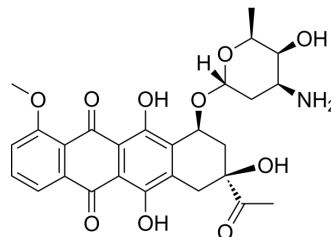


Daunorubicin

Cat. No.:	HY-13062A
CAS No.:	20830-81-3
Molecular Formula:	C ₂₇ H ₂₉ NO ₁₀
Molecular Weight:	527.52
Target:	Topoisomerase; DNA/RNA Synthesis; ADC Cytotoxin; Autophagy; Bacterial; Antibiotic; Apoptosis
Pathway:	Cell Cycle/DNA Damage; Antibody-drug Conjugate/ADC Related; Autophagy; Anti-infection; Apoptosis
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	Daunorubicin (Daunomycin) is a topoisomerase II inhibitor with potent anti-tumor activity. Daunorubicin inhibits DNA and RNA synthesis. Daunorubicin is a cytotoxin that inhibits cancer cell viability and induces apoptosis and necrosis. Daunorubicin is also an anthracycline antibiotic. Daunorubicin can be used in the research of infection and variety of cancers, including leukemia, non-Hodgkin lymphomas, Ewing's sarcoma, Wilms' tumor ^{[1][2][4][5]} .																	
IC₅₀ & Target	Topoisomerase II	Daunorubicins/Doxorubicins																
In Vitro	<p>Daunorubicin (0-256 µg/mL, 30 min) inhibits DNA and RNA synthesis in sensitive and resistant Ehrlich ascites tumor cells^[2]. Daunorubicin (7 nM-1.9 µM, 72 h) shows chemosensitivity in Molt-4 cells and L3.6 cells^{[3][4]}. Daunorubicin (0.4 µM, 48 h) induces apoptotic and necrosis in L3.6 cells^[4]. Daunorubicin (0.4 µM, 120 min) induces ROS generation in L3.6 cells^[4]. Daunorubicin (2 µM, 24 h) induces autophagy in K562 cells (myeloid cell line)^[6]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Cell Viability Assay^{[3][4]}</p> <table border="1"> <tr> <td>Cell Line:</td> <td>Molt-4 cells (a human T-lymphoblastic leukemia cell line), L3.6 cells (metastatic human pancreatic cell line)</td> </tr> <tr> <td>Concentration:</td> <td>7 nM-1.9 µM</td> </tr> <tr> <td>Incubation Time:</td> <td>72 h</td> </tr> <tr> <td>Result:</td> <td>Inhibited cell viability with IC₅₀ values of 40 nM (Molt-4) and 400 nM (L3.6).</td> </tr> </table> <p>Apoptosis Analysis^[4]</p> <table border="1"> <tr> <td>Cell Line:</td> <td>L3.6 cells</td> </tr> <tr> <td>Concentration:</td> <td>0.4 µM</td> </tr> <tr> <td>Incubation Time:</td> <td>24 h, 48 h</td> </tr> <tr> <td>Result:</td> <td>Induced necrosis without apoptosis at 24 h, induced both an apoptotic and extensive</td> </tr> </table>		Cell Line:	Molt-4 cells (a human T-lymphoblastic leukemia cell line), L3.6 cells (metastatic human pancreatic cell line)	Concentration:	7 nM-1.9 µM	Incubation Time:	72 h	Result:	Inhibited cell viability with IC ₅₀ values of 40 nM (Molt-4) and 400 nM (L3.6).	Cell Line:	L3.6 cells	Concentration:	0.4 µM	Incubation Time:	24 h, 48 h	Result:	Induced necrosis without apoptosis at 24 h, induced both an apoptotic and extensive
Cell Line:	Molt-4 cells (a human T-lymphoblastic leukemia cell line), L3.6 cells (metastatic human pancreatic cell line)																	
Concentration:	7 nM-1.9 µM																	
Incubation Time:	72 h																	
Result:	Inhibited cell viability with IC ₅₀ values of 40 nM (Molt-4) and 400 nM (L3.6).																	
Cell Line:	L3.6 cells																	
Concentration:	0.4 µM																	
Incubation Time:	24 h, 48 h																	
Result:	Induced necrosis without apoptosis at 24 h, induced both an apoptotic and extensive																	

necrotic response at 48 h.

Western Blot Analysis^[6]

Cell Line:	K562 cells
Concentration:	2 μ M
Incubation Time:	24 h
Result:	Enabled the switch of LC3-I into LC3-II, accompanied with a significant increased expression level of LC3.

In Vivo

Daunorubicin (intravenous injection, 3 mg/kg, three times at 48 h intervals.) produces cardiotoxicity and nephrotoxicity in rats^[5].

Daunorubicin (intraperitoneal injection, 10 mg/kg) induces sister chromatid exchanges in mice^[7].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male Sprague-Dawley rats ^[5]
Dosage:	3 mg/kg
Administration:	Intravenous injection, three times at 48 h intervals.
Result:	Caused a significant increase in MDA (malondialdehyde) level in renal tissue, accompanied by a significant reduction in total GPx activity. Increased urinary protein excretion, serum creatinine, and BUN level.

CUSTOMER VALIDATION

- Cell Mol Immunol. 2023 Jan;20(1):51-64.
- Clin Cancer Res. 2020 Apr 15;26(8):2011-2021.
- Leukemia. 2023 Mar 28.
- J Control Release. 2022 Apr 22;346:136-147.
- J Transl Med. 2022 Jul 6;20(1):304.

See more customer validations on www.MedChemExpress.com

REFERENCES

- [1]. Emeline Bollaert, et al. MiR-15a-5p Confers Chemoresistance in Acute Myeloid Leukemia by Inhibiting Autophagy Induced by Daunorubicin. Int J Mol Sci. 2021 May 13;22(10):5153.
- [2]. Cheng Wu, et al. Doxorubicin suppresses chondrocyte differentiation by stimulating ROS production. Eur J Pharm Sci. 2021 Dec 1;167:106013.
- [3]. Lehmann M, et al. Activity of topoisomerase inhibitors daunorubicin, idarubicin, and aclarubicin in the Drosophila Somatic Mutation and Recombination Test. Environ Mol Mutagen. 2004;43(4):250-7.
- [4]. Svensson SP, et al. Melanin inhibits cytotoxic effects of Doxorubicin and Daunorubicin in MOLT 4 cells. Pigment Cell Res. 2003 Aug;16(4):351-4
- [5]. Gervasoni JE Jr, et al. An effective in vitro antitumor response against human pancreatic carcinoma with paclitaxel and Daunorubicin by induction of both necrosis and

apoptosis. *Anticancer Res.* 2004 Sep-Oct;24(5A):2617-26

[6]. Arozal W, et al. Telmisartan prevents the progression of renal injury in daunorubicin rats with the alteration of angiotensin II and endothelin-1 receptor expression associated with its PPAR- γ agonist actions. *Toxicology.* 2011 Jan 11;279(1-3):91-9.

[7]. Dano K, et al. Inhibition of DNA and RNA synthesis by daunorubicin in sensitive and resistant Ehrlich ascites tumor cells in vitro. *Cancer Res.* 1972 Jun;32(6):1307-14.

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

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA