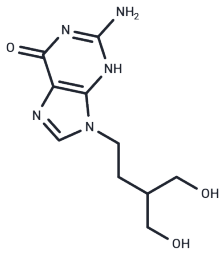
Data Sheet (Cat.No.T1643)

TargetMol

Penciclovir

Chemical Properties



CAS No. : 39809-25-1

Formula: C10H15N5O3

Molecular Weight: 253.26

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	Penciclovir (BRL 39123) is a Herpesvirus Nucleoside Analog DNA Polymerase Inhibitor. In HSV infected cells, penciclovir is phosphorylated by viral thymidine kinase and subsequently converted by cellular kinases into the active metabolite, penciclovir triphosphate, which competitively inhibits viral HSV polymerase by blocking deoxyguanosine triphosphate substrate binding. As a result, herpes viral DNA synthesis and replication are selectively inhibited.
Targets(IC50)	HCV Protease,Antifection,HSV
In vivo	Penciclovir exhibits antiviral activity against a variety of herpesviruses, demonstrating efficacy against HHV-6A (IC50: 37.9 μM) and HHV-6B (IC50: 77.8 μM). It shows in vitro effectiveness against both type I and type II herpes simplex viruses and possesses a beneficial effect on varicella-zoster virus, without affecting DNA synthesis in uninfected cells. As a guanine analog, Penciclovir features low toxicity and high selectivity. It is converted by cellular kinases into an active triphosphate form that competitively inhibits viral DNA polymerase, thereby suppressing DNA synthesis in virus-infected cells. Studies related to herpes simplex virus type I have indicated that Penciclovir can induce apoptosis in cells with minimal genotoxic effects.
Cell Research	Penciclovir is dissolved with DMSO and diluted with appropriate media[2]. Human breast cancer cell lines MCF-7 and MDA-MB-435, glioblastoma U87 mg, and embryonic kidney cells 293T are cultured at 37°C in a humidified atmosphere containing 5% CO2 in Iscove's modified Dulbecco medium or Leibovitz's L-medium and 5% fetal bovine serum (FBS). The assays are performed with slight modifications. In brief, cells are seeded into 24-well plates (5×104 cells/well) and infected 48 h later with 103 particles per cell of unmodified virus (Adtk), PEGylated virus (PEG-Adtk), or RGD-PEG-modified virus (RGD-PEG-Adtk) in triplicates in culture medium with 2% FBS and incubated for 4 h at 37°C. The incubation medium is then replaced by normal medium and cells are further incubated for 48 h. Cells are harvested and lysed with 500 μL of TK lysis buffer that contained 0.5% Nonidet P-40 (NP-40), 20 mM N-(2-hydroxyethyl) piperazine-N'-(2-ethanesulfonic acid) (HEPES) (pH 7.6), 2 mM Mg(OAc)2, 1 mM dithiothreitol, and 50 μM thymidine. The supernatant is collected after centrifugation. The samples are kept at -80°C until use. The modified and unmodified adenovirus protein concentrations are determined by the Micro BCA assay. One microgram of cell extract is incubated with HSV1-tk substrate 8-3H-Penciclovir (8-3 H-PCV). The phosphorylated tracer is separated from unphosphorylated 8-3 H-PCV with DE-81 filters. TK activity is expressed as the

Cell Research	percentage of conversion of substrate per minute per microgram protein[2].

Solubility Information

Solubility	H2O: 1 mg/mL (3.95 mM),Sonication is recommended. DMSO: 50 mg/mL (197.43 mM),Sonication is recommended. Ethanol: < 1 mg/mL (insoluble or slightly soluble), (< 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 (7.9 mM),Sonication is recommended. 10% DMSO+90% Saline: 5 mg/mL (19.74 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	3.9485 mL	19.7426 mL	39.4851 mL
5 mM	0.7897 mL	3.9485 mL	7.897 mL
10 mM	0.3949 mL	1.9743 mL	3.9485 mL
50 mM	0.079 mL	0.3949 mL	0.7897 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

Earnshaw DL, et al. Antimicrob Agents Chemother, 1992, 36(12), 2747-2757.
Thieulent C, Hue E, Sutton G, et al. Identification of antiviral compounds against equid herpesvirus-1 using real-time cell assay screening: efficacy of decitabine and valganciclovir alone or in combination. Antiviral Research. 2020: 104931
Amjad M, et al. Microbiol Immunol, 2001, 45(3), 233-240.
Thust R, et al. Cancer Gene Ther, 2000, 7(1), 107-117.
Thieulent C, Hue E, Sutton G, et al. Identification of antiviral compounds against equid herpesvirus-1 using real-time cell assay screening: efficacy of decitabine and valganciclovir alone or in combination[J]. Antiviral Research. 2020: 104931