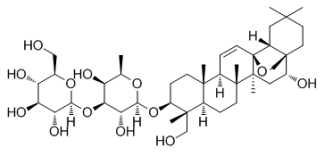
Saikosaponin D

Cat. No.:	HY-N0250
CAS No.:	20874-52-6
Molecular Formula:	$C_{42}H_{68}O_{13}$
Molecular Weight:	780.98
Target:	STAT; NF-κB; Estrogen Receptor/ERR
Pathway:	JAK/STAT Signaling; Stem Cell/Wnt; NF-κBOthers
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 6 months -20°C 1 month



Solvent & Solubility

In Vitro

DMSO : 50 mg/mL (64.02 mM; Need ultrasonic)
H_2O : < 0.1 mg/mL (insoluble)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	1.2804 mL	6.4022 mL	12.8044 mL
	5 mM	0.2561 mL	1.2804 mL	2.5609 mL
	10 mM	0.1280 mL	0.6402 mL	1.2804 mL

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

In Vivo

1. Add each solvent one by one: **10% DMSO >> 90% corn oil**
   Solubility: ≥ 2.5 mg/mL (3.20 mM); Clear solution
2. Add each solvent one by one: **10% DMSO >> 90% (20% SBE-β-CD in saline)**
   Solubility: ≥ 2.5 mg/mL (3.20 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Saikosaponin D is a triterpene saponin isolated from Bupleurum, with anti-inflammatory, anti-bacterial, anti-tumor, and anti-allergic activities; Saikosaponin D inhibits **selectin**, **STAT3** and **NF-kB** and activates **estrogen receptor-β**.

IC_{50} & Target

Selectin[1], STAT3, NF-kB[2], Estrogen receptor-β[3]

In Vitro

Saikosaponin D (Compound 3) is a triterpene saponin, which inhibits E-selectin, L-selectin and P-selectin binding to THP-1 cells, with IC_{50}s of 1.8 μM, 3.0 μM and 4.3 μM, and such effects are not due to cytotoxic action. Saikosaponin D (1, 5, 10 μM) dose-dependently inhibits the THP-1 adhesion to the HUVECs monolayer activated by TNF-α.

	Saikosaponin D (30 μM) also inhibits the expression of P-selectin ligand (CD162) in THP-1 cells[1]. Saikosaponin D (5 μM) suppresses the proliferation of HSC-T6 cells induced by H_2O_2 treatment, reduces the expression levels of α-SMA, TGF-β1, Hyp, COL1 and TIMP-1, and increases MMP-1 expressioon, thus inhibiting H_2O_2-induced excessive extracellular matrix (ECM) formation, with similar effects to estradiol (E2), and these effects are blocked by ER antagonists. Saikosaponin D also inhibits oxidative stress-induced ROS generation and down reduates MAPK signaling pathway, and the inhibition is also suppressed by ER antagonists[3].
In Vivo	Saikosaponin D (2 mg/kg/day, i.p.) shows a protective effect on overdose of acetaminophen (APAP)-induced liver injury of mice. Saikosaponin D affects APAP metabolism, increases GSH levels but does not alter PPARα activation. Saikosaponin D (2 mg/kg/day, i.p.) also suppresses APAP-induced increases in the expression of STAT3 target genes and pro-inflammatory cytokines and inhibits APAP-induced activation of STAT3 and NF-kB[2].

PROTOCOL

Cell Assay [1]	Cell viability is assessed by morphology and by reduction of the tetrazolium salt (MTT). Briefly, the **THP-1 cells (2 × 10^5 cells/well)** and **various concentrations of compounds 1-4 (including Saikosaponin D)** are added to the 96-well plates, incubated for 48 h at 37°C, and 5 μL of MTT solution (5 mg/mL in PBS) is added to each well of the 96-well plates. After incubation for 4 h at 37°C, the absorbance is measured at 540 nm using a microplate reader with the reference absorbance at 650 nm[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [2]	Mice[2] **Male 6- to 7-week-old C57BL6 mice** are randomly divided into four groups, vehicle/control, Saikosaponin D (SSd)/control, vehicle/APAP, and SSd/APAP, and killed 4 h or 24 h after single APAP injection. For overdose of acetaminophen (APAP) injection, a typical single dose of 200 mg/kg/day is used. Saikosaponin D, 2 mg/kg once daily is used as the dosing regimen. **Saikosaponin D powder is dissolved in a saline solution supplemented with 0.1% Tween 20 and is administered by intraperitoneal injection at a dose of 2 mg/kg/day once daily for five days**. Saline solution containing 0.1% Tween 20 without Saikosaponin D is administered as a vehicle. APAP is dissolved in warm saline solution (20 mg/mL) and is injected intraperitoneally 30 minutes after the last Saikosaponin D injection. Saline is injected to mice in the control groups[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Jang MJ, et al. Saikosaponin D isolated from Bupleurum falcatum inhibits selectin-mediated cell adhesion. Molecules. 2014 Dec 4;19(12):20340-9.

[2]. Liu A, et al. Saikosaponin d protects against acetaminophen-induced hepatotoxicity by inhibiting NF-κB and STAT3 signaling. Chem Biol Interact. 2014 Nov 5;223:80-6.

[3]. Que R, et al. Estrogen receptor-β-dependent effects of saikosaponin-d on the suppression of oxidative stress-induced rat hepatic stellate cell activation. Int J Mol Med. 2018 Mar;41(3):1357-1364.

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