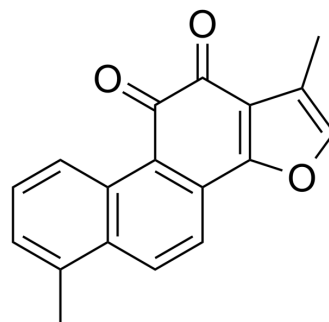


Tanshinone I

Cat. No.:	HY-N0134		
CAS No.:	568-73-0		
Molecular Formula:	C ₁₈ H ₁₂ O ₃		
Molecular Weight:	276.29		
Target:	Phospholipase		
Pathway:	Metabolic Enzyme/Protease		
Storage:	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	2 years
		-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 2 mg/mL (7.24 mM; Need ultrasonic)

Concentration	Solvent	Mass		
		1 mg	5 mg	10 mg
1 mM		3.6194 mL	18.0969 mL	36.1939 mL
5 mM		0.7239 mL	3.6194 mL	7.2388 mL
10 mM		---	---	---

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

BIOLOGICAL ACTIVITY

Description

Tanshinone I is an inhibitor of type IIA human recombinant sPLA₂ (IC₅₀=11 μM) and rabbit recombinant cPLA₂ (IC₅₀=82 μM).

IC₅₀ & Target

IC₅₀: 11 μM (sPLA₂), 82 μM (cPLA₂)^[1].

In Vitro

Tanshinone I inhibits PGE₂ formation from LPS-induced RAW macrophages (IC₅₀=38 μM). When Tanshinone I is added simultaneously with LPS, this compound clearly inhibits PGE₂ production (IC₅₀=38 μM) at 10-100 μM. Tanshinone I also reduces PGE₂ production (IC₅₀=46 μM) when added after COX-2 is fully induced. The fact that Tanshinone I inhibits PGE₂ production by pre-induced COX-2 strongly suggests that this compound may directly inhibit COX-2 activity and/or affect PLA₂ activity. When Tanshinone I is incubated with two different forms of phospholipase A₂ (PLA₂), it clearly inhibits sPLA₂ (IC₅₀=11 μM) in a concentration-dependent manner. Although being less potent, Tanshinone I also inhibits cPLA₂ (IC₅₀=82 μM)^[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Tanshinone I shows antiinflammatory activity in rat carrageenan-induced paw oedema and adjuvant-induced arthritis. In order to establish the anti-inflammatory activity of Tanshinone I, the classical animal models of acute and chronic inflammation [rat carrageenan (CGN)-induced paw oedema and rat adjuvant-induced arthritis (AIA)] are employed. When

Tanshinone I is orally administered, it shows significant anti-inflammatory activity against CGN-induced paw oedema (47% inhibition at 160 mg/kg), while the IC₅₀ of indomethacin is 7.1 mg/kg. In AIA, Tanshinone I gives 27% inhibition of secondary inflammation at 18 day with an oral dose of 50 mg/kg/day, whereas prednisolone (5 mg/kg/day) shows potent inhibition (65%)^[1].

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

PROTOCOL

Kinase Assay ^[1]

As sources of PLA₂, human recombinant sPLA₂ (type IIA) is purified from CHO cells transfected with the PLA₂ gene and rabbit recombinant platelet cPLA₂ is obtained through its expression in baculovirus. The standard reaction mixture (200 µL) contained 100 mM Tris-HCl buffer (pH 9.0) with 6 mM CaCl₂ and 20 nmol 1-acyl-[1-¹⁴C]-arachidonyl-sn-glycerophosphoethanolamine (2000 cpm/nmol) in the presence or absence of Tanshinone I. The reaction is started by adding 50 ng purified sPLA₂ or cPLA₂. After 20 min at 37°C, the free fatty acid generated is analysed. Under these standard conditions, the reaction mixture in the absence of Tanshinone I released approximately 10% of free fatty acid from the phospholipid substrate added^[1].

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

Cell Assay ^[1]

RAW 264.7 cells are cultured with DMEM supplemented with 10% FBS and 1% antibiotics under 5% CO₂ at 37°C. Briefly, cells are plated in 96-well plates (2×10⁵ cells/well). LPS (1 µg/mL) and Tanshinone I are simultaneously added and incubated for 24 h, unless otherwise specified. The PGE₂ concentration in the medium is measured using an EIA kit for PGE₂. In order to determine the effects of Tanshinone I on PGE₂ production after induction of COX-2, cells are incubated with LPS (1 µg/mL) for 24 h and thoroughly washed. Then, Tanshinone I is added without LPS and the cells are incubated for another 24 h. From the medium, PGE₂ concentrations are measured. The cytotoxicity of Tanshinone I to RAW cells is checked using the MTT assay. Tanshinone I does not show any cytotoxicity up to 100 µM^[1].

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

Animal Administration ^[1]

Mice^[1]

In order to evaluate the inhibitory activity of Tanshinone I against animal models of acute and chronic inflammation, rat carrageenan (CGN)-induced paw oedema and adjuvant-induced arthritis (AIA) models are employed. Briefly, 1% CGN dissolved in pyrogen-free saline (0.05 mL) is injected into right hind paw of rats for the paw oedema test. After 5 h, swelling of the treated paw is measured using a plethysmometer. Tanshinone I dissolved in 0.5% CMC is administered orally 1 h prior to CGN injection. For the AIA test, an arthritic inflammation is provoked by injection of Mycobacterium Butyricum (0.6 mL/rat) dissolved in mineral oil to the right hind paw of rats. Tanshinone I is orally administered every day. The swelling of the treated and untreated paws is measured using a plethysmometer.

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

CUSTOMER VALIDATION

- Int J Mol Sci. 2022, 23(19), 11721.

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REFERENCES

[1]. Kim SY, et al. Effects of Tanshinone I isolated from *Salvia miltiorrhiza bunge* on arachidonic acid metabolism and in vivo inflammatory responses. *Phytother Res.* 2002 Nov;16(7):616-20.

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

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