

## Columbamine chloride

## Chemical Properties

CAS No. : 1916-10-5

Formula: C<sub>20</sub>H<sub>20</sub>ClNO<sub>4</sub>

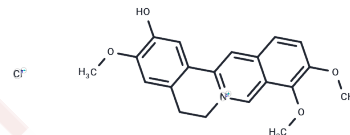
Molecular Weight: 373.83

Storage:

Keep away from moisture, Keep away from direct sunlight

Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Actual storage temperature shall be subject to the COA.



## Biological Description

Description	Columbamine chloride is an organic heterocyclic alkaloid and a metabolite of berberine which is widely found in Ranunculaceae plants such as Coptis and Phellodendron. Columbamine chloride induces apoptosis in cancer cells and exhibits anticancer activity. Columbamine chloride inhibits the cytochrome P450 (CYP) subtype CYP3A4 (IC <sub>50</sub> = 30.6 μM). Columbamine chloride possesses various biological activities, including antioxidant, anti-inflammatory, antifungal, antiprotozoal, hepatoprotective, neuroprotective, lipid-lowering, and hypoglycemic effects.
Targets(IC <sub>50</sub> )	Apoptosis, Parasite, Cytochromes P450
In vitro	Methods: HCT116 cells were treated with Columbamine chloride (0, 20, 30, 40 μM) for 48 hours, and apoptosis was assessed by TUNEL staining and flow cytometry. Results: Columbamine chloride induced concentration-dependent cell death in HCT116 cells. [1] Methods: Columbamine chloride (15 μM) was added to Hep G2 cells and incubated for 24 hours; real-time quantitative PCR was used to detect changes in the mRNA expression of ACC, FAS, GPAT, HMGCR, and mCAD. Results: Columbamine chloride significantly inhibited the mRNA expression of the lipid synthesis-related genes ACC, FAS, GPAT, and HMGCR, and increased the mRNA expression of the fatty acid oxidation-related gene mCAD. [2]
In vivo	Methods: To investigate the tumor growth-inhibiting effects of Columbamine chloride, BALB/c nude mice were selected and subcutaneously injected with HCT116 cells. Following successful tumor engraftment, Columbamine chloride (5, 10, 20 mg/kg) was administered for 23 consecutive days. Results: Columbamine chloride inhibited tumor growth in a dose-dependent manner. [1]

## Solubility Information

Solubility	DMSO: 4 mg/mL (10.7 mM), Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
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### Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.675 mL	13.3751 mL	26.7501 mL
5 mM	0.535 mL	2.675 mL	5.350 mL
10 mM	0.2675 mL	1.3375 mL	2.675 mL
50 mM	0.0535 mL	0.2675 mL	0.535 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

### Reference

- Lei C, et al. Columbamine suppresses the proliferation and malignization of colon cancer cells via abolishing Wnt/ $\beta$ -catenin signaling pathway. *Cancer Manag Res.* 2019;11:8635-8645. Published 2019 Sep 23.
- Cao S, et al. Berberine metabolites exhibit triglyceride-lowering effects via activation of AMP-activated protein kinase in Hep G2 cells. *J Ethnopharmacol.* 2013;149(2):576-582.
- Wang W, et al. A series of strategies for solving the shortage of reference standards for multi-components determination of traditional Chinese medicine, Mahoniae Caulis as a case. *J Chromatogr A.* 2015 Sep 18;1412:100-11.
- Cao S, et al. Berberine metabolites exhibit triglyceride-lowering effects via activation of AMP-activated protein kinase in Hep G2 cells. *J Ethnopharmacol.* 2013 Sep 16;149(2):576-82.
- ei C, et al. Columbamine suppresses the proliferation and malignization of colon cancer cells via abolishing Wnt/ $\beta$ -catenin signaling pathway. *Cancer Manag Res.* 2019 Sep 23;11:8635-8645.

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