Data Sheet (Cat.No.T13229)

TargetMol

Tunicamycin

Chemical Properties

CAS No. : 11089-65-9

Formula: C39H64N4O16

Molecular Weight:

Storage: Keep away from moisture
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	Tunicamycin is a mixture of antibiotics that inhibit N-linked glycosylation by blocking GlcNAc phosphotransferase (GPT). Tunicamycin has antitumor activity, as well as anti-bacterial, anti-fungal, and anti-viral activity.
Targets(IC50)	Antibacterial,Antibiotic,Antifungal,Influenza Virus
In vitro	**METHODS**: Human hepatocellular carcinoma cells Hep3B were treated with Tunicamycin (1 μg/mL), camptothecin (3 μM), etoposide (5 μM), taxol (0.1 μM), and vincristine (0.1 μM) for 48 h, and cell death was detected by Flow Cytometry. **RESULTS**: Tunicamycin significantly inhibited apoptosis induced by TOP inhibitors (camptothecin and etoposide) but not by microtubule-targeting drugs (taxol and vincristine). [1] **METHODS**: Human hepatocellular carcinoma cells PLC/PRF/5, MHCC-97L and MHCC-97H were treated with Tunicamycin (2.5 μg/mL) for 24 h, and the expression levels of the target proteins were detected by Western Blot. **RESULTS**: Tunicamycin inhibited the phosphorylation of Akt in the three hepatocellular carcinoma cell lines. [2]
In vivo	**METHODS**: To investigate the effects on hepatic energy metabolism, Tunicamycin (1 mg/kg) was administered intraperitoneally to C57BL/6 mice as a single injection. **RESULTS**: Tunicamycin significantly induced hepatic yellow coloration and endoplasmic reticulum stress, and increased serum aspartate aminotransferase and alanine aminotransferase levels.Tunicamycin altered hepatic energy homeostasis by increasing triglyceride accumulation and decreasing glycogen content. [3] **METHODS**: To test the antitumor activity in vivo, Tunicamycin (0.25 mg/kg) was administered orally twice a week for four weeks to Balb/c (nu/nu) mice harboring human triple-negative breast carcinoma tumor MDA-MB-231. **RESULTS**: Within one week of oral administration of Tunicamycin, MDA-MB-231 tumor xenografts were reduced by 65% and there was no systemic and/or organ failure. [4]

Solubility Information

Solubility	DMSO: 14.37 mg/mL,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,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.*

Reference

Hsu JL, et al. Tunicamycin induces resistance to camptothecin and etoposide in human hepatocellular carcinoma cells: role of cell-cycle arrest and GRP78. Naunyn Schmiedebergs Arch Pharmacol. 2009 Nov;380(5):373-82.
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Hou H, et al. Tunicamycin potentiates cisplatin anticancer efficacy through the DPAGT1/Akt/ABCG2 pathway in mouse Xenograft models of human hepatocellular carcinoma. Mol Cancer Ther. 2013 Dec;12(12):2874-84.
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Banerjee A, et al. Unfolded protein response is required in nu/nu mice microvasculature for treating breast tumor with tunicamycin. J Biol Chem. 2011 Aug 19;286(33):29127-29138.