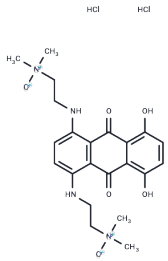
Data Sheet (Cat.No.T10459)

TargetMol

Banoxantrone dihydrochloride

Chemical Properties



CAS No. : 252979-56-9

Formula: C22H30Cl2N4O6

Molecular Weight: 517.4

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	Banoxantrone dihydrochloride (AQ4N dihydrochloride) is a novel hypoxic cytotoxin that selectively kills hypoxic cells through an iNOS-dependent mechanism.
Targets(IC50)	NOS,Topoisomerase
In vitro	In hypoxic conditions, Banoxantrone dihydrochloride (AQ4N) undergoes reduction to form AQ4, a stable compound with high DNA affinity. AQ4 acts as a potent inhibitor of topoisomerase II, effectively damaging cells that enter the cell cycle following radiation exposure to the tumor's well-oxygenated regions. Specifically, Banoxantrone dihydrochloride demonstrates significantly higher cytotoxicity (more than 8-fold) in hypoxic environments compared to normoxic ones in 9L rat gliosarcoma and H460 human non-small-cell lung carcinoma cells, without similar effects across 11 other human cancer cell lines. Moreover, the relationship between DT-diaphorase protein levels and Banoxantrone chemosensitivity is weak across these cancer cell lines, and Banoxantrone's effectiveness does not diminish in the presence of DT-diaphorase inhibitors. Banoxantrone dihydrochloride is chemically characterized as a bis-N-oxide, which is sequentially reduced to the tertiary amine AQ4. AQ4 exhibits potent cytotoxicity against both aerobic and hypoxic cells by intercalating into DNA, forming a stable complex that inhibits topoisomerase II, leading to DNA damage and subsequent cell death, a mechanism not observed with AQ4N.
In vivo	Banoxantrone dihydrochloride(AQ4N) showed ≥ 8-fold higher cytotoxicity under hypoxia than normoxia in cultures of 9L rat gliosarcoma and H460 human non-small-cell lung carcinoma cells but not for 11 other human cancer cell lines. DT-diaphorase protein levels and Banoxantrone dihydrochloride(AQ4N) chemosensitivity were poorly correlated across the cancer cell line panel, and Banoxantrone dihydrochloride(AQ4N) chemosensitivity was not affected by DT-diaphorase inhibitors. Moreover, the activation of Banoxantrone dihydrochloride(AQ4N)cytotoxicity in vivo requires tumor hypoxia that is more extensive or prolonged than can readily be achieved by vasodilation or by antiangiogenic drug treatment[1][2].

Solubility Information

Solubility	DMSO: 10 mg/mL (19.33 mM),Sonication is recommended. H2O: 10 mg/mL (19.33 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: 1 mg/mL (1.93 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	1.9327 mL	9.6637 mL	19.3274 mL
5 mM	0.3865 mL	1.9327 mL	3.8655 mL
10 mM	0.1933 mL	0.9664 mL	1.9327 mL
50 mM	0.0387 mL	0.1933 mL	0.3865 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

Williams KJ, et al. In vivo activation of the hypoxia-targeted cytotoxin AQ4N in human tumor xenografts. Mol Cancer Ther. 2009 Dec;8(12):3266-75.

Manley E Jr, et al. Impact of tumor blood flow modulation on tumor sensitivity to the bioreductive drug banoxantrone. J Pharmacol Exp Ther. 2013 Feb;344(2):368-77.

Hejmadi MV, et al. DNA damage following combination of radiation with the bioreductive drug AQ4N: possible selective toxicity to oxic and hypoxic tumour cells. Br J Cancer. 1996 Feb;73(4):499-505.

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