

Product Data Sheet

Product Name: Eflornithine (DFMO)

Cat. No.: GC30283

Chemical Properties

Cas. No. 70052-12-9

SMILES NC(CCCN)(C(F)F)C(O)=O

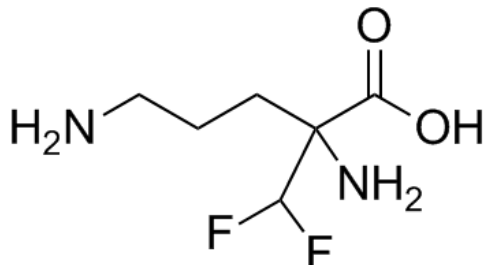
Formula $C_6H_{12}F_2N_2O_2$ M.Wt 182.17

Solubility Soluble in H₂O Storage Store at -20°C

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 OVCAR5 and SKOV3 cells

Preparation Method Cells were treated with 0.5 mM Eflornithine (DFMO) and rucaparib.

Caution: Product has not been fully validated for medical applications. For research use only.

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Reaction Conditions 0.5 mM Eflornithine ;72h

Applications Eflornithine Sensitizes homologous recombination (HR)-Competent Ovarian Cancer Cells to Rucaparib.

Animal experiment [2]:

Animal models Pancreas of athymic (nu/nu) mice (Human pancreatic L3.6pl tumor model)

Preparation Method Mice were treated for two weeks with control, GW5074 (1 mg/kg), Eflornithine (1% w/v) and Eflornithine + GW5074 after a week post orthotopic tumor cell implantation.

Dosage form 1% w/v Eflornithine in the drinking water; 48-72 h

Applications Eflornithine alone markedly increases survival of pancreatic tumor-bearing mice in contrast with GW5074 across multiple dosing and tumor seeding strategies.

References:

[1]. El Naggari O, Doyle B, et.al. Difluoromethylornithine (DFMO) Enhances the Cytotoxicity of PARP Inhibition in Ovarian Cancer Cells. Med Sci (Basel). 2022 May 26;10(2):28. doi: 10.3390/medsci10020028. PMID: 35736348; PMCID: PMC9230675.

[2]. Nakkinah SP, Gitto SB, et.al. DFMO Improves Survival and Increases Immune Cell Infiltration in Association with MYC Downregulation in the Pancreatic Tumor Microenvironment. Int J Mol Sci. 2021 Dec 7;22(24):13175. doi: 10.3390/ijms222413175. PMID: 34947972; PMCID: PMC8706739.

Background

Eflornithine (DFMO) inhibits polyamine biosynthesis by irreversible inhibition of ornithine

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decarboxylase(ODC). It is a chemotherapeutic protectant that blocks angiogenesis. Its biological half-life is 8 hours[1-2].

Eflornithine (0.5 mM DFMO;72h) sensitizes homologous recombination (HR)-Competent Ovarian Cancer Cells to Rucaparib [3]. Combination of Eflornithine (1 mM; 48 h) and Thymoquinone (TQ) significantly reduced cell viability and resulted in significant synergistic effects on apoptosis when compared to either Eflornithine or TQ alone in Jurkat cells [4]. Eflornithine (5 mM;72h) treatment leads to the accumulation of the cyclin-dependent kinase inhibitor p27(Kip1) protein and causes p27(Kip1)/Rb-coupled G (1) cell cycle arrest in MYCN-amplified NB tumor cells through a process that involves p27(Kip1) phosphorylation at residues Ser10 and Thr198[5].

Eflornithine (1% w/v in the drinking water; 48-72 h) alone markedly increases survival of pancreatic tumor-bearing mice in contrast with GW5074 across multiple dosing and tumor seeding strategies [6]. The Kras(G12D/+) mice fed Eflornithine at 0.1% and 0.2% in the diet showed a significant inhibition of pancreatic ductal adenocarcinoma (PDAC) incidence compared with mice fed control diet [7].

References:

- [1]. Drugs and Lactation Database (LactMed®) [Internet]. Bethesda (MD): National Institute of Child Health and Human Development; 2006-. Eflornithine. 2021 Dec 20. PMID: 29999676.
- [2]. Kang CN, Shah M, et.al. Hair Removal Practices: A Literature Review. Skin Therapy Lett. 2021 Sep;26(5):6-11. PMID: 34524781.
- [3]. El Naggari O, Doyle B, et.al. Difluoromethylornithine (DFMO) Enhances the Cytotoxicity of PARP Inhibition in Ovarian Cancer Cells. Med Sci (Basel). 2022 May 26;10(2):28. doi: 10.3390/medsci10020028. PMID: 35736348; PMCID: PMC9230675.
- [4]. Alhosin M, Razvi SSI, et.al. Thymoquinone and Difluoromethylornithine (DFMO) Synergistically Induce Apoptosis of Human Acute T Lymphoblastic Leukemia Jurkat Cells Through the Modulation of Epigenetic Pathways. Technol Cancer Res Treat. 2020 Jan-Dec;19:1533033820947489. doi: 10.1177/1533033820947489. PMID: 32912061; PMCID: PMC7488875.
- [5]. Koomoa DL, Geerts D, et.al. DFMO/eflornithine inhibits migration and invasion downstream of MYCN and involves p27Kip1 activity in neuroblastoma. Int J Oncol. 2013 Apr;42(4):1219-28. doi: 10.3892/ijo.2013.1835. Epub 2013 Feb 21. PMID: 23440295; PMCID: PMC3622674.
- [6]. Nakkina SP, Gitto SB, et.al. DFMO Improves Survival and Increases Immune Cell Infiltration in Association with MYC Downregulation in the Pancreatic Tumor Microenvironment. Int J Mol Sci. 2021 Dec 7;22(24):13175. doi: 10.3390/ijms222413175. PMID: 34947972; PMCID: PMC8706739.
- [7]. Mohammed A, Janakiram NB, et.al. Eflornithine (DFMO) prevents progression of pancreatic

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cancer by modulating ornithine decarboxylase signaling. Cancer Prev Res (Phila). 2014 Dec;7(12):1198-209. doi: 10.1158/1940-6207.CAPR-14-0176. Epub 2014 Sep 23. PMID: 25248858; PMCID: PMC4310684.

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