Product Data Sheet

Product Name: AP-III-a4 hydrochloride
Cat. No.: GC35371

Chemical Properties

Cas. No.	2070014-95-6		
SMILES	FC1=CC=C(CNC2=NC(NCC3CCCCC3)=NC(NC4=CC=C(CC(NCCOCCOCCN)=O)C=C4)=N2)C=C1.Cl		
Formula	$C_{31}H_{44}ClFN_8O_3$	M.Wt	631.18
Solubility	DMSO: ≥ 53 mg/mL (83.97 mM)	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure	AP-III-a4 hydrochloride		

Protocol

Cell experiment [1]:

Cell lines	NCI-H929 cells
Preparation Method	NCI-H929 cells were cultured in RPMI-1640 or Dulbecco's modified Eagle's medium at 37℃ in a humidified atmosphere with 5% CO_2. NCI-H929 cells were treated with 0.2-1.6μM AP-III-a4 hydrochloride for 72 hours.
Reaction Conditions	0.2-1.6μM; 72h
Applications	AP-III-a4 hydrochloride inhibits the proliferation of cancer cells.

Animal experiment [1]:

Animal models	Multiple myeloma (MM) xenograft model
Preparation Method	BALB/c nude mice were used for the xenograft experiments. The mice were randomly assigned to four groups: vehicle control group, bortezomib (BTZ) treatment group (1mg/kg), ENO1 inhibitor (AP-III-a4 hydrochloride) treatment group (10mg/kg), and combination treatment group (BTZ + AP-III-a4). AP-III-a4 and BTZ were administered via intraperitoneal injection every two days. Tumor volume and body weight were monitored regularly throughout the treatment period.

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Dosage form	10mg/kg; ip; 15d
Applications	In MM xenograft model, the combination of AP-III-a4 hydrochloride and BTZ has a more significant growth inhibitory effect in vivo than AP-III-a4 hydrochloride or BTZ alone.

References:
[1]. Gao X, Feng Q, Zhang Q, et al. Targeting enolase 1 reverses bortezomib resistance in multiple myeloma through YWHAZ/Parkin axis. Journal of Biomedical Science. 2025 Jan 20; 32(1): 9.

Background

AP-III-a4 hydrochloride is the first non-substrate analog inhibitor of enolase (IC_{50} = 0.576μM) [1]. AP-III-a4 hydrochloride induces cell death under hypoxia and inhibits cancer cell migration and invasion by downregulating AKT and Bcl-xL expression [1]. AP-III-a4 hydrochloride is often used in cancer research [2-3].

In HCT116 cells, AP-III-a4 hydrochloride (10μM, 24h) induced cell death under hypoxia and inhibited cancer cell migration and invasion by downregulating AKT and Bcl-xL expressions [1]. In NCI-H929 cells, AP-III-a4 hydrochloride (0.2-1.6μM; 72h) inhibits the proliferation of cancer cells [4]. In H9c2 cells, AP-III-a4 hydrochloride (10μM, 24h) inhibitor group displayed markedly reduced glucose and lactate levels [5].

In the Multiple myeloma (MM) xenograft model, the combination of AP-III-a4 hydrochloride (10mg/kg; ip; 15d) and BTZ has a more significant growth inhibitory effect in vivo than AP-III-a4 hydrochloride or BTZ alone [4].

References:
[1]. Jung DW, Kim WH, Park SH, et al. A unique small molecule inhibitor of enolase clarifies its role in fundamental biological processes. ACS chemical biology. 2013 Jun 21; 8(6): 1271-1282.
[2]. Chen X, Xu H, Wu N, et al. Interaction between granulin A and enolase 1 attenuates the migration and invasion of human hepatoma cells. Oncotarget. 2017 Mar 17; 8(18): 30305.
[3]. Wang C, Huang M, Lin Y, et al. ENO2-derived phosphoenolpyruvate functions as an endogenous inhibitor of HDAC1 and confers resistance to antiangiogenic therapy. Nature Metabolism. 2023 Oct; 5(10): 1765-1786.
[4]. Gao X, Feng Q, Zhang Q, et al. Targeting enolase 1 reverses bortezomib resistance in multiple myeloma through YWHAZ/Parkin axis. Journal of Biomedical Science. 2025 Jan 20; 32(1): 9.
[5]. Guo Z, Liu S, Hou X, et al. Isorhamnetin Attenuates Isoproterenol-Induced Myocardial Injury by Reducing

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