Data Sheet (Cat.No.TN4944)

TargetMol
A DRUG SCREENING EXPERT

Santamarine

Chemical Properties

CAS No.:	4290-13-5
Formula:	C15H20O3
Molecular Weight:	248.3
Appearance:	N/A
Storage:	0-4℃ for short term (days to weeks), or -20℃ for long term (months).

Biological Description

Description	Santamarine has significant anticancer activity, can inhibit L1210 cells because of its cytotoxic,cytostatic and blocking mitosis and reducing uptake of thymidine. Santamarine and reynosin show bactericidal activity against clinical strains of Mycobacterium tuberculosis.
Targets(IC_{50})	Caspase: None
In vitro	Cyathocline purpurea has been traditionally used to treat various diseases including cancers for many years. However, these applications of C. purpurea have not been supported by pharmacological investigation. The objective of this study is to investigate the anticancer activities of three main constituents such as Santamarine, 9beta-acetoxycostunolide and 9beta-acetoxyparthenolide isolated from C. purpurea in vitro. METHODS AND RESULTS: Cell viability was determined by trypan blue exclusion and methylene blue assays. Colony formation was assessed by microtitration cloning assay. DNA synthesis was determined by tritiated thymidine incorporation assay. Cell cycle analysis was carried out by flow cytometry. Apoptosis was observed by DAPI staining assay and Caspase 3/7 activities was measured using Caspase-Glo 3/7 assay kit. Santamarine, 9beta-acetoxycostunolide and 9beta-acetoxyparthenolide inhibited the growth of L1210 murine leukaemia, CCRF-CEM human leukaemia, KB human nasopharyngeal carcinoma, LS174T human colon adenocarcinoma and MCF 7 human breast adenocarcinoma cells in vitro, with IC(50) in the range of 0.16-1.3 microg/mL. In L1210 model, Santamarine and 9beta-acetoxycostunolide inhibited L1210 cell growth, colony formation and [(3)H]-thymidine incorporation in time- and concentration-dependent manners. Flow cytometry studies showed that Santamarine and 9beta-acetoxycostunolide blocked L1210 cells in the G(2)/M phase of the cell cycle. DAPI staining and caspase activity assays showed Santamarine and 9beta-acetoxycostunolide induced apoptosis and activated caspase 3 in L1210 cells. CONCLUSIONS: These results indicated that Santamarine, 9beta-acetoxycostunolide and 9beta-acetoxyparthenolide exhibit significant anticancer activities in vitro. The inhibitory effects of Santamarine and 9beta-acetoxycostunolide on L1210 cells are cytotoxic rather than just cytostatic. They block mitosis and reduce uptake of thymidine. The mechanism of the cytotoxicity of Santamarine and 9beta-acetoxycostunolide to L1210 cells could be related to alkylation of the sulfhydryl enzymes involved in nucleic acids and protein synthesis, as previously found for other sesquiterpenes with the alpha-methylene-gamma-lactone moiety present in Santamarine, 9beta-acetoxycostunolide and 9beta-acetoxyparthenolide. It may also be related to suppression of microtubular proteins. Santamarine and 9beta-acetoxycostunolide induced apoptosis of L1210 cells via activation of caspase 3.

Solubility Information

Solubility	< 1 mg/ml refers to the product slightly soluble or insoluble

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	4.027 mL	20.137 mL	40.274 mL
5 mM	0.805 mL	4.027 mL	8.055 mL
10 mM	0.403 mL	2.014 mL	4.027 mL
50 mM	0.081 mL	0.403 mL	0.805 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. The storage conditions and period of the stock solution: - 80 ℃ for 6 months; - 20 ℃ for 1 month. Please use it as soon as possible.

Reference

1. Anticancer activities of sesquiterpene lactones from Cyathocline purpurea in vitro. Cancer Chemother Pharmacol. 2009 Jun;64(1):143-52.

2. Reynosin and santamarine: two sesquiterpene lactones from Ambrosia confertiflora with bactericidal activity against clinical strains of Mycobacterium tuberculosis. Pharmaceutical Biology, 2016, 14 May, 54(11):2623-8.

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