Glycycoumarin

Cat. No.: HY-N4113

CAS No.: 94805-82-0

Molecular Formula: $C_{21}H_{20}O_6$

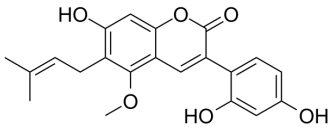
Molecular Weight: 368.38

Target: Keap1-Nrf2; AMPK

Pathway: NF-κB; Epigenetics; PI3K/Akt/mTOR

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 250 mg/mL (678.65 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.7146 mL	13.5729 mL	27.1459 mL
	5 mM	0.5429 mL	2.7146 mL	5.4292 mL
	10 mM	0.2715 mL	1.3573 mL	2.7146 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (5.65 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: 2.08 mg/mL (5.65 mM); Suspended solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Glycycoumarin is a potent antispasmodic agent. Glycycoumarin is a major bioactive coumarin of licorice and exhibits antispasmodic activity. Glycycoumarin also has hepatoprotective effect. Glycycoumarin can be used for the research of abdominal pain and liver diseases[1][2].

In Vitro

Glycycoumarin, (25 μM; 24 h) combining with ABT-737 (12.5 μM) synergistically, induces cell death in multiple types of liver cancer cell HepG2[2].

Glycycoumarin is highly effective against alcoholic liver disease, nonalcoholic fatty liver disease, acetaminophen-induced hepatotoxicity, and liver cancer through mechanisms involved in activation of Nrf2 antioxidant system, stimulation of AMPK-mediated energy homeostasis, induction of autophagy degradation process, and inhibiting oncogenic kinase T-lymphokine-activated killer cell-originated protein kinase activity[3].

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

Cell Viability Assay[2]

Cell Line:	HepG2, SMMC-7721, and Huh-7
Concentration:	10, 20, 25, 30, and 40 μM
Incubation Time:	24 hours
Result:	Induced cell death in multiple types of liver cancer cell lines in a dose-dependent manner.

In Vivo

Glycycoumarin (30 μM-0.3 nM; 5 min) has an inhibitory effect on smooth muscle contraction induced by various types of stimulants through the inhibition of PDEs, especially isozyme 3, followed by the accumulation of intracellular cAMP[1] .Glycycoumarin (10 mg/kg; i.p.; once daily for 4 d) enhances tumor growth inhibition in HepG2 xenograft model in mice and shows synergistical effect with ABT-737 (HY-50907)[2].

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Animal Model:	Male ICR mice (aged 6 weeks, weight 25-30 g)[1]
Dosage:	30 μM-0.3 nM, 5 min
Administration:	
Result:	Inhibited the contraction induced by various types of stimulants, such as CCh, KCl, BaCl(2), and A23187 (calcium ionophore III). Enhanced the relaxation induced by forskolin on CCh-evoked contraction and also enhances the relaxation effect of rolipram. Associated with dose-dependent accumulation of cAMP.

Animal Model:	HepG2 cancer cells xenograft model in male BALB/c athymic nude mice (6-7 weeks old)[2]
Dosage:	10 mg/kg
Administration:	Intraperitoneal injection; once daily for 4 days; ABT-737 group was given 100 mg/kg i.p.
Result:	Inhibited tumor growth and resulted a reduction of the final tumor weight by 17%.

REFERENCES

[1]. Yuji Sato, et al. Glycycoumarin from Glycyrrhizae Radix acts as a potent antispasmodic through inhibition of phosphodiesterase 3. J Ethnopharmacol. 2006 May 24;105(3):409-14.

[2]. Enxiang Zhang, et al. Protective effects of glycycoumarin on liver diseases. Phytother Res. 2020 Jun;34(6):1191-1197.

[3]. Zhang E, et al. Glycycoumarin Sensitizes Liver Cancer Cells to ABT-737 by Targeting De Novo Lipogenesis and TOPK-Survivin Axis. Nutrients. 2018 Mar 15;10(3):353.

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

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