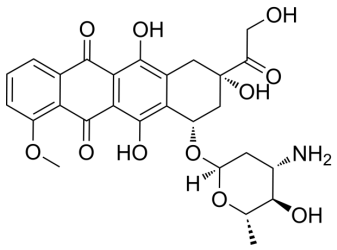
Epirubicin

Cat. No.:	HY-13624
CAS No.:	56420-45-2
Molecular Formula:	$C_{27}H_{29}NO_{11}$
Molecular Weight:	543.52
Target:	Topoisomerase; Apoptosis; DNA/RNA Synthesis; Antibiotic
Pathway:	Cell Cycle/DNA Damage; Apoptosis; Anti-infection
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	Epirubicin (4'-Epidoxorubicin), a semisynthetic L-arabino derivative of doxorubicin, has an antineoplastic agent by inhibiting Topoisomerase[1]. Epirubicin inhibits DNA and RNA synthesis. Epirubicin is a Forkhead box protein p3 (Foxp3) inhibitor and inhibits regulatory T cell activity[2].
IC_{50} & Target	Topoisomerase
In Vitro	Epirubicin (4'-Epidoxorubicin), 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 may also affect the integrity and activity of cellular membranes. Maximal cell kill caused by Epirubicin 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 display antineoplastic activity against most cancer cells. Epirubicin is cytotoxic to Hepatoma G2 cells with IC_{50} of 1.6 μg/mL at 24 hr. 1.6 μg/mL Epirubicin 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%. Epirbicin 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 (4'-Epidoxorubicin) 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 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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