

Product Data Sheet

Product Name: Embelin
Cat. No.: GC13163

Chemical Properties

Cas. No. 550-24-3

Chemical Name 2,5-dihydroxy-3-undecylcyclohexa-2,5-diene-1,4-dione

SMILES CCCCCCCCCCCC1=C(C(=O)C=C(C1=O)O)O

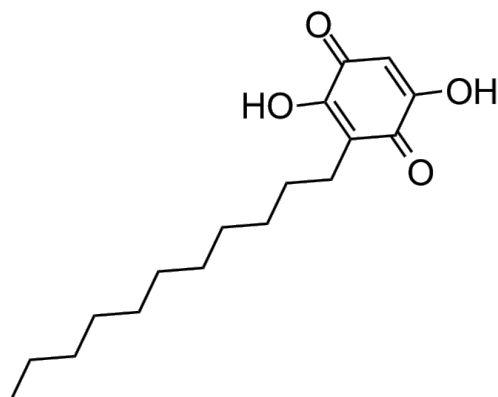
Formula $C_{17}H_{26}O_4$ M.Wt 294.39

Solubility $\geq 9.6\text{mg/mL}$ in DMSO, $\geq 4.23\text{ mg/mL}$ in EtOH with ultrasonic Storage 4°C , protect from light

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 AML-12 cells

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

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Preparation Method AML-12 cells were cultivated for 24h with Embelin (6.25, 12.5μM) for 24h, and then exposure to EtOH (50mM) for 24h. The IL-1β and IL-18 protein levels released from AML-12 cells into culture medium were determined by an ELISA assay.

Reaction Conditions 6.25 or 12.5μM; 24h

Applications Embelin reversed ethanol-induced inflammatory response in AML-12 cells.

Animal experiment [2]:

Animal models C57BL/6 female mice

Preparation Method Acute liver injury was induced by a single intraperitoneal injection of 4% thioacetamide (TAA, 300μg/g). Embelin was administered via intragastric gavage at 50μg/g starting 2 days before TAA administration and continued throughout the study. The survival of TAA-treated mice was observed 4 days later, and the surviving mice were sacrificed. The acute liver injury protocol was repeated again 1, 2, and 3 days later, and the remaining mice were sacrificed at each time point. To estimate the pathophysiological values, the livers of the sacrificed mice were removed.

Dosage form 50μg/g; i.g.

Applications Embelin can protect mice from thioacetamide-induced acute liver injury.

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References:

- [1] Zhang JJ, Zhong JT, Wang WL, et al. Embelin improves alcoholic steatohepatitis in alcohol-associated liver disease via ATF6-mediated P2X7r-NLRP3 signaling pathway. *Phytomedicine*. 2025 May;140:156638.
- [2] Wang H, Zhang H, Wang Y, et al. Embelin can protect mice from thioacetamide-induced acute liver injury. *Biomed Pharmacother*. 2019 Oct;118:109360.

Background

Embelin is a non-peptidic, cell-permeable small inhibitor of the X-linked inhibitor of apoptosis protein (XIAP) with an IC_{50} value of $4.1\mu M$ ^[1].

In vitro, Embelin (6.25 or $12.5\mu M$; 24h) reversed ethanol-induced inflammatory response in AML-12 cells^[2]. Embelin ($20\mu M$; 2h) protects against apoptosis and inflammation by regulating PI3K/Akt signaling in IL-1 β -stimulated human nucleus pulposus cells^[3].

In vivo, Embelin (50 or 100mg/kg ; 10 days; i.g.) ameliorates alcoholic steatohepatitis (ASH) by modulating the ATF6-P2 $\times$ 7r/NLRP3 signaling pathway in mice with alcoholic liver disease (ALD)^[2]. Embelin ($50\mu\text{g/g}$; i.g.) can protect mice from thioacetamide-induced acute liver injury^[4].

References:

- [1] Sheng Z, Ge S, Gao M, et al. Synthesis and Biological Activity of Embelin and its Derivatives: An Overview. *Mini Rev Med Chem*. 2020;20(5):396-407.
- [2] Zhang JJ, Zhong JT, Wang WL, et al. Embelin improves alcoholic steatohepatitis in alcohol-associated liver disease via ATF6-mediated P2X7r-NLRP3 signaling pathway. *Phytomedicine*. 2025 May;140:156638.
- [3] Bai X, Wang J, Ding S, et al. Embelin protects against apoptosis and inflammation by regulating PI3K/Akt signaling in IL-1 β -stimulated human nucleus pulposus cells. *Tissue Cell*. 2023 Jun;82:102089.
- [4] Wang H, Zhang H, Wang Y, et al. Embelin can protect mice from thioacetamide-induced acute liver injury. *Biomed Pharmacother*. 2019 Oct;118:109360.

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