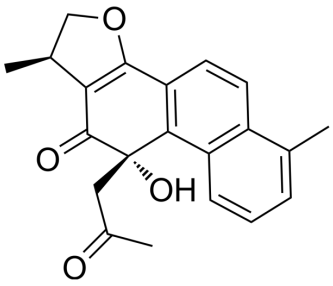
Danshenol A

Cat. No.:	HY-122917
CAS No.:	189308-08-5
Molecular Formula:	$C_{21}H_{20}O_4$
Molecular Weight:	336.38
Target:	Aldose Reductase; Reactive Oxygen Species
Pathway:	Metabolic Enzyme/Protease; Immunology/Inflammation; NF-κB
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Danshenol A, an abietane-type diterpenoid, is an aldose reductase (AR) inhibitor with an IC_{50} of 0.1 μM. Danshenol A can protect endothelial cells from oxidative stress by directly scavenging ROS. Danshenol A has anti-inflammatory and antitumor properties. Danshenol A can be used for atherosclerosis research[1][2][3][4].

IC_{50} & Target

IC50: 0.1 μM (Aldose reductase)[3]

In Vitro

Danshenol A (10 nM; pretreatment for 1 h) alone showed no effect on the ICAM-1 expression at both mRNA and protein levels. TNF-α-induced ICAM-1 expression and subsequent adhesion of monocytes, as well as elevated reactive oxygen species (ROS) generation and NOX4 expression are all significantly reversed by Danshenol ADanshenol A inhibits TNF-α-induced ICAM-1 expression and subsequent monocyte adhesion to endothelial cells through the NOX4-dependent IKKβ/NF-κB pathway[1].

Danshenol A (1, 3, and 10 μM; pretreated for 35 min) restores apoptosis of cardiomyocytes induced by angiotensin II. Besides, Danshenol A inhibits mitochondrial redox signaling pathways in cardiomyocytes[2].

Danshenol A shows inhibited growth of K562 (IC_{50} = 0.53 μg/mL), T-24 (IC_{50} = 7.94 μg/mL), QGY (IC_{50} = 4.65 μg/mL) and Me180 (IC_{50} = 6.89 μg/mL) cell lines[4].

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

Western Blot Analysis[1]

Cell Line:	HUVEC cells
Concentration:	10 nM
Incubation Time:	Pretreatment for 1 h
Result:	Showed no effect on the ICAM-1 expression at both mRNA and protein levels.

In Vivo

Danshenol A (0.3-3 mg/kg; p.o; daily; for 12 weeks) ameliorates blood pressure, cardiac injury, and myocardial collagen volume and improved cardiac function in SHR rats. Danshenol A repaires the structure/function of the mitochondria, alleviated oxidative stress in the myocardium[2].

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

Animal Model:	Forty male spontaneously hypertensive rats (SHR) and eight male Wistar-Kyoto (WKY) rats

	at the age of 16 weeks[2]
Dosage:	0.3 mg/kg, 1 mg/kg, 3 mg/kg
Administration:	Orally administration; daily; for 12 weeks
Result:	Ameliorated blood pressure, cardiac injury, and myocardial collagen volume and improved cardiac function.

REFERENCES

[1]. Wenwen Zhao, et al. Danshenol A inhibits TNF-α-induced expression of intercellular adhesion molecule-1 (ICAM-1) mediated by NOX4 in endothelial cells. Sci Rep. 2017 Oct 11;7(1):12953.

[2]. Kai Chen, et al. Danshenol A Alleviates Hypertension-Induced Cardiac Remodeling by Ameliorating Mitochondrial Dysfunction and Suppressing Reactive Oxygen Species Production. Oxid Med Cell Longev. 2019 Sep 11;2019:2580409.

[3]. Y Tezuka, et al. Aldose reductase inhibitory constituents of the root of Salvia miltiorhiza Bunge. Chem Pharm Bull (Tokyo). 1997 Aug;45(8):1306-11.

[4]. Gang Xu, et al. Two new abietane diterpenoids from Salvia yunnanensis. Planta Med. 2006 Jan;72(1):84-6.

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