Protopine

Cat. No.: HY-N0793

CAS No.: 130-86-9

Molecular Formula: $C_{20}H_{19}NO_5$

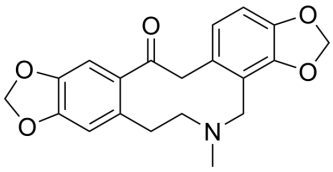
Molecular Weight: 353.37

Target: Cholinesterase (ChE)

Pathway: Neuronal Signaling

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 12.5 mg/mL (35.37 mM; ultrasonic and warming and heat to 60°C)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.8299 mL	14.1495 mL	28.2990 mL
	5 mM	0.5660 mL	2.8299 mL	5.6598 mL
	10 mM	0.2830 mL	1.4149 mL	2.8299 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: ≥ 1.47 mg/mL (4.16 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 1.25 mg/mL (3.54 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 1.25 mg/mL (3.54 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Protopine (Corydinine), an isoquinoline alkaloid, is a specific reversible and competitive inhibitor of acetylcholinesterase. Protopine exhibits anti-inflammation, anti-microbial, anti-angiogenic and anti-tumour activity[1][2].

In Vitro

Protopine (10-40 μM, 24 h-96 h) inhibits cell viability, migration, invasion and EMT process of liver carcinoma cells (HepG2, Huh7)[2].

Protopine (10-40 μM, 24 h) induces apoptosis by increasing the expression of caspase-3 and caspase-9 in HepG2 and Huh7 cells, and inhibits the PI3K/Akt signaling pathway[2].

Protopine (10-40 μM, 6 h) induces generation of ROS in HepG2 and Huh7 cells[2].
Protopine (0-10 μg/mL) inhibits the uptake of serotonin transporter (SERT) in S6 cells and noradrenaline (NE) uptake in N1 cells[3].

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

Western Blot AnalysisWB[2]

Cell Line:	HepG2, Huh7
Concentration:	10, 20, 40 μM
Incubation Time:	24 h
Result:	Induced the cleavage of caspase-3 and caspase-9. Decreased Bcl-2 and Bcl-xl level. Induced the release of mitochondrial protein cytochrome c into the cytosol.

In Vivo

Protopine (0.1 and 1 mg/kg, i.p.) alleviates Scopolamine (HY-N0296) (1 mg/kg)-induced memory impairment in mice[1].
Protopine (5-20 mg/kg, i.v.) inhibits tumor growth and inhibits PI3K/Akt, and induces cleavage of caspase-3 in xenograft BALB/c mice (s.c. with HepG2 or Huh-7 cells)[2].
Protopine (5-20 mg/kg, i.p.) shows antidepressant-like effect in mice HTR and TST tests[3].
Protopine (1-4 mg/kg, i.p., once daily for 3 days) shows protective effect on the focal cerebral ischaemic induced injury in rats[4].

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

Animal Model:	5-hydroxy-DL-tryptophan (5-HTP)-induced mice model[3]
Dosage:	5, 10, 20 mg/kg
Administration:	i.p.
Result:	Increased the number of 5-HTP-induced head twitch response (HTR). Decreased the immobility time tested in the Tail suspension test (TST).

REFERENCES

[1]. Kim SR, et, al. Protopine from Corydalis ternata has anticholinesterase and antiamnesic activities. Planta Med. 1999 Apr;65(3):218-21.

[2]. Nie C, et, al. Protopine triggers apoptosis via the intrinsic pathway and regulation of ROS/PI3K/Akt signalling pathway in liver carcinoma. Cancer Cell Int. 2021 Jul 27;21(1):396.

[3]. Xu LF, et al. Protopine inhibits serotonin transporter and noradrenaline transporter and has the antidepressant-like effect in mice models. Neuropharmacology. 2006 Jun;50(8):934-40.

[4]. Xiao X, et al. Protective effect of protopine on the focal cerebral ischaemic injury in rats. Basic Clin Pharmacol Toxicol. 2007 Aug;101(2):85-9.

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