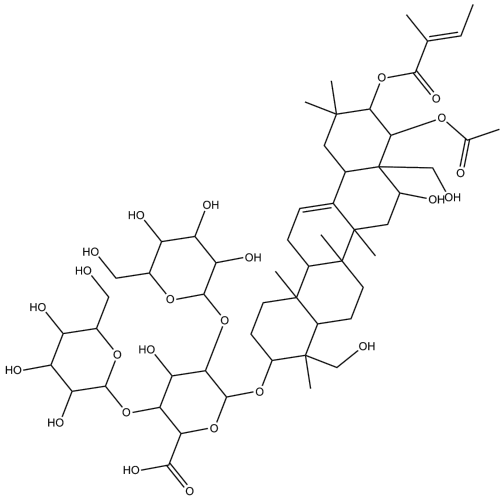
Product Data Sheet

Product Name: Sapogenins Glycosides
Cat. No.: GC12248

Chemical Properties

Cas. No.	8047-15-2		
SMILES	CC=C(C)C(=O)OC1C(C2(C(CC1(C)C)C3=CCC4C5(CCC(C(C5CCC4(C3(CC2O)C)C)(C)CO)OC6C(C(C(C(O6)C(=O)O)OC7C(C(C(C(O7)CO)O)O)O)O)OC8C(C(C(C(O8)CO)O)O)O)C)CO)OC(=O)C		
Formula	$C_{55}H_{86}O_{24}$	M.Wt	1131.26
Solubility	Soluble in water	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20°C for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		

Structure



Protocol

Cell experiment [1]:

Cell lines PC-9-ZD cells (gefitinib-resistant human lung adenocarcinoma cell line)

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Preparation Method	PC-9-ZD cells were maintained in Dulbecco's modified Eagle's medium (DMEM) supplemented with 10% fetal bovine serum (FBS), 100μg/mL penicillin and 100μg/mL streptomycin at 37°C, 5% CO_2. PC-9-ZD cells were pretreated with Sapogenins Glycosides (0.5μg/mL) for 3h, followed by irradiation with 4Gy 6-MV X-ray.
Reaction Conditions	0.5μg/mL; 3h pretreatment
Applications	Sapogenins Glycosides significantly enhanced the radiosensitivity of PC-9-ZD cells, induced G2/M cell cycle arrest and apoptosis of irradiated cells, upregulated p21/Waf1/Cip1, caspase-3 and Bax protein expression, and downregulated Bcl-2 protein expression.

Animal experiment [2]:

Animal models	4-week-old male ICR mice
Preparation Method	Mice were acclimated for 2 weeks under standard conditions (20-25°C, 60-70% relative humidity, 12-h light/dark cycle) with free access to water and food, then orally administered Sapogenins Glycosides (65mg/kg) by gavage, and sacrificed at 0.5, 1, 2, 3, 4, 6, 12, 24h post-administration for small intestine collection; control mice received water only and were sacrificed immediately after gavage.
Dosage form	65mg/kg; oral gavage; single administration
Applications	Sapogenins Glycosides significantly upregulated the mRNA and protein levels of GIP in mouse small intestine, with the peak GIP mRNA and protein expression detected at 1h and 3h post-gavage respectively, and this GIP-stimulatory effect was mediated via SGLT1 and TGR5 pathways.

Caution: Product has not been fully validated for medical applications. For research use only.
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References:
[1] Zhao PJ, Song SC, Du LW, et al. Paris Saponins enhance radiosensitivity in a gefitinib-resistant lung adenocarcinoma cell line by inducing apoptosis and G2/M cell cycle phase arrest. Mol Med Rep. 2016 Mar;13(3):2878-84.
[2] Zhu H, Wang K, Chen S, et al. Saponins from *Camellia sinensis* Seeds Stimulate GIP Secretion in Mice and STC-1 Cells via SGLT1 and TGR5. Nutrients. 2022 Aug 19;14(16):3413.

