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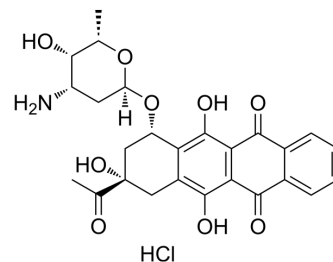
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Idarubicin hydrochloride

Cat. No.:	HY-17381
CAS No.:	57852-57-0
Molecular Formula:	C ₂₆ H ₂₈ ClNO ₉
Molecular Weight:	533.95
Target:	Topoisomerase; Autophagy; Bacterial; Fungal; Antibiotic; DNA/RNA Synthesis; c-Myc
Pathway:	Cell Cycle/DNA Damage; Autophagy; Anti-infection; Apoptosis
Storage:	4°C, sealed storage, away from moisture and light * In solvent : -80°C, 1 year; -20°C, 6 months (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro	DMSO : 83.33 mg/mL (156.06 mM; Need ultrasonic)																					
	<table border="1"> <thead> <tr> <th rowspan="2">Solvent</th> <th rowspan="2">Mass</th> <th colspan="3">Concentration</th> </tr> <tr> <th>1 mg</th> <th>5 mg</th> <th>10 mg</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Preparing Stock Solutions</td> <td>1 mM</td> <td>1.8728 mL</td> <td>9.3642 mL</td> <td>18.7283 mL</td> </tr> <tr> <td>5 mM</td> <td>0.3746 mL</td> <td>1.8728 mL</td> <td>3.7457 mL</td> </tr> <tr> <td>10 mM</td> <td>0.1873 mL</td> <td>0.9364 mL</td> <td>1.8728 mL</td> </tr> </tbody> </table>	Solvent	Mass	Concentration			1 mg	5 mg	10 mg	Preparing Stock Solutions	1 mM	1.8728 mL	9.3642 mL	18.7283 mL	5 mM	0.3746 mL	1.8728 mL	3.7457 mL	10 mM	0.1873 mL	0.9364 mL	1.8728 mL
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	Please refer to the solubility information to select the appropriate solvent.																					
In Vivo	<ol style="list-style-type: none"> Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline Solubility: ≥ 2.08 mg/mL (3.90 mM); Clear solution Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) Solubility: ≥ 2.08 mg/mL (3.90 mM); Clear solution 																					

BIOLOGICAL ACTIVITY

Description	Idarubicin hydrochloride is an anthracycline antileukemic agent. It inhibits the topoisomerase II interfering with the replication of DNA and RNA transcription. Idarubicin hydrochloride inhibits the growth of bacteria and yeasts.
IC₅₀ & Target	Topoisomerase II
In Vitro	The IC ₅₀ of Idarubicin hydrochloride is 3.3±0.4 ng/mL on MCF-7 monolayers and 7.9±1.1 ng/mL in multicellular spheroids ^[1] . Idarubicin hydrochloride has shown a greater cytotoxicity than daunorubicin or doxorubicin in various in vitro systems. This has been attributed to a better ability of idarubicin to induce the formation of topoisomerase II -mediated DNA breaks ^[2] . Idarubicin hydrochloride is about 57.5-fold and 25-fold more active than doxorubicin and epirubicin, respectively ^[3] . Idarubicin hydrochloride produces a concentration-dependent reduction in cell growth, with an IC ₅₀ value of approximately 0.01 μM. Idarubicin hydrochloride produced a concentration-dependent inhibition of DNA synthesis ^[4] .

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

PROTOCOL

Cell Assay ^[1]

Stock solutions of idarubicin hydrochloride is dissolved in distilled water (1 mg/mL). MCF-7 monolayer are exposed to idarubicin or its metabolite idarubicinol at 0.01, 0.1, 1, 10, 100, and 1000 ng/mL for 24 hours. Multicellular spheroids are exposed to the same range of idarubicin and idarubicinol concentration as monolayers (0.01-1000 ng/mL) for 24 h and, in separate experiments, at the drug concentration of 100 ng/mL for 6, 12, 24 and 48 h. The inhibition of cell proliferation is determined by counting the viable cells with an hemocytometer. Results are expressed as percentage of cell survival vs. control cultures^[1].

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

CUSTOMER VALIDATION

- Nat Commun. 2020 Apr 14;11(1):1792.
- Nucleic Acids Res. 2018 Apr 20;46(7):3284-3297.
- Cancer Lett. 2019 Oct 1;461:31-43.
- Anal Chem. 2022 Oct 4;94(39):13623-13630.
- J Virol. 2019 May 15;93(11):e02230-18.

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REFERENCES

- [1]. Orlandi P, et al. Idarubicin and idarubicinol effects on breast cancer multicellular spheroids. J Chemother. 2005 Dec;17(6):663-7.
- [2]. Robert J. Clinical pharmacokinetics of idarubicin. Clin Pharmacokinet. 1993 Apr;24(4):275-88.
- [3]. Siegmund MJ, et al. Enhanced in vitro cytotoxicity of idarubicin compared to epirubicin and doxorubicin in rat prostate carcinoma cells. Eur Urol. 1997;31(3):365-70.
- [4]. Gewirtz DA, et al. Induction of DNA damage, inhibition of DNA synthesis and suppression of c-myc expression by the anthracycline analog, idarubicin (4-demethoxy-daunorubicin) in the MCF-7 breast tumor cell line. Cancer Chemother Pharmacol. 1998;41(5):361-
- [5]. Kinnunen U, et al. Idarubicin inhibits the growth of bacteria and yeasts in an automated blood culture system. Eur J Clin Microbiol Infect Dis. 2009 Mar;28(3):301-3.
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Caution: Product has not been fully validated for medical applications. For research use only.

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