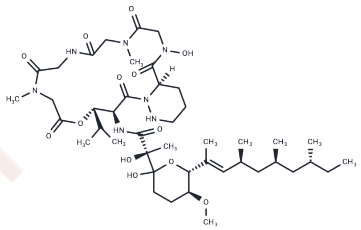
Data Sheet (Cat.No.T9649)

TargetMol

Verucopeptin

Chemical Properties



CAS No. : 138067-14-8

Formula: C43H73N7O13

Molecular Weight: 896.08

Storage: Keep away from moisture,Store at low temperature
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	Verucopeptin is a pyranized cyclic peptide and an inhibitor of hypoxia-inducible factor 1 (HIF-1). It is an antibiotic effective against B16 melanoma, with anticancer activity, lowering the expression of HIF-1 target genes and HIF-1α protein levels. It can be used in cancer research.
Targets(IC50)	Proton pump,HIF/HIF Prolyl-Hydroxylase,Endogenous Metabolite,HIF
In vitro	Verucopeptin is a potent HIF-1 inhibitor with an IC50 value of 0.22 μM, capable of reducing the expression level of HIF-1 target genes and decreasing the accumulation of HIF-1α protein. When Verucopeptin was treated with HT1080 cells at a concentration of 0-335 nM for 24 hours, it was able to dose-dependently reduce the level of HIF-1 proteins, but had no significant effect on c-Raf. [1] Verucopeptin exhibited excellent anti-tumor effects on K562R cells at concentrations of 0-30 μM with a treatment time of 72 hours, with an IC50 of 388 nM, although these cells were resistant to certain chemotherapeutic agents (e.g., 10 μM concentrations of paclitaxel and vincristine). [2] When Verucopeptin was tested in the 0-1 μM concentration range, its antiproliferative capacity covered 66% of 1,094 cancer cells, exhibiting a broad spectrum of activity with an IC50 of less than 100 nM. [2] In a competitive binding assay, Verucopeptin was able to block the binding of the VE-P marker to ATP6V1G1 after 1 hour of treatment at a concentration of 10 nM, while ATP1V1B2 and ATP6V1D were not affected. In addition, the compound potently inhibits v-ATPase activity and reduces lysosomal acidification, albeit less efficiently than Baf A1. [2] Verucopeptin exhibits significant inhibition of p-S6K and p-4EBP1 phosphorylation within 1 hour at concentrations ranging from 0-500 nM. The compound also attenuated the phosphorylation levels of a variety of mTORC1 downstream substrates, including p-4EBP1, pmTORS2448, p-mTORS2481, p-Rictor, p-μLK1, and p-Grb10, at concentrations ranging from 50 to 500 nM. [2]
In vivo	In animal experiments, Verucopeptin was injected intravenously at a dose of 1 mg/kg twice daily for 7 consecutive days, which significantly inhibited tumor growth, while no weight loss or significant toxicity was observed.HE staining showed that Verucopeptin induced cell death and effectively blocked the mTORC1 signaling pathway by dephosphorylating S6K and 4EBP1. [2]

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	1.116 mL	5.5799 mL	11.1597 mL
5 mM	0.2232 mL	1.116 mL	2.2319 mL
10 mM	0.1116 mL	0.558 mL	1.116 mL
50 mM	0.0223 mL	0.1116 mL	0.2232 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

Takahashi N, et al. Total synthesis of verucopeptin, an inhibitor of hypoxia-inducible factor 1 (HIF-1). Chem Commun (Camb). 2019 Oct 1;55(79):11956-11959.
Wang Y, et al. Pharmacological Targeting of Vacuolar H+-ATPase via Subunit V1G Combats Multidrug-Resistant Cancer. Cell Chem Biol. 2020 Nov 19;27(11):1359-1370.e8.
Yoshimura A, et al. Structure Elucidation of Verucopeptin, a HIF-1 Inhibitory Polyketide-Hexapeptide Hybrid Metabolite from an Actinomycete. Org Lett. 2015 Nov 6;17(21):5364-7.