

Product Data Sheet

Product Name: Glycodeoxycholic Acid

Cat. No.: GC38644

Chemical Properties

Cas. No. 360-65-6

SMILES C[C@@H]([C@]1(CC[C@]2([C@@]3(CC[C@@]4(C[C@@H](CC[C@@]4([C@]3(C[C@@H]([C@@]21C)O)[H])C)O)[H])[H])[H])CCC(NCC(O)=O)=O

Formula $C_{26}H_{43}NO_5$ M.Wt 449.62

Solubility DMSO: 250 mg/mL (556.03 mM) 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.

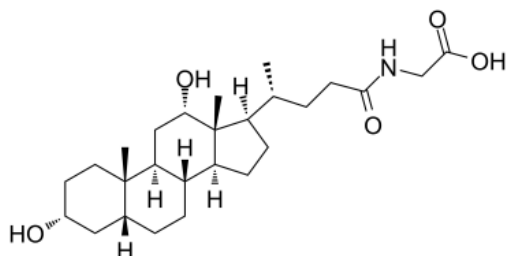
Caution: Product has not been fully validated for medical applications. For research use only.

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Structure



Protocol

Cell experiment [1]:

Cell lines SUN-449 and HepG2 human HCC cell lines

Preparation Method SUN-449 and HepG2 human HCC cell lines were maintained in Dulbecco's modified Eagle's medium (DMEM) with 10% fetal bovine serum (FBS). Cells were cultured in a cell incubator with 5% CO₂ at 37°C. And cells were treated with Glycodeoxycholic Acid (0.5mM) or PBS for 24h. Then CCK-8 and Transwell assays were performed for cell proliferation and migration detection. And cell apoptosis was detected using an Annexin V FITC apoptosis detection kit.

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Reaction
Conditions 0.5mM; 24h

Applications Glycodeoxycholic Acid significantly inhibited the proliferation and migration, and increased cells apoptosis in human hepatocellular carcinoma (HCC) SUN-449 and HepG2 cells.

Animal experiment [2]:

Animal models Wistar rats

6-8 weeks old male (330-360g) and female (215-250g) Wistar rats were housed in 22°C under constant lighting conditions (14/10h light/dark cycle) with ad libitum access to food and water. After a two-week adaptation period, two females were paired with one adult male Wistar rat to produce experimental female offspring. Subsequently, the rats were randomly divided into two groups: HFD ($n=14$) and NN ($n=14$). To model CPP, female pups were raised in small litters of four pups per dam starting on postnatal day (PND) 10 and given free access to HFD from PND 21 to PND 33. In contrast, the NN group consisted of female pups raised in normal litters of twelve pups per dam, fed a standard diet. Wistar rats in the CPP model were administered 100mg/kg/d Glycodeoxycholic Acid (diluted in sterile saline) via gavage from PND 11 to PND 34, while the control group received the same volume of the vehicle. Rat weights were recorded every four days from PND 10 to PND 21 and daily thereafter until the experiment ended. At the termination of the experiment, the rats were euthanized following a 16-hour fasting period. Blood samples were collected and centrifuged at 3500rpm for 15min at 4°C to obtain serum. The hypothalamus, uterus, ovaries, and feces were immediately collected, frozen in liquid nitrogen, and stored at -80°C until further analysis. In addition, the wet weights of the uterus and ovaries were measured, and the relative uterus weight (UW) and ovary weight (OW) (mg/100g) were calculated. Ovarian tissues were stained with hematoxylin and eosin after fixation in formalin.

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Dosage form 100mg/kg/day; oral gavage from postnatal day 11 to 34

Applications Glycodeoxycholic Acid delayed the onset of puberty, increased hypothalamic Sirt1 expression, and decreased serum LH levels, Kiss1 and GnRH expression in high-fat diet-induced central precocious puberty (CPP) female rats.

References:

- [1] Shen R, Ke L, Li Q, et al. Abnormal bile acid-microbiota crosstalk promotes the development of hepatocellular carcinoma. *Hepatol Int.* 2022;16(2):396-411.
- [2] Wu N, Jiang X, Liu Y, et al. Glycodeoxycholic acid alleviates central precocious puberty by modulating gut microbiota and metabolites in high-fat diet-fed female rats. *Cell Mol Life Sci.* 2025;82(1):163.

Background

Glycodeoxycholic Acid is a glycine-conjugated form of the secondary bile acid deoxycholic acid [1]. Glycodeoxycholic Acid participates in bile formation and fat digestion and absorption, and also plays an important role in regulating cholesterol metabolism and maintaining gut microbiota balance[2]. Glycodeoxycholic Acid is mainly used in the research of bile acid metabolism and related diseases[3].

In vitro, treatment of primary hepatocytes isolated from rats with Glycodeoxycholic Acid (250μM; 4h) significantly increased hepatocyte MDA levels, decreased membrane fluidity, elevated ALT levels, and induced hepatocyte injury[4]. Glycodeoxycholic Acid (0.5mM; 24h) significantly inhibited the proliferation and migration, and increased cells apoptosis in human hepatocellular carcinoma (HCC) SUN-449 and HepG2 cells[5].

In vivo, Glycodeoxycholic Acid (100mg/kg/day; oral gavage from postnatal day 11 to 34) delayed the onset of puberty, increased hypothalamic Sirt1 expression, and decreased serum LH levels, Kiss1 and GnRH expression in high-fat diet-induced central precocious puberty (CPP) female rats[6]. Intraduodenal infusion of Glycodeoxycholic Acid at a rate equivalent to the hepatic bile acid flux (32.90±9.04mg/h) for 24 hours reduced cholesterol 7α-hydroxylase activity and inhibited endogenous bile acid synthesis in the rabbit model with bile fistula[7].

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- [1] Lefebvre P, Cariou B, Lien F, Kuipers F, Staels B. Role of bile acids and bile acid receptors in metabolic regulation. *Physiol Rev.* 2009;89(1):147-191.
- [2] Jia Y, Yang X, Wilson LM, et al. Diet-Related and Gut-Derived Metabolites and Health Outcomes: A Scoping Review. *Metabolites.* 2022;12(12):1261.
- [3] Farooqui N, Elhence A, Shalimar. A Current Understanding of Bile Acids in Chronic Liver Disease. *J Clin Exp Hepatol.* 2022;12(1):155-173.
- [4] Huang W, Kang G, Tu Z. *Zhonghua Gan Zang Bing Za Zhi.* 1999;7(1):46-47.
- [5] Shen R, Ke L, Li Q, et al. Abnormal bile acid-microbiota crosstalk promotes the development of hepatocellular carcinoma. *Hepatol Int.* 2022;16(2):396-411.
- [6] Wu N, Jiang X, Liu Y, et al. Glycodeoxycholic acid alleviates central precocious puberty by modulating gut microbiota and metabolites in high-fat diet-fed female rats. *Cell Mol Life Sci.* 2025;82(1):163.
- [7] Xu G, Salen G, Batta AK, et al. Glycocholic acid and glycodeoxycholic acid but not glycoursocholic acid inhibit bile acid synthesis in the rabbit. *Gastroenterology.* 1992;102(5):1717-1723.

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