Natural Products

ChemFaces

Tanshinone IIA Datasheet

4th Edition (Revised in July, 2016)

[Product Information]

Name: Tanshinone IIA

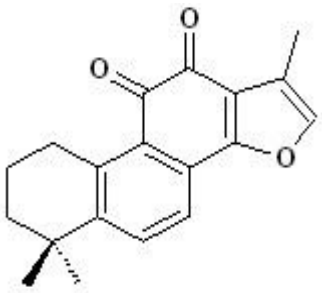
Catalog No.: CFN98952

Cas No.: 568-72-9

Purity: > 98%

M.F: $C_{19}H_{18}O_3$

M.W: 294.4



Physical Description: Red powder

Synonyms: 1,6,6-Trimethyl-8,9-dihydro-7H-naphtho[1,2-g]benzofuran-10,11-dione.

[Intended Use]

1. Reference standards;
2. Pharmacological research;
3. Synthetic precursor compounds;
4. Intermediates & Fine Chemicals;
5. Others.

[Source]

The root of *Salvia miltiorrhiza Bge.*

[Biological Activity or Inhibitors]

Tanshinone IIA (Tan-IIA) is a derivative of phenanthrene-quinone isolated from Danshen,

a widely used Chinese herbal medicine, it has antioxidant properties and cytotoxic activity against multiple human cancer cell lines, inducing apoptosis and differentiation of some human cancer cell lines, it demonstrates a dose- and time-dependent inhibitory effect on cell growth (IC50 = 0.25 ug/ml), and it significantly inhibits colony formation and BrdU incorporation of human breast cancer cells.[1]

Tanshinone IIA protects cardiac myocytes against oxidative stress-induced apoptosis, the in vivo protection is mediated by increased scavenging of oxygen free radicals, prevention of lipid peroxidation and upregulation of the Bcl-2/Bax ratio.[2]

Tanshinone IIA possesses anti-cancer and anti-inflammatory activities, Tan-IIA has the potential to target and kill cancer stem cells (CSCs), and can inhibit human breast CSCs growth both in vitro and in vivo through attenuation of IL-6/STAT3/NF-kB signaling pathways. [3]

Tanshinone IIA is a good candidate for treating cerebral ischemia, but its short half-life and poor permeability across the blood-brain-barrier (BBB) limit its curative efficacy; we find tanshinone IIA PEGylated nanoparticles (CBSA-PEG-TIIA-NPs) possesses remarkable neuroprotective effects on ischemic stroke through modulation of inflammatory cascades and neuronal signal pathways involved in cerebral ischemia.[4]

Tanshinone IIA has the potential to ameliorate bone-resorption diseases in vivo by reducing both the number and activity of osteoclasts, it inhibits the bone resorptive activity of differentiated osteoclasts, which was accompanied with the disruption of the actin ring. [5]

Tanshinone IIA protects human umbilical vein endothelial cell line (ECV-304) cell damage induced by hydrogen peroxide through its anti-oxidant effect and cluster of differentiation 40 (CD40) anti-inflammatory approach.[6]

Tanshinone IIA can protect against sudden cardiac death induced by lethal arrhythmias via repression of microRNA-1; tanshinone IIA pretreatment protects myocardium against ischaemia/reperfusion injury through the phosphatidylinositol 3-kinase/Akt-dependent pathway in diabetic rats.[7,8]

Tanshinone IIA represses inflammatory response and reduces radiculopathic pain by inhibiting IRAK-1 and NF-κB/p38/JNK signaling, it has the potential of for the treatment of

inflammation and followed pain in degenerative disease.[9]

[Solvent]

Chloroform, Dichloromethane, Diethyl ether, DMSO, Acetone, etc.

[HPLC Method][10]

Mobile phase:Methanol-Tetrahydrofuran-H2O- Glacial acetic acid =20:35:44:1;

Flow rate: 1.0 ml/min;

Column temperature: Room Temperature;

The wave length of determination: 254 nm.

[Storage]

2-8℃, Protected from air and light, refrigerate or freeze.

[References]

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[3] Lin C, Wang L, Wang H, *et al. J. Cell. Biochem., 2013, 114(9):2061–70.*

[4] Liu X, An C, Jin P, *et al. Biomaterials, 2012, 34(3):817-30.*

[5] Kim H H, Kim J H, Han B K, *et al. Biochem. Pharmacol., 2004, 67(9):1647-56.*

[6] Lin R, Wang W R, Liu J T, *et al. J. Ethnopharmacol., 2006, 108(2):217-22.*

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[9] Wei L, Yu Z, Xing C, *et al. Int. Immunopharmacol., 2015, 28(1):382-9.*

[10] Shi Z, He J, Yao T, *et al. J. Pharmaceut. Biomed. , 2005, 37(3):481-6.*

[Contact]

Address: **Email:** info@chemfaces.com

S5-3 Building, No. 111, Dongfeng Rd.,
Wuhan Economic and Technological Development Zone,
Wuhan, Hubei 430056,
China

Tel: +86-27-84237783
Fax: +86-27-84254680
Web: www.chemfaces.com
Tech Support: service@chemfaces.com