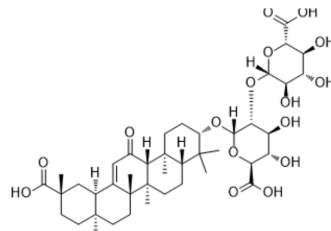


## Glycyrrhizic acid

|                           |   |       |          |
|---------------------------|---|-------|----------|
| <b>Cat. No.:</b>          | HY-N0184  |       |          |
| <b>CAS No.:</b>           | 1405-86-3                                       |       |          |
| <b>Molecular Formula:</b> | C <sub>42</sub> H <sub>62</sub> O <sub>16</sub> |       |          |
| <b>Molecular Weight:</b>  | 822.93  |       |          |
| <b>Target:</b>            | Virus Protease                                  |       |          |
| <b>Pathway:</b>           | Anti-infection                                  |       |          |
| <b>Storage:</b>           | Powder  | -20°C | 3 years  |
|                           |   | 4°C   | 2 years  |
|                           | In solvent                                      | -80°C | 6 months |
|                           |   | -20°C | 1 month  |



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : 100 mg/mL (121.52 mM; Need ultrasonic)  
 H<sub>2</sub>O : < 0.1 mg/mL (ultrasonic) (insoluble)

|                              | Solvent<br>Concentration | Mass      |           |            |
|------------------------------|--------------------------|-----------|-----------|------------|
|                              |                          | 1 mg      | 5 mg      | 10 mg      |
| Preparing<br>Stock Solutions | 1 mM                     | 1.2152 mL | 6.0759 mL | 12.1517 mL |
|                              | 5 mM                     | 0.2430 mL | 1.2152 mL | 2.4303 mL  |
|                              | 10 mM                    | 0.1215 mL | 0.6076 mL | 1.2152 mL  |

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

#### In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
 Solubility: ≥ 2.5 mg/mL (3.04 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
 Solubility: ≥ 2.5 mg/mL (3.04 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
 Solubility: ≥ 2.5 mg/mL (3.04 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

Glycyrrhizic acid is a triterpenoid saponin, acting as a direct HMGB1 antagonist, with anti-tumor, anti-diabetic activities.

#### In Vitro

Glycyrrhizic acid shows a series of anti-cancer-related pharmacological activities, such as broad-spectrum anti-cancer ability, resistance to the tissue toxicity caused by chemotherapy and radiation, drug absorption enhancing effects and anti-multidrug resistance (MDR) mechanisms, as a carrier material in drug delivery systems<sup>[1]</sup>.  
 In intestinal NCI-H716 cells that secretes GLP-1, Glycyrrhizic acid promotes GLP-1 secretion with a marked elevation of calcium levels. Glycyrrhizic acid can enhance GLP-1 secretion through TGR5 activation<sup>[2]</sup>.

Glycyrrhizic acid can form a stable transparent low-molecular-weight hydrogels (LMWHs) at 37°C in physiological phosphate buffered saline (PBS) with nanoclusters as the microstructures<sup>[4]</sup>.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

#### In Vivo

In type 1-like diabetic rats induced by streptozotocin (STZ-treated rats), Glycyrrhizic acid increases the level of plasma GLP-1, which is blocked by triamterene at a dose sufficient to inhibit Takeda G-protein-coupled receptor 5 (TGR5)<sup>[1]</sup>.

Glycyrrhizic acid (Glycyrrhizic acid; 50 mg/kg, i.p.) significantly decreases the levels of TgAb, HMGB1, TNF- $\alpha$ , IL-6, IL-1 $\beta$  in mice<sup>[3]</sup>.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## PROTOCOL

#### Animal Administration <sup>[3]</sup>

Mice<sup>[3]</sup>

NOD.H-2<sup>h4</sup> mice are fed in the animal house until 4 weeks of age. A total of 24 male mice are then randomly separated into three different groups (n=8 per group). Mice in the control group are given sterile water without supplement. Mice in the iodine supplement (NaI) group are given 0.005% NaI in the drinking water. Mice in the NaI+Glycyrrhizic acid group are treated with 50 mg/kg Glycyrrhizic acid once daily for 4 weeks, administered via intraperitoneal injection after 8 weeks of iodine supplementation. Thyroid tissues are removed surgically under anesthesia, washed with cold saline, blotted on filter paper and weighed using an electronic balance. The thyroid gland tissues are then stored at -80°C until use<sup>[3]</sup>.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## CUSTOMER VALIDATION

- Adv Healthc Mater. 2023 Aug 21;e2301808.
- Cell Prolif. 2020 Jun;53(6):e12829.
- Cell Commun Signal. 2023 May 1;21(1):86.
- J Funct Foods. 2021, 104584.
- Front Cell Dev Biol. 2020 Aug 11;8:713.

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## REFERENCES

[1]. Su X, et al. Glycyrrhizic acid: A promising carrier material for anticancer therapy. Biomed Pharmacother. 2017 Sep 5;95:670-678

[2]. Wang LY, et al. Glycyrrhizic acid increases glucagon like peptide-1 secretion via TGR5 activation in type 1-like diabetic rats. Biomed Pharmacother. 2017 Sep 4;95:599-604.

[3]. Li C, et al. Glycyrrhizin, a Direct HMGB1 Antagonist, Ameliorates Inflammatory Infiltration in a Model of Autoimmune Thyroiditis via Inhibition of TLR2-HMGB1 Signaling. Thyroid. 2017 May;27(5):722-731.

[4]. Xia Zhao, et al. A Simple Injectable Moldable Hydrogel Assembled from Natural Glycyrrhizic Acid with Inherent Antibacterial Activity. ACS Appl. Bio Mater. 2020, 3, 1, 648-653.

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

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: [tech@MedChemExpress.com](mailto:tech@MedChemExpress.com)

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA