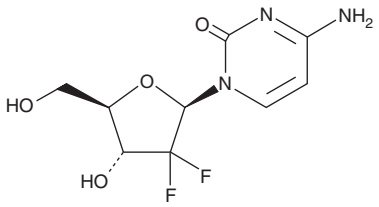
PRODUCT INFORMATION

Gemcitabine

Item No. 11690

CAS Registry No.:	95058-81-4
Formal Name:	2'-deoxy-2',2'-difluoro-cytidine
Synonyms:	DDFC, dFdC, LY 188011, NSC 613327
MF:	$C_9H_{11}N_3O_4F_2$
FW:	263.2
Purity:	≥98%
UV/Vis.:	λ_{max}: 243, 269 nm
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Gemcitabine is supplied as a crystalline solid. A stock solution may be made by dissolving the gemcitabine in the solvent of choice. Gemcitabine is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide, which should be purged with an inert gas. The solubility of gemcitabine in these solvents is approximately 0.25, 5, and 0.1 mg/ml, respectively.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of gemcitabine can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of gemcitabine in PBS (pH 7.2) is approximately 2 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Gemcitabine is an active metabolite of the gemcitabine prodrugs NUC-1031 (Item No. 9003247) and gemcitabine elaidate (Item No. 28303) and a prodrug form of gemcitabine di- and triphosphates.[1-3] Gemcitabine is phosphorylated by intracellular kinases to the intermediate metabolite gemcitabine monophosphate (Item No. 31726) and the active di- and triphosphate forms.[3] It is cytotoxic to HepG2 hepatocellular carcinoma and A549 non-small cell lung cancer (NSCLC) cells (IC_{50}s = 5.2 and 16 nM, respectively) and inhibits tumor growth in various breast, colon, lung, and pancreatic cancer mouse xenograft models.[4] Gemcitabine (12 mg/kg) sensitizes tumors to antibodies targeting programmed cell death protein 1 (PD-1), decreases the number of tumor-infiltrating regulatory T cells (Tregs), and increases survival in an MC-38 syngeneic mouse model of colon carcinoma.[5] Formulations containing gemcitabine have been used in the treatment of cancer.

References

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2. Bergman, A.M., Adema, A.D., Balzarini, J., *et al. Invest. New Drugs* **29(3)**, 456-466 (2011).
3. Veltkamp, S.A., Pluim, D., van Eijndhoven, M.A.J., *et al. Mol. Cancer Ther.* **7(8)**, 2415-2425 (2008).
4. Merriman, R.L., Hertel, L.W., Schultz, R.M., *et al. Invest. New. Drugs* **14(3)**, 243-247 (1996).
5. Obradovic, A., Ager, C., Turunen, M., *et al. Cancer Cell* **41(5)**, 933-949 (2023).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.**CAYMANCHEM**.COM