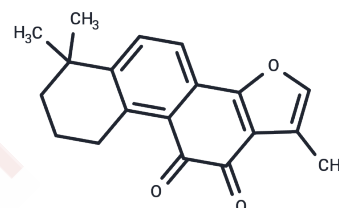
Molecular Weight: 294.34

Storage:

Keep away from direct sunlight, The compound is unstable in solution. Please use soon

Powder: -20°C for 3 years

Actual storage temperature shall be subject to the COA.



### Biological Description

Description	Tanshinone IIA (Tanshinone B) is a diterpene quinone natural product that targets the protein kinase domain of VEGF/VEGFR2. Tanshinone IIA inhibits angiogenesis and exhibits anti-inflammatory, antioxidant, and therapeutic activities against coronary heart disease.
Targets(IC50)	VEGFR
In vitro	<p><b>METHODS:</b> Human breast cancer cells MCF-7 were treated with Tanshinone IIA (0.0625-1 µg/mL) for 5 days and cell viability was measured by MTT assay.</p> <p><b>RESULTS:</b> Tanshinone IIA inhibited cell growth in a dose- and time-dependent manner, with an IC<sub>50</sub> of 0.25 µg/mL and a maximum inhibition of cell growth (&gt;80%) at 1 µg/mL. [1]</p> <p><b>METHODS:</b> Human breast cancer cells MCF-7 were treated with Tanshinone IIA (5-20 µM) for 12-48 h, and apoptosis was detected by Flow cytometry.</p> <p><b>RESULTS:</b> A concentration-dependent induction of apoptosis was observed in the presence of Tanshinone IIA. [2]</p>
In vivo	<p><b>METHODS:</b> To detect anti-tumor activity in vivo, Tanshinone IIA (30 mg/kg) was injected into BALB/c-nu nude mice bearing MCF-7 tumor xenografts five times per week for two weeks.</p> <p><b>RESULTS:</b> Tanshinone IIA treatment significantly reduced tumor size and weight. Tanshinone IIA treatment enhanced PARP and caspase-3 cleavage in vivo. [2]</p>
Cell Research	Tanshinone IIA (Tan IIA) is dissolved in DMSO (10 mM) and stored (in dark and -20°C), and serially diluted in a RPMI 1640 medium immediately prior to experiments[1]. A549 cells are counted in logarithmic phase and 6000 cells (90 µL volume) are placed in 96-well plates. 10 µL varying concentrations of Tanshinone IIA (final concentrations 80, 60, 40, 30, 20, 15, 10, 5 and 2.5 µM) and ADM (final concentrations 8, 4, 2, 1, 0.5 and 0.25 µM) are added into drug groups, while negative control group (vehicle group) is only added 10 µL DMSO or normal saline without Tanshinone IIA or ADM. Cells are incubated for an additional 2 h with CCK-8 reagent (100 µL/mL medium) and the absorbance is read at 450 nm using a microplate reader. Cell proliferation inhibition rates are calculated according to the following formula: the proliferation inhibition ratio (%)=1-[(A1-A4)/(A2-A3)]×100, where, A1 is the OD value of drug experimental group, A2 is the OD value of blank control group, A3 is the OD value of the RPMI1640 medium without

Cell Research	cells, and A4 is the OD value of drugs with the same concentration as A1 but without cells. The IC50 value, which represents the concentration of the drug that demonstrates 50% of cell growth inhibition, is calculated by nonlinear regression analysis using GraphPad Prism software[1].
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## Solubility Information

Solubility	DMSO: 2.95 mg/mL (10.02 mM),The compound is unstable in solution. Please use soon. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 0.29 mg/mL (0.99 mM),Suspension. 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	3.3974 mL	16.9872 mL	33.9743 mL
5 mM	0.6795 mL	3.3974 mL	6.7949 mL
10 mM	0.3397 mL	1.6987 mL	3.3974 mL
50 mM	0.0679 mL	0.3397 mL	0.6795 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

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- Sun S, et al. *Brain Res Bull*, 2012, 88(6), 581-588.
- Ruolin Yang, et al. *Med. Chem. Commun.*, 2014, 5: 1528-1532.
- Zhang Z, et al. Tanshinone IIA inhibits apoptosis in the myocardium by inducing microRNA-152-3p expression and thereby downregulating PTEN. *Am J Transl Res*. 2016 Jul 15;8(7):3124-32.
- Su CC, et al. Tanshinone IIA decreases the protein expression of EGFR, and IGFR blocking the PI3K/Akt/mTOR pathway in gastric carcinoma AGS cells both in vitro and in vivo. *Oncol Rep*. 2016 Aug;36(2):1173-9.

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