Background

Sapogenins Glycosides are a class of natural glycosidic secondary metabolites found in various plants with multiple biological functions. Sapogenins Glycosides can induce tumor cell cycle arrest and apoptosis, inhibit VEGF/VEGFR2-mediated angiogenesis to suppress tumor proliferation and metastasis, while exerting anti-inflammatory, lipid-regulating, and immunomodulatory effects through modulating AMPK and NF-κB pathways. Sapogenins Glycosides can be used in research on tumors, cardiovascular diseases, metabolic disorders, and inflammation-related diseases[1-4].

In vitro, Sapogenins Glycosides (0.5μg/mL) pretreated gefitinib-resistant lung adenocarcinoma PC-9-ZD cells for 3h, followed by irradiation with 4Gy 6-MV X-ray. Sapogenins Glycosides induced G2/M phase cell cycle arrest in PC-9-ZD cells, upregulated the expression of p21/Waf1/Cip1, caspase-3, and Bax, downregulated Bcl-2 expression, promoted apoptosis, and enhanced the radiosensitivity of gefitinib-resistant lung adenocarcinoma cells[5]. Sapogenins Glycosides (12–50μg/mL) treated CHO-K1 cells for 72h, incubated human red blood cells with 0.5–100μg/mL for 1h, and simultaneously acted on clinical multidrug-resistant *E. coli* strains at 1–12μg/mL for 18h. Sapogenins Glycosides exhibited cytotoxicity toward CHO-K1 cells at 25 and 50μg/mL, dose-dependently increased the proportion of early apoptotic cells at 12–50μg/mL, caused dose-dependent hemolysis of human red blood cells at concentrations ≥25μg/mL, while promoting the growth of six clinical *E. coli* strains in LB medium at 12μg/mL[6].

In vivo, Sapogenins Glycosides (65mg/kg) were administered once by gavage to 4-week-old male ICR mice. Sapogenins Glycosides upregulated the mRNA and protein expression levels of GIP in the mouse small intestine[7]. Sapogenins Glycosides (supplemented in feed at 10 or 30g/kg for 9 weeks) were fed to female ICR mice with high-fat diet-induced obesity. Sapogenins Glycosides reduced body weight and fat mass, decreased hepatic triacylglycerol and total cholesterol levels, increased fecal fat

excretion, and elevated small intestinal weight[8].

References:

[1] Chen J, Yu Q, Patterson E, et al. Dinitroaniline Herbicide Resistance and Mechanisms in Weeds. Front Plant Sci. 2021 Mar 25;12:634018.
[2] Singh B, Yun S, Gil Y, et al. The Role of Colchicine in Plant Breeding. Int J Mol Sci. 2025 Jul 14;26(14):6743.
[3] Basit A, Lim KB. Systematic approach of polyploidy as an evolutionary genetic and genomic phenomenon in horticultural crops. Plant Sci. 2024 Nov;348:112236.
[4] Gantait S, Mukherjee E. Induced autopolyploidy-a promising approach for enhanced biosynthesis of plant secondary metabolites: an insight. J Genet Eng Biotechnol. 2021 Jan 8;19(1):4.
[5] Zhao PJ, Song SC, Du LW, et al. Paris Saponins enhance radiosensitivity in a gefitinib-resistant lung adenocarcinoma cell line by inducing apoptosis and G2/M cell cycle phase arrest. Mol Med Rep. 2016 Mar;13(3):2878-84.
[6] Arabski M, Węgierek-Ciuk A, Czerwonka G, et al. Effects of saponins against clinical E. coli strains and eukaryotic cell line. J Biomed Biotechnol. 2012;2012:286216.
[7] Zhu H, Wang K, Chen S, et al. Saponins from *Camellia sinensis* Seeds Stimulate GIP Secretion in Mice and STC-1 Cells via SGLT1 and TGR5. Nutrients. 2022 Aug 19;14(16):3413.
[8] Han LK, Zheng YN, Xu BJ, et al. Saponins from platycodi radix ameliorate high fat diet-induced obesity in mice. J Nutr. 2002 Aug;132(8):2241-5.

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