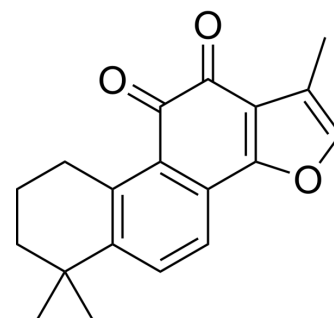


Tanshinone IIA

Cat. No.:	HY-N0135
CAS No.:	568-72-9
Molecular Formula:	C ₁₉ H ₁₈ O ₃
Molecular Weight:	294.34
Target:	VEGFR
Pathway:	Protein Tyrosine Kinase/RTK
Storage:	Powder -20°C 3 years 4°C 2 years



* The compound is unstable in solutions, freshly prepared is recommended.

SOLVENT & SOLUBILITY

In Vitro

DMSO : 1 mg/mL (3.40 mM; ultrasonic and warming and heat to 80°C)

Concentration	Mass		
	1 mg	5 mg	10 mg
1 mM	3.3974 mL	16.9872 mL	33.9743 mL
5 mM	---	---	---
10 mM	---	---	---

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

BIOLOGICAL ACTIVITY

Description

Tanshinone IIA (Tan IIA) is one of the main compositions in the root of *Salvia miltiorrhiza* Bunge. Tanshinone IIA may suppress angiogenesis by targeting the protein kinase domains of VEGF/VEGFR2.

IC₅₀ & Target

VEGF/VEGFR2^[1]

In Vitro

The anti-tumor effect of Tanshinone IIA includes inhibiting tumor cell proliferation, disturbing tumor cell cycle, promoting tumor cell apoptosis, and inhibiting tumor cell invasion and transfer. Tanshinone IIA has anti-proliferative effects on A549 cells: the IC₅₀ of Tanshinone IIA after 24, 48 and 72 h are 145.3, 30.95 and 11.49 μM, respectively. The CCK-8 assay is used to evaluate the proliferative activity of A549 cells treated with Tanshinone IIA (2.5-80 μM) for 24, 48 and 72 h, respectively. The CCK-8 results show that Tanshinone IIA can significantly inhibit A549 cell proliferation in a dose- and time-dependent manner. Obvious apoptosis and cell growth inhibition of A549 cells are observed after drug treatment for 48 h (concentrations used are approximately IC₅₀ values: Tanshinone IIA 31 μM on A549). Western blotting finds that 48 h exposures to Tanshinone IIA (31 μM) in A549 cells, downregulates expression of VEGF and VEGFR2 protein in both drug treatment groups vs. vehicle^[1]. Tanshinone IIA, one of the most abundant constituents of the root of *Salvia miltiorrhiza*, protects rat myocardium-derived H9C2 cells against apoptosis. Treatment of H9C2 cells with Tanshinone IIA inhibits angiotensin II-induced apoptosis by downregulating the expression of PTEN (phosphatase and tensin homolog), a tumor

suppressor that plays a critical role in apoptosis. Tanshinone IIA inhibits angiotensin II (AngII)-induced apoptosis by downregulating the expression of phosphatase and tensin homolog (PTEN)^[2]. Tanshinone IIA decreases the protein expression of EGFR, and IGFR blocking the PI3K/Akt/mTOR pathway in gastric carcinoma AGS cells^[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Tanshinone IIA (10 or 20 mg/kg; p.o) significantly reverses scopolamine-induced cognitive impairments^[4].

Tanshinone IIA (2, 4, 8 mg/kg; i.p.) mediated protective effects on the STZ-induced diabetic nephropathy may be associated with the reduced endoplasmic reticulum stress via attenuating PERK signaling activities^[5].

Tanshinone IIA (3 and 12 mg/kg; i.p.) significantly inhibits the growth of ectopic endometrium^[6].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male ICR mice (25–30 g) ^[4]
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Dosage:	10 or 20 mg/kg
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Administration:	P.o.
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Result:	Significantly reversed scopolamine-induced cognitive impairments.
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Animal Model:	STZ-treated rats ^[5]
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Dosage:	2, 4, 8 mg/kg
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Administration:	I.p.
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Result:	Decreased the expression levels of transforming growth factor-beta1, TSP-1, Grp78 and CHOP and attenuated the increase in the protein levels of p-PERK, p-elf2 α and ATF-4 from the renal tissues of diabetic rats.
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Animal Model:	Female Sprague-Dawley rats (180 -200g) ^[6]
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Dosage:	3 and 12 mg/kg
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Administration:	I.p.
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Result:	Significantly inhibited the growth of ectopic endometrium.
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CUSTOMER VALIDATION

- Phytother Res. 2022 Jul 8.
- Cancer Cell Int. 2020 Aug 7;20:379.
- Chem-Biol Interact. 2020 Mar 1;319:109024.
- Eur J Pharmacol. 2020 Aug 5;880:173140.
- J Integr Med. 20 January 2022.

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REFERENCES

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- [1]. Xie J, et al. The antitumor effect of tanshinone IIA on anti-proliferation and decreasing VEGF/VEGFR2 expression on the human non-small cell lung cancer A549 cell line. *Acta Pharm Sin B*. 2015 Nov;5(6):554-63.
- [2]. 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.
- [3]. 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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Caution: Product has not been fully validated for medical applications. For research use only.

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