Product Data Sheet

Product Name: Gambogic Acid
Cat. No.: GC12139

Chemical Properties

Cas. No.	2752-65-0		
Chemical Name	(Z)-4-((1S,3aR,5S,11R,14aS)-8-hydroxy-2,2,11-trimethyl-13-(3-methylbut-2-en-1-yl)-11-(4-methylpent-3-en-1-yl)-4,7-dioxo-2,3a,4,5,7,11-hexahydro-1H-1,5-methanofuro[3,2-g]pyrano[3,2-b]xanthen-3a-yl)-2-methylbut-2-enoic acid		
SMILES	C/C(C)=C\CC[C@]1(C)C=CC(C(O)=C(C(C([C@]2([C@@H](C3)C(C)(C)O[C@]24C/C=C(C(O)=O)/C)O5)=C[C@H]3C4=O)=O)C5=C6C/C=C(C)\C)=C6O1		
Formula	$C_{38}H_{44}O_8$	M.Wt	628.75
Solubility	≥ 22.45 mg/mL in DMSO, ≥ 48.2 mg/mL in EtOH	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ 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	Gambogic Acid		

Protocol

Cell experiment [1]:

Cell lines	MDA-MB 435S cell
Preparation Method	To test the detoxification of Gambogic Acid, aliquots of serum-free DMEM containing 1μM Gambogic Acid and different concentrations of NAC were pre-incubated at room temperature for the indicated time points, and then incubated with MDA-MB 435S cell cultures for 24h.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Reaction Conditions	Gambogic Acid: 1μM; 24h
Applications	Gambogic Acid treatment progressively increased the levels of poly-ubiquitinated proteins, proteasome-substrate proteins (e.g.Nrf1, Mcl-1, and Noxa) and ER stress marker proteins (e.g. phospho-eIF2α, ATF4, and CHOP).

Animal experiment [1]:

Animal models	Xenograft tumor model
Preparation Method	Mice were randomized into 3 groups, including vehicle (PBS containing 0.25% DMSO), 4mg/kg Gambogic Acid and 8mg/kg Gambogic Acid, and mice were received twice intraperitoneal (ip) injections of Gambogic Acid at the indicated concentrations (day 0 and day 2). On the 14th day, mice were sacrificed and the tumors were isolated.
Dosage form	Gambogic Acid: 4, 8mg/kg; ip; twice
Applications	Gambogic Acid (4, 8mg/kg; ip; twice) dose-dependently reduced the tumor size without inducing any significant loss of body weight.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

References:
[1]. Seo MJ, Lee DM, Kim IY, Lee D, Choi MK, Lee JY, Park SS, Jeong SY, Choi EK, Choi KS. Gambogic acid triggers vacuolization-associated cell death in cancer cells via disruption of thiol proteostasis. Cell Death Dis. 2019 Feb 22;10(3):187.

Background

Gambogic Acid A cell-permeable caspase activator and apoptosis inducer commonly used in studies of breast, lung, and liver cancers[1].

Gambogic Acid (1.2-4.8μM; 24-72h) reduced the viability of Jurkat and Molt-4 cells in a dose-dependent manner, The IC_{50} values of Gambogic Acid for Jurkat and Molt-4 were 2.23 and 3.03μM, respectively[2]. Gambogic Acid (2.4, 4.8μM; 72h) at concentrations of 2.4 and 4.8μM led to a remarkable increase in G2/M phase, with a corresponding decrease in the S phase compared with exposure of cells to 1.2μM Gambogic Acid[3]. Gambogic Acid (1μM; 24h) treatment increased the levels of poly-ubiquitinated proteins, proteasome-substrate proteins (e.g. Nrf1, Mcl-1, and Noxa) and ER stress marker proteins (e.g. phospho-eIF2α, ATF4, and CHOP) [4].

Gambogic Acid (4, 8mg/kg; ip; twice) dose-dependently reduced the tumor size without inducing any loss of body weight[4]. In murine CT26 tumor-bearing mouse models, the treatment with Gambogic Acid (2, 8mg/kg; bid; 12d) reduced the volumes and weights of CRC solid tumors,The average of tumor weight decreased from 1.139g (control group) to 0.445g (low-dose group), or 0.214g (high-dose group) [5].

References:
[1]Vichitsakul K, Laowichuwakonnukul K, Soontornworajit B, et al. Anti-proliferation and induction of mitochondria-mediated apoptosis by Garcinia hanburyi resin in colorectal cancer cells[J]. Heliyon, 2023, 9(6).
[2].Zhai D, Jin C, Shiau CW, Kitada S, Satterthwait AC, Reed JC. Gambogic acid is an antagonist of antiapoptotic Bcl-2 family proteins. Mol Cancer Ther. 2008 Jun;7(6):1639-46.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

[3].Gambogic acid inhibits proliferation and induces apoptosis of human acute T-cell leukemia cells by inducing autophagy and downregulating β-catenin signaling pathway: Mechanisms underlying the effect of Gambogic acid on T-ALL cells. Oncol Rep. 2020 Oct;44(4):1747-1757.
[4]. Seo MJ, Lee DM, Kim IY, Lee D, Choi MK, Lee JY, Park SS, Jeong SY, Choi EK, Choi KS. Gambogic acid triggers vacuolization-associated cell death in cancer cells via disruption of thiol proteostasis. Cell Death Dis. 2019 Feb 22;10(3):187.
[5]. Xu H, Zhang D, Wei R, Zhou Y, Dai G, Li J, Sun Y, Li F, Xi L. Gambogic Acid Induces Pyroptosis of Colorectal Cancer Cells through the GSDME-Dependent Pathway and Elicits an Antitumor Immune Response. Cancers (Basel). 2022 Nov 9;14(22):5505.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA