Ganciclovir sodium

Cat. No.: HY-13637A

CAS No.: 107910-75-8

Molecular Formula: $C_9H_{12}N_5NaO_4$

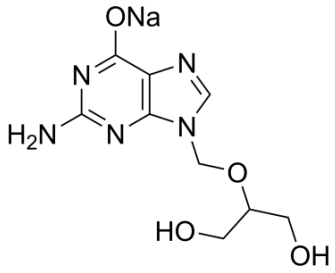
Molecular Weight: 277.21

Target: CMV; HSV; Antibiotic; Nucleoside Antimetabolite/Analog

Pathway: Anti-infection; Cell Cycle/DNA Damage

Storage: 4°C, protect from light

* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro

H_2O : 50 mg/mL (180.37 mM; Need ultrasonic)

DMSO : 5 mg/mL (18.04 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.6074 mL	18.0369 mL	36.0737 mL
5 mM	0.7215 mL	3.6074 mL	7.2147 mL
10 mM	0.3607 mL	1.8037 mL	3.6074 mL

Please refer to the solubility information to select the appropriate solvent.

BIOLOGICAL ACTIVITY

Description

Ganciclovir (BW 759) sodium, a nucleoside analogue and an orally active antiviral agent, shows activity against CMV. Ganciclovir sodium also has activity in vitro against members of the herpes group and some other DNA viruses. Ganciclovir sodium inhibits the in vitro replication of human herpes viruses (HSV 1 and 2, CMV) and adenovirus serotypes 1, 2, 4, 6, 8, 10, 19, 22 and 28. Ganciclovir sodium has an IC_{50} of 5.2 μM for feline herpesvirus type-1 (FHV-1)[1][2][3].

IC_{50} & Target	CMV	HSV-1	HSV-2	FHV-1 5.2 μM (IC_{50})

In Vitro

Ganciclovir sodium is an acyclic deoxyguanosine analog structurally similar to acyclovir but with superior activity against CMV. The median ganciclovir concentration required to inhibit viral replication by 50 percent is 2.15 mumol versus 72 mumol for acyclovir[4].The primary mechanism of ganciclovir action against CMV is inhibition of the replication of viral DNA by ganciclovir-5'-triphosphate (ganciclovir-TP). This inhibition includes a selective and potent inhibition of the viral DNA polymerase. Ganciclovir sodium is metabolized to the triphosphate form by primarily three cellular enzymes: a deoxyguanosine kinase induced by CMV-infected cells; guanylate kinase; and phosphoglycerate kinase[5].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Ganciclovir sodium (1-80 mg/kg; i.h.; daily for 5 days) delays MCMV-induced wasting syndrome and mortality[6].

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Animal Model:	Severe combined immunodeficiency (SCID) mice (MCMV infection)[6]
Dosage:	1-80 mg/kg
Administration:	I.h.; daily for 5 days
Result:	Dose dependently delayed MCMV-induced wasting syndrome and mortality.

CUSTOMER VALIDATION

- Cell. 2020 Oct 28;S0092-8674(20)31381-7.
- Brain Behav Immun. 2019 Aug;80:394-405.
- J Virol. 2017 Jan 18;91(3). pii: e02152-16.
- Cells. 2019 Dec 20;9(1):31.
- Eur J Pharm Sci. 2019 Jan 15;127:29-37.

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REFERENCES

[1]. Maggs DJ, et al. In vitro efficacy of ganciclovir, cidofovir, penciclovir, foscarnet, idoxuridine, and acyclovir against feline herpesvirus type-1. Am J Vet Res. 2004 Apr;65(4):399-403.

[2]. Faulds D, et al. Ganciclovir. A review of its antiviral activity, pharmacokinetic properties and therapeutic efficacy in cytomegalovirus infections. Drugs. 1990;39(4):597-638.

[3]. Boujemla I, et al. Pharmacokinetics and tissue diffusion of ganciclovir in mice and rats. Antiviral Res. 2016;132:111-115.

[4]. Fletcher CV, et al. Evaluation of ganciclovir for cytomegalovirus disease. DICP. 1989 Jan;23(1):5-12.

[5]. Matthews T, et al. Antiviral activity and mechanism of action of ganciclovir. Rev Infect Dis. 1988 Jul-Aug;10 Suppl 3:S490-4.

[6]. Duan J, Paris W, Kibler P, Bousquet C, Liuzzi M, Cordingley MG. Dose and duration-dependence of ganciclovir treatment against murine cytomegalovirus infection in severe combined immunodeficient mice. Antiviral Res. 1998;39(3):189-197.

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