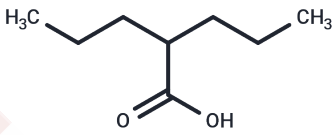
Data Sheet (Cat.No.T7064)

TargetMol

Valproic Acid

Chemical Properties



CAS No. : 99-66-1

Formula: C8H16O2

Molecular Weight: 144.21

Storage: Pure form: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Valproic Acid (2-Propylpentanoic Acid) is an HDAC inhibitor that suppresses HDAC1 activity and induces HDAC2 degradation, exhibiting oral bioavailability. Valproic Acid activates Notch1 signalling and inhibits the proliferation of small cell lung carcinoma cells, making it applicable for research into epilepsy and bipolar disorder.
Targets(IC50)	Apoptosis,Mitophagy,Gamma-secretase,HIV Protease,GABA Receptor,Endogenous Metabolite,HDAC,Autophagy,Sodium Channel
In vitro	**METHODS**: Esophageal squamous cell carcinoma (ESCC) cell lines TE9, TE10, TE11, and TE14 were treated with Valproic Acid (0.01-5 mM) for 72 h, and cell viability was assayed using MTT Assay. **RESULTS**: Valproic Acid inhibited the viability of all ESCC cells in a dose-dependent manner. The IC50 values of Valproic Acid ranged from 1.02-2.15 mM in each cell line. [1] **METHODS**: Mouse teratoma cells, F9, and human cervical cancer cells, HeLa, were treated with Valproic Acid (0.25-5 mM) for 4-24 h. The expression levels of target proteins were detected by Western Blot. **RESULTS**: Only trace amounts of acetylated histones were detected in untreated F9 or HeLa cells. Treatment with Valproic Acid at concentrations as low as 0.25 mM increased the amount of acetylated histone H4, and significant acetylation was found with 2 mM Valproic Acid. [2]
In vivo	**METHODS**: To study the effects on Machado Joseph disease (MJD), Valproic Acid (200 mg/kg) was administered intraperitoneally to the CMVMJD135 mouse model five times per week for twenty-five weeks. **RESULTS**: Chronic Valproic Acid treatment had limited effects on motor deficits in these mice, observed primarily in the late stages of locomotor swimming, beam swimming, rotational bar and spontaneous motor activity tests, and did not alter ATXN3 inclusion body loads and astrocyte proliferation in affected brain regions. [3] **METHODS**: To assay antitumor activity in vivo, Valproic Acid (500 mg/kg, 10% DMSO 25% w/v Kleptose HPB buffer) was administered by gavage to BALB/c nude mice harboring the human AML tumor, Kasumi-1, once daily for twelve days. **RESULTS**: Valproic Acid inhibited tumor growth in mice transplanted with Kasumi-1 cells. At the end of the experiment, the incidence of IR in the Valproic Acid group was 57.25%. [4]

Solubility Information

Solubility	DMSO: 100 mg/mL (693.43 mM),Sonication is recommended. H2O: 1 mg/mL (6.93 mM),Sonication and heating are recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	5% DMSO+95% Saline: 5 mg/mL (34.67 mM),Solution. *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	6.9343 mL	34.6717 mL	69.3433 mL
5 mM	1.3869 mL	6.9343 mL	13.8687 mL
10 mM	0.6934 mL	3.4672 mL	6.9343 mL
50 mM	0.1387 mL	0.6934 mL	1.3869 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

Shoji M, et al. Valproic acid, a histone deacetylase inhibitor, enhances radiosensitivity in esophageal squamous cell carcinoma. Int J Oncol. 2012 Jun;40(6):2140-6.
Zhu Z A, Li Y Y, Xu J, et al.CDKL5 deficiency in adult glutamatergic neurons alters synaptic activity and causes spontaneous seizures via TrkB signaling.Cell Reports.2023, 42(10).
Han L, Song B, Zhang P, et al.PC3T: a signature-driven predictor of chemical compounds for cellular transition. Communications Biology.2023, 6(1): 989.
Göttlicher M, et al. Valproic acid defines a novel class of HDAC inhibitors inducing differentiation of transformed cells. EMBO J. 2001 Dec 17;20(24):6969-78.
Esteves S, et al. Limited Effect of Chronic Valproic Acid Treatment in a Mouse Model of Machado-Joseph Disease. PLoS One. 2015 Oct 27;10(10):e0141610.
Li G, Zeng M, Yan Z, et al.HDAC inhibitors support long-term expansion of porcine hepatocytes in vitro.Biomedicine & Pharmacotherapy.2024, 177: 116973.
Zhang ZH, et al. Valproic acid inhibits tumor angiogenesis in mice transplanted with Kasumi-1 leukemia cells. Mol Med Rep. 2014 Feb;9(2):443-9.