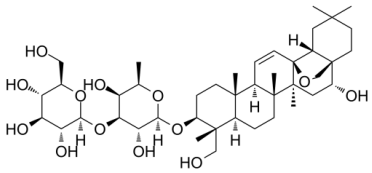
Data Sheet

Product Name:	Saikosaponin D
Cat. No.:	CS-0008281
CAS No.:	20874-52-6
Molecular Formula:	$C_{42}H_{68}O_{13}$
Molecular Weight:	780.98
Target:	Bacterial; Estrogen Receptor/ERR; NF-κB; STAT
Pathway:	Anti-infection; JAK/STAT Signaling; NF-κB; Others; Stem Cell/Wnt
Solubility:	H2O : < 0.1 mg/mL (insoluble); DMSO : 50 mg/mL (64.02 mM; Need ultrasonic)



BIOLOGICAL ACTIVITY:

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**. IC50 & 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 (Extracted from published papers and Only for reference)

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].
Animal Administration: Saikosaponin D is dissolved in a saline solution supplemented with 0.1% Tween 20[2].[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].

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.

CAIndexNames:

β-D-Galactopyranoside,(3β,4α,16α)-13,28-epoxy-16,23-dihydroxyolean-11-en-3-yl 6-deoxy-3-O-β-D-glucopyranosyl-

SMILES:

CC1(C)CC[C@]2(CO3)[C@H](O)C[C@@]4(C)[C@]([C@]5([H])C=C[C@]43[C@]2([H])C1)(C)CC[C@@]([C@]5(C)CC6)([H])[C@@](CO)(C)[C@H]6O[C@@](O[C@H](C)[C@@H]7O)([H])[C@H](O)[C@H]7O[C@@]8([H])[C@H](O)[C@@H](O)[C@H](O)[C@@H](CO)O8

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