

Product Data Sheet

Product Name: Mertansine

Cat. No.: GC19244

Chemical Properties

Cas. No. 139504-50-0

SMILES C[C@]1([C@@](CC(N(C(C=C2C=C3OC)=C3Cl)C)=O)([H])OC([C@H](C)N(C)C(CCS)=O)=O)[C@H]([C@@H]([C@](OC4=O)([H])C[C@]([C@]/C=C/C=C(C)/C2)([H])OC)(N4)O)C)O1

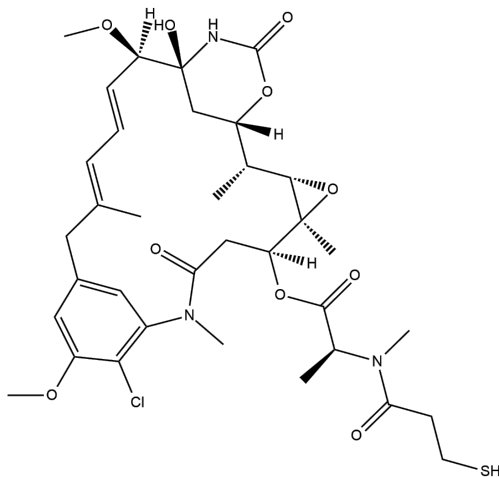
Formula $C_{35}H_{48}ClN_3O_{10}S$ M.Wt 738.29

Solubility DMSO : ≥ 83.33 mg/mL (112.87 mM); Water : < 0.1 mg/mL (insoluble) Storage Store at -20°C , unstable in solution, ready to use.

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 MCF7 cells

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

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Preparation Method	MCF7 cells were cultured as adherent cells in high glucose (4g/l) and 25mM HEPES-fortified DMEM supplemented with 1× nonessential amino acids and 10% fetal bovine serum (FBS) at 37°C in 5.8% CO ₂ . Cells were plated onto a 96-well plate at a density of 2.4×10 ⁴ cells/ml for 24h, and were treated with different concentrations of Mertansine (0.01, 0.1, 1, 10, 100, and 1000nM). After 72 hours, cell viability was analyzed.
Reaction Conditions	0.01, 0.1, 1, 10, 100, and 1000nM; 72h
Applications	Mertansine treatment significantly reduced the cell viability of MCF7 cells in a dose-dependent manner.

References:

[1] Oroudjev E, Lopus M, Wilson L, et al. Maytansinoid-antibody conjugates induce mitotic arrest by suppressing microtubule dynamic instability[J]. Molecular cancer therapeutics, 2010, 9(10): 2700-2713.

Background

Mertansine is a potent microtubule-targeted compound that inhibits tubulin assembly into microtubules, with the K_D value of 0.86 μ M [1]. Mertansine binds to the vinblastine-binding site in the mitochondrial region, leading to mitotic arrest and apoptosis-mediated cell death [2]. Mertansine has been extensively conjugated to antibodies via linkers containing disulfide bonds for highly efficient killing of cancer cells[3].

In vitro, Mertansine treatment for 72 hours significantly inhibited the proliferation of MCF7 cells with an IC₅₀ value of 0.71nM[4]. Treatment with 2.5 μ M Mertansine for 48h significantly reduced CYP1A2, CYP2B6, and CYP3A4 mRNA levels in human hepatocytes[5].

References:

[1] Lopus M, Oroudjev E, Wilson L, et al. Maytansine and cellular metabolites of antibody-

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maytansinoid conjugates strongly suppress microtubule dynamics by binding to microtubules[J].

Molecular cancer therapeutics, 2010, 9(10): 2689-2699.

[2] Martin-Aubert S, Avrillon K, Tournier N, et al. Successful repositioning of mertansine for improved chemotherapy by combining a polymer prodrug approach and PET imaging[J]. Journal of Controlled Release, 2025, 378: 803-813.

[3] Lopus M. Antibody-DM1 conjugates as cancer therapeutics[J]. Cancer letters, 2011, 307(2): 113-118.

[4] Oroudjev E, Lopus M, Wilson L, et al. Maytansinoid-antibody conjugates induce mitotic arrest by suppressing microtubule dynamic instability[J]. Molecular cancer therapeutics, 2010, 9(10): 2700-2713.

[5] Choi W G, Park R, Kim D K, et al. Mertansine Inhibits mRNA Expression and Enzyme Activities of Cytochrome P450s and Uridine 5'-Diphospho-Glucuronosyltransferases in Human Hepatocytes and Liver Microsomes[J]. Pharmaceutics, 2020, 12(3): 220.

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