Data Sheet (Cat.No.T6947)

TargetMol

Piperlongumine

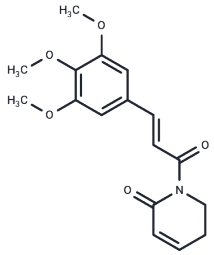
Chemical Properties

CAS No. : 20069-09-4

Formula: C17H19NO5

Molecular Weight: 317.34

Storage: 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	Piperlongumine (Piplartine) is a natural alkaloid from Piper longum L. It selectively kills cancer cells and strengthens the level of reactive oxygen species (ROS).
Targets(IC50)	Apoptosis,ERK,Ferroptosis,Reactive Oxygen Species,Antibacterial,Autophagy,ROS
In vitro	Piperlongumine is a known ROS inducer which could induce pancreatic cancer cell death in cell culture[1] As a thromboxane A(2) receptor antagonist, Piperlongumine inhibits platelet aggregation. [2] Piperlongumine also promotes autophagy via inhibition of Akt/mTOR signalling and mediates cancer cell death. [3]
In vivo	Piperlongumine (50 mg/kg i.p.) causes in vivo growth inhibition of tumor cells without leading to major changes in the biochemical, hematological and histopathological parameters. [4]
Kinase Assay	MEK Kinase Assay: Kinase inactive murine ERK2 (mERK2) K52A/T183A is affinity purified from Escherichia coli expressed using the pET21a vector. MEK1 kinase activity is determined using mERK2 K52A T183A as the substrate. Recombinant MEK1 enzyme (5 nM) is first activated by 0.02 unit or 1.5 nM of RAF1 in the presence of 25 mM HEPES (pH 7.8), 1 mM MgCl2, 50 mM NaCl, 0.2 mM EDTA, and 50 μM ATP for 30 minutes at 25 °C. The reactions are initiated by adding 2 μM of mERK2K52A T183A and 2.5 μCi [γ-33P] ATP in a total volume of 20 μL. The MEK2 kinase activity is determined similarly except that activation by RAF1 is not needed and 11 nM of MEK2 enzyme (active) are used in the assays.Kinase profiling is performed by Invitrogen using their Select Screen Kinase Profiling Service. The Z'-LYTE biochemical assay is used. RDEA119 is assayed in quadruplicate at 10 μM against 205 kinases.
Cell Research	MCF-7 and 786-O cells are incubated with various PL concentrations for 48h. Cell proliferation is analysed by CellTiter Blue assay. Effective doses (ED) are calculated using XLift, Microsoft Excel add-in. (Only for Reference)

Solubility Information

Solubility	DMSO: 128.75 mg/mL (405.72 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 2 mg/mL (6.3 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.1512 mL	15.756 mL	31.5119 mL
5 mM	0.6302 mL	3.1512 mL	6.3024 mL
10 mM	0.3151 mL	1.5756 mL	3.1512 mL
50 mM	0.063 mL	0.3151 mL	0.6302 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

Yao Y, et al. Piperlongumine induces apoptosis and reduces bortezomib resistance by inhibiting STAT3 in multiple myeloma cells. Oncotarget. 2016 Nov 8;7(45):73497-73508.
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Zou P, et al. Cancer Lett. 2016, 375(1):114-26.
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