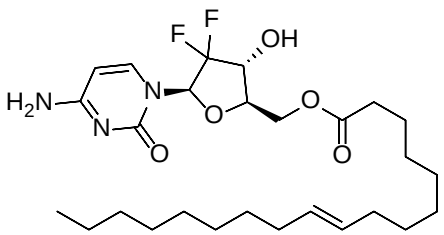
Product data sheet

MedKoo Cat#: 204970 Name: Gemcitabine elaidate CAS#: 210829-30-4 Chemical Formula: $C_{27}H_{43}F_2N_3O_5$ Exact Mass: 527.3171 Molecular Weight: 527.64	
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:
Gemcitabine elaidate, also known as CO-101 and CP-4126, is a lipophilic, unsaturated fatty acid ester derivative of gemcitabine (dFdC), an antimetabolite deoxynucleoside analogue, with potential antineoplastic activity. Upon hydrolysis intracellularly by esterases, the prodrug gemcitabine is converted into the active metabolites difluorodeoxycytidine di- and tri-phosphate (dFdCDP and dFdCTP) by deoxycytidine kinase. dFdCDP inhibits ribonucleotide reductase, thereby decreasing the deoxynucleotide pool available for DNA synthesis; dFdCTP is incorporated into DNA, resulting in DNA strand termination and apoptosis.

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	28.0	53.07
DMF	30.0	56.86
Ethanol	30.0	56.86
Ethanol:PBS (pH 7.2) (1:2)	0.33	0.63

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	1.90 mL	9.48 mL	18.95 mL
5 mM	0.38 mL	1.90 mL	3.79 mL
10 mM	0.19 mL	0.95 mL	1.90 mL
50 mM	0.04 mL	0.19 mL	0.38 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. Bergman AM, Adema AD, Balzarini J, Bruheim S, Fichtner I, Noordhuis P, Fodstad O, Myhren F, Sandvold ML, Hendriks HR, Peters GJ. Antiproliferative activity, mechanism of action and oral antitumor activity of CP-4126, a fatty acid derivative of gemcitabine, in in vitro and in vivo tumor models. Invest New Drugs. 2011 Jun;29(3):456-66. doi: 10.1007/s10637-009-9377-7. Epub 2010 Jan 12. PMID: 20066470; PMCID: PMC3076580.

In vivo study

1. Bergman AM, Adema AD, Balzarini J, Bruheim S, Fichtner I, Noordhuis P, Fodstad O, Myhren F, Sandvold ML, Hendriks HR, Peters GJ. Antiproliferative activity, mechanism of action and oral antitumor activity of CP-4126, a fatty acid derivative of gemcitabine, in in vitro and in vivo tumor models. Invest New Drugs. 2011 Jun;29(3):456-66. doi: 10.1007/s10637-009-9377-7. Epub 2010 Jan 12. PMID: 20066470; PMCID: PMC3076580.

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7. Bioactivity

Biological target: Gemcitabine elaidate inhibits growth of L1210/L5, BCLO, and A2780 cells with IC50s of 0.0033, 0.0042, and 0.0025 μM, respectively.

In vitro activity

Gemcitabine is a deoxycytidine (dCyd) analog with activity in leukemia and solid tumors, which requires phosphorylation by deoxycytidine kinase (dCK). Decreased membrane transport is a mechanism of resistance to gemcitabine. In order to facilitate gemcitabine uptake and prolong retention in the cell, a lipophilic pro-drug was synthesized (CP-4126), with an elaidic fatty acid esterified at the 5'position. CP-4126 was tested in cell lines resistant to cytarabine, another dCyd analog or gemcitabine. Activity of gemcitabine and the derivative was comparable in the parent cell lines, while in dCK deficient cells all compounds were inactive. However, inhibition of nucleoside transport increased the IC(50) for gemcitabine up to 200-fold, but not for CP-4126, underlining the independence of a nucleoside transporter.

Reference: Invest New Drugs. 2011 Jun;29(3):456-66. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3076580/

In vivo activity

For in vivo evaluation, nude mice bearing a human xenograft were treated intraperitoneally every third day for five doses at the maximal tolerated dose. In melanoma, sarcoma, lung, prostate, pancreatic and breast cancer xenografts, gemcitabine and CP-4126 were equally and highly effective; in four other xenografts moderately but equally active. In contrast to gemcitabine, CP-4126 could be administered orally, with a schedule and dose dependent toxicity and antitumor activity. In a colon cancer xenograft, antitumor activity of orally administered CP-4126 was equal to the intraperitoneally administered drug. In conclusion, CP-4126 is membrane transporter independent. Intraperitoneally administered CP-4126 was as effective as gemcitabine in several xenografts and CP-4126 is tolerated when orally administered.

Reference: Invest New Drugs. 2011 Jun;29(3):456-66. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3076580/