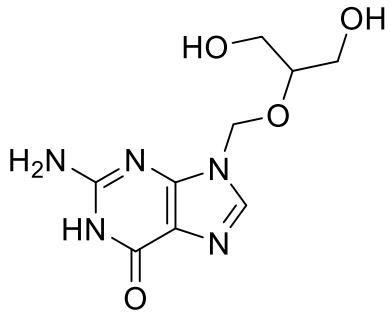
Product data sheet

MedKoo Cat#: 574300 Name: Ganciclovir CAS#: 82410-32-0 Chemical Formula: $C_9H_{13}N_5O_4$ Exact Mass: 255.0968 Molecular Weight: 255.23	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Ganciclovir is a synthetic analog of 2'-deoxy-guanosine which is used to treat or prevent cytomegalovirus (CMV) infections. It inhibits the replication of human CMV with an IC50 value of 0.01 μM and is effective against strains of CMV from human, monkey, mouse, and guinea pig.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	36.78	144.09
Water	1.67	6.54

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.92 mL	19.59 mL	39.18 mL
5 mM	0.78 mL	3.92 mL	7.84 mL
10 mM	0.39 mL	1.96 mL	3.92 mL
50 mM	0.08 mL	0.39 mL	0.78 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Janoly-Dumenil A, Rouvet I, Bleyzac N, Bertrand Y, Aulagner G, Zabot MT. Effect of duration and intensity of ganciclovir exposure on lymphoblastoid cell toxicity. Antivir Chem Chemother. 2009;19(6):257-62. doi: 10.1177/095632020901900605. PMID: 19641234.
2. Ding Z, Mathur V, Ho PP, James ML, Lucin KM, Hoehne A, Alabsi H, Gambhir SS, Steinman L, Luo J, Wyss-Coray T. Antiviral drug ganciclovir is a potent inhibitor of microglial proliferation and neuroinflammation. J Exp Med. 2014 Feb 10;211(2):189-98. doi: 10.1084/jem.20120696. Epub 2014 Feb 3. PMID: 24493798; PMCID: PMC3920559.

In vivo study

1. Haller TJ, Price MS, Lindsay SR, Hillas E, Seipp M, Firpo MA, Park AH. Effects of ganciclovir treatment in a murine model of cytomegalovirus-induced hearing loss. Laryngoscope. 2020 Apr;130(4):1064-1069. doi: 10.1002/lary.28134. Epub 2019 Jun 11. PMID: 31184781.
2. Ding Z, Mathur V, Ho PP, James ML, Lucin KM, Hoehne A, Alabsi H, Gambhir SS, Steinman L, Luo J, Wyss-Coray T. Antiviral drug ganciclovir is a potent inhibitor of microglial proliferation and neuroinflammation. J Exp Med. 2014 Feb 10;211(2):189-98. doi: 10.1084/jem.20120696. Epub 2014 Feb 3. PMID: 24493798; PMCID: PMC3920559.

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7. Bioactivity

Biological target:

Ganciclovir (RS-21592, BW-759, 2'-Nor-2'-deoxyguanosine) is an antiviral drug for feline herpesvirus type-1 with IC50 of 5.2 μM in a cell-free assay.

In vitro activity

A correlation was found between the dose of ganciclovir exposure and a decrease in total cell number when duration exceeded 2 days (r(2)=0.92 and 0.93 after 7 and 14 days, respectively). High levels (20 mg/l) of ganciclovir were not more toxic than lowest levels (1 mg/l) for the shortest durations of ganciclovir exposure (1 and 2 days). Moreover, 50% cytotoxic concentrations markedly decreased with the duration of ganciclovir exposure (374-3 mg/l from 1 to 14 days respectively) after 14 days of culture.

Reference: Antivir Chem Chemother. 2009;19(6):257-62. https://pubmed.ncbi.nlm.nih.gov/19641234/

In vivo activity

Ganciclovir (GCV)-treated CMV-infected mice had lower ABR ($P < 0.0001$, Kruskal-Wallis test) and DPOAE ($P < 0.0001$) thresholds compared to CMV-infected untreated mice, indicating that GCV protected mice from CMV-induced hearing loss. Viral load in infected populations undergoing GCV treatment was significantly decreased ($P = 0.03$) relative to untreated mice. GCV treatment alone had no effect on ABR and DPOAE compared to untreated, uninfected controls ($P = 0.1$, $P = 0.24$, respectively). GCVtreated mice received increased protection from OHC loss when compared to untreated groups, with total OHC losses of approximately 7% and 14%, respectively ($P < 0.05$). Neutropenia was absent after 7 days of GCV treatment.

Reference: Laryngoscope. 2020 Apr;130(4):1064-1069. https://pubmed.ncbi.nlm.nih.gov/31184781/