

Product Data Sheet

Product Name: Mitomycin C

Cat. No.: GC12353

Chemical Properties

Cas. No. 50-07-7

Chemical Name ((1aS,8S,8aR,8bS)-6-amino-8a-methoxy-5-methyl-4,7-dioxo-1,1a,2,4,7,8,8a,8b-octahydroazirino[2',3':3,4]pyrrolo[1,2-a]indol-8-yl)methyl carbamate

SMILES NC(C1=O)=C(C)C(C2=C1[C@@H](COC(N)=O)[C@]3(OC)N2C[C@H]4[C@@H]3N4)=O

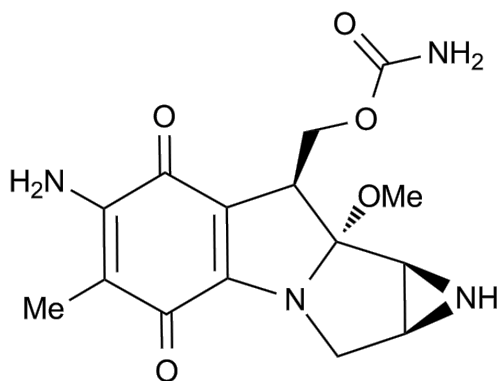
Formula $C_{15}H_{18}N_4O_5$ M.Wt 334.33

Solubility $\geq 16.7\text{mg/mL}$ in DMSO Storage 4°C , protect from light

General tips For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

Cell lines	H460, A549, H1299 cells (human non-small cell lung cancer cell line)
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Preparation Method	H460, A549 and H1299 cells were maintained in RPMI-1640 supplemented with 10% FBS at 37°C, 5% CO ₂ . Cells were treated with 0.4μM Mitomycin C for 24 or 48 hours. After treatment, MTT assay, RT-qPCR, Western blot, luciferase reporter assay, chromatin immunoprecipitation assay, flow cytometric analysis of PD-L1 and MHC-I surface expression, co-culture with PBMCs and LDH release assay, T-cell-mediated tumor killing assay, and granzyme B/TNF-α intracellular staining were performed.
Reaction Conditions	0.4μM; 24h or 48h
Applications	Mitomycin C increased PD-L1 and MHC-I mRNA and protein levels, increased p-ERK, p-JNK, p65, p-p65, c-JUN, p-c-JUN, STAT3 and p-STAT3 protein levels, enhanced c-JUN binding to PD-L1 promoter and c-JUN/STAT3 interaction, increased PD-L1 promoter luciferase activity, and after 24h pretreatment enhanced PBMC-mediated lysis of H460 cells, reduced surviving H460 cell viability in PD-L1 antibody co-culture system.
Animal experiment [2]:	
Animal models	Female athymic nude foxn1nu mice (6-8 weeks old)
Preparation Method	Mice were intraperitoneally injected with 2.5×10 ⁶ B76 human high-grade serous ovarian cancer GFP/luciferase cells in 500μL. Four days later, a closed peritoneal perfusion circuit was established and mice received a 30-minute intraperitoneal perfusion with 20μg/mL Mitomycin C in 30mL total perfusate at 41°C (HIPEC) or 37°C (NIPEC) with flow rate 6mL/min, followed by 3-minute saline flush. Luminescence imaging was performed serially; some mice were sacrificed on day 17 for tumor weight measurement; survival was recorded until spontaneous endpoint.

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Dosage form	20µg/mL; i.p. perfusion; 30min (single procedure at day 4 after tumor inoculation)
Applications	Mitomycin C perfusion inhibited intraperitoneal tumor growth, reduced day-17 tumor weight to 0.12g (HIPEC) or 0.28g (NIPEC) versus 0.77g in saline control, lowered luminescence signal, and increased median overall survival from 25 days (saline) to 37 days (HIPEC) or 34 days (NIPEC); hyperthermia addition did not further improve survival.
References: [1] Luo M, Wang F, Zhang H, et al. Mitomycin C enhanced the efficacy of PD-L1 blockade in non-small cell lung cancer. <i>Signal Transduction and Targeted Therapy</i>. 2020 Aug 28;5:141. [2] Andersson Y, Lovstakken E, Herud TM, et al. Intraperitoneal perfusion with cisplatin or mitomycin C improves survival in mice bearing peritoneal metastases from ovarian cancer. <i>Annals of Surgical Oncology</i>. 2025;32:9333-40.	

