Epirubicin hydrochloride

Cat. No.: HY-13624A

CAS No.: 56390-09-1

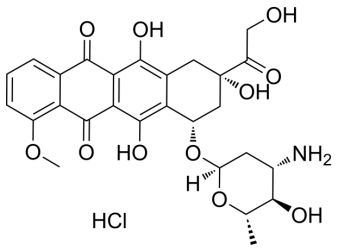
Molecular Formula: $C_{27}H_{30}ClNO_{11}$

Molecular Weight: 579.98

Target: Topoisomerase; Apoptosis; DNA/RNA Synthesis; Antibiotic

Pathway: Cell Cycle/DNA Damage; Apoptosis; Anti-infection

Storage: 4°C, sealed storage, away from moisture and light
* In solvent : -80°C, 1 years; -20°C, 6 months (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro

H_2O : 50 mg/mL (86.21 mM; Need ultrasonic)
DMSO : 25 mg/mL (43.10 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	1.7242 mL	8.6210 mL	17.2420 mL
	5 mM	0.3448 mL	1.7242 mL	3.4484 mL
	10 mM	0.1724 mL	0.8621 mL	1.7242 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 5% DMSO >> 40% PEG300 >> 5% Tween-80 >> 50% saline
   Solubility: ≥ 2.5 mg/mL (4.31 mM); Clear solution
2. Add each solvent one by one: 5% DMSO >> 95% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (4.31 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (3.59 mM); Clear solution
4. Add each solvent one by one: PBS
   Solubility: 1.1 mg/mL (1.90 mM); Clear solution; Need ultrasonic
5. Add each solvent one by one: 1% DMSO >> 99% saline
   Solubility: ≥ 0.5 mg/mL (0.86 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Epirubicin hydrochloride (4'-Epidoxorubicin hydrochloride), a semisynthetic L-arabino derivative of doxorubicin, has an antineoplastic agent by inhibiting Topoisomerase[1]. Epirubicin hydrochloride inhibits DNA and RNA synthesis. Epirubicin hydrochloride is a Forkhead box protein p3 (Foxp3) inhibitor and inhibits regulatory T cell activity[2].

IC_{50} & Target	Topoisomerase
In Vitro	Epirubicin hydrochloride (4'-Epidoxorubicin hydrochloride), like doxorubicin, exerts its antitumor effects by complex with DNA, resulting in damage to DNA and interference with the synthesis of DNA, RNA, and proteins. Epirubicin hydrochloride may also affect the integrity and activity of cellular membranes. Maximal cell kill caused by Epirubicin hydrochloride occurs during the S phase of the cell cycle. With higher concentrations effects are also seen in early G2 as well as G1 and M phases[1]. Epirubicin hydrochloride display antineoplastic activity against most cancer cells. Epirubicin hydrochloride is cytotoxic to Hepatoma G2 cells with IC_{50} of 1.6 μg/mL at 24 hr. 1.6 μg/mL Epirubicin hydrochloride induces apoptosis of Hep G2 cells, and higher activity of catalase by 50%, Se-dependent glutathione peroxidase by 110%, Cu, Zn-superoxide dismutase by 172% and Mn-superoxide dismutase by 135%. Epirubicin hydrochloride increases the cellular expression of NADPH-CYP 450 reductase, and reduces GST-π expression[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Epirubicin hydrochloride (4'-Epidoxorubicin hydrochloride) are clinically active against a broad range of tumor types, including breast cancer, malignant lymphomas, soft tissue sarcomas, lung cancer, pleural mesothelioma, gastrointestinal cancer, head and neck cancer, ovarian cancer, prostatic carcinoma, transitional bladder carcinoma and so on[4]. Epirubicin hydrochloride at a dose of 3.5 mg/kg suppresses tumor mass of human breast tumor xenograft R-27 by 74.4 %[5]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [3]	Hep G2 cells (500 cells/well, monolayer) are plated in a 96-well plate. The next day the cells are treated with Epirubicin in the medium. At the end of the incubation periods, 15% volume of MTT dye solution is added. After 1 hr of incubation at 37°C, an equal volume of solubilization/stop solution (dimethylsul-foxide) is added to each well for an additional 1 hr incubation. The absorbance of the reaction solution at 570 nm is recorded. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Cell Mol Immunol. 2023 Jan;20(1):51-64.
- Mol Cell. 2022 Feb 17;S1097-2765(22)00085-5.
- Cell Prolif. 2021 Apr 1;e13038.
- Anal Chem. 2022 Oct 4;94(39):13623-13630.
- Int J Mol Sci. 2023, 24(1), 343.

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REFERENCES

[1]. Cersosimo RJ, et al. Epirubicin: a review of the pharmacology, clinical activity, and adverse effects of an adriamycin analogue. J Clin Oncol. 1986 Mar;4(3):425-39.

[2]. Ozkan, A., et al. Epirubicin HCl toxicity in human-liver derived hepatoma G2 cells. Pol J Pharmacol, 2004. 56(4): p. 435-44.

[3]. Bonadonna, G., et al. Drugs ten years later: epirubicin. Ann Oncol, 1993. 4(5): p. 359-69.

[4]. Asanuma, F., et al. Antitumor activity of paclitaxel and epirubicin in human breast carcinoma, R-27. Folia Microbiol (Praha), 1998. 43(5): p. 473-4.

[5]. Kashima H, et al. Epirubicin, Identified Using a Novel Luciferase Reporter Assay for Foxp3 Inhibitors, Inhibits Regulatory T Cell Activity. PLoS One. 2016 Jun 10;11(6):e0156643.

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