Background

Mitomycin C is a cytotoxic antitumor antibiotic. Mitomycin C undergoes enzymatic reductive activation and then alkylates guanine residues in DNA to form intra-strand and inter-strand crosslinks. Mitomycin C inhibits DNA synthesis and degrades DNA. Mitomycin C can be used in research related to gastric cancer, colorectal cancer, anal canal cancer, bladder cancer, pancreatic cancer, breast cancer, as well as bacterial biofilms and drug-resistant infections^[1-4].

In vitro, J82 cells and mitoxantrone-resistant J82/MMC cells were treated with 0.025-10µg/mL Mitomycin C for 24 hours. Mitomycin C reduced J82 cell viability and showed relative resistance in J82/MMC cells^[5]. Human non-small cell lung cancer cells (H460, A549, H1299) were treated with 0.4µM Mitomycin C for 24 hours. Mitomycin C increased PD-L1 and MHC-I mRNA and protein expression, and promoted c-JUN binding to the PD-L1 promoter and c-JUN/STAT3 interaction^[6]. T24 cells were treated with 0.05-50µM Mitomycin C for 24-48 hours. Mitomycin C reduced cell

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viability, arrested the cell cycle at the G2/M phase, and decreased the proportion of cells in S phase^[7].

In vivo, foxn1nu mice were intraperitoneally injected with 2.5×10^6 B76 human high-grade serous ovarian cancer cells. Four days later, a 30-minute intraperitoneal perfusion with 20µg/mL Mitomycin C was performed at a flow rate of 6mL/min with a total volume of 30mL. Mitomycin C inhibited peritoneal tumor growth and prolonged median survival^[8]. C3H/HeN mice were intraperitoneally injected with a single dose of 1-3mg/kg Mitomycin C. Mitomycin C induced tumoricidal activity in peritoneal macrophages and increased macrophage uptake of 2-deoxy-D-glucose^[9]. BALB/c athymic nude mice bearing WiDr human colon adenocarcinoma xenografts were intraperitoneally injected with a single dose of 1-5mg/kg Mitomycin C. Mitomycin C increased the proportion of S-phase cells within the tumor^[10].

References:

- [1] den Hartigh J, Verweij J, Pinedo HM. Mitomycin C. Cancer Chemother Biol Response Modif. 1988;10:45-9.
- [2] Bradner WT. Mitomycin C: a clinical update. Cancer Treat Rev. 2001 Feb;27(1):35-50.
- [3] Crespo MA, Rapuano CJ, Syed ZA. Applications of Mitomycin C in Cornea and External Disease. Turk J Ophthalmol. 2023 Jun 21;53(3):175-182.
- [4] Di Felice C, Machuzak MS, Shepherd RW. Use of Mitomycin-C in Laryngotracheal Stenosis: A Focused Clinical Review. J Bronchology Interv Pulmonol. 2023 Jul 1;30(3):223-231.
- [5] Datta SN, Allman R, Loh C, et al. Effect of photodynamic therapy in combination with mitomycin C on a mitomycin-resistant bladder cancer cell line. British Journal of Cancer. 1997;76(3):312-7.
- [6] Luo M, Wang F, Zhang H, et al. Mitomycin C enhanced the efficacy of PD-L1 blockade in non-small cell lung cancer. Signal Transduction and Targeted Therapy. 2020 Aug 28;5:141.
- [7] Nakayama T, Nozawa N, Kawada C, et al. Mitomycin C-induced cell cycle arrest enhances 5-aminolevulinic acid-based photodynamic therapy for bladder cancer. Photodiagnosis and Photodynamic Therapy. 2020 Sep;31:101893.

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[8] Andersson Y, Lovstakken E, Herud TM, et al. Intraperitoneal perfusion with cisplatin or mitomycin C improves survival in mice bearing peritoneal metastases from ovarian cancer. *Annals of Surgical Oncology*. 2025;32:9333-40.

[9] Shindo H, Ogura T, Masuno T, et al. Induction of activated macrophages by intraperitoneal injection of mitomycin C in mice. *Cancer Immunology Immunotherapy*. 1985;20:145-50.

[10] Ma LW, Moan J, Steen HB, et al. Anti-tumour activity of photodynamic therapy in combination with mitomycin C in nude mice with human colon adenocarcinoma. *British Journal of Cancer*. 1995;71(5):950-6.

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