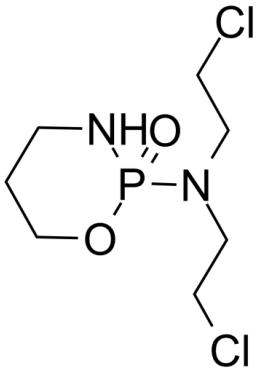
Data Sheet

Product Name:	Cyclophosphamide
Cat. No.:	CS-1425
CAS No.:	50-18-0
Molecular Formula:	C7H15Cl2N2O2P
Molecular Weight:	261.09
Target:	DNA Alkylator/Crosslinker
Pathway:	Cell Cycle/DNA Damage
Solubility:	H2O : 33.33 mg/mL (127.66 mM; Need ultrasonic); DMSO : ≥ 38 mg/mL (145.54 mM)



BIOLOGICAL ACTIVITY:

Cyclophosphamide is a synthetic **alkylating** agent chemically related to the nitrogen mustards with antineoplastic activity, a immunosuppressant. IC50 & Target: DNA Alkylator[1] **In Vitro:** Cyclophosphamide induces outer membrane blebbing, leads to DNA fragmentation, as revealed by TUNEL staining of free 3'-OH DNA ends, and induces cleavage of the caspase 3 and caspase 7 substrate PARP in 9L/P450 cells. Bcl-2 expression fully blocks the activation of both initiator caspases as well as the effector caspase 3 in cells treated with activated Cyclophosphamide. Bcl-2 inhibits the cytotoxic effects but not the cytostatic effects of activated Cyclophosphamide[1]. Cyclophosphamide inhibits the AChE reversibly with an IC_{50} of 511 μM[2]. Carbon tetrachloride does not affect the direct cytotoxicity of cyclophosphamide or 4-hydroxycyclophosphamide to cells in culture[3]. **In Vivo:** Cyclophosphamide (injected i.p.;2mg/mouse in 0.1 mL PBS, in C3H mice bearing SW1 tumors) increases the percentage of cells that stained for CD3, CD4 or CD8 in both spleens and tumors[4].

PROTOCOL (Extracted from published papers and Only for reference)

Cell Assay: [1]9L/pBabe, 9L/Bax, and 9L/Bcl-2 cells are treated with 12, 24, or 50 μM MFA for 72 h. Cells remaining on the plates at 0, 24, 48, and 72 h are washed twice with cold PBS and then stained for 5 min with crystal violet [1.25 g of crystal violet dissolved in a solution containing 50 mL of 37% formaldehyde and 450 mL of methanol]. The stained cells are washed three times in tap water and the plates are allowed to dry. The stain is eluted from the cells with 70% ethanol and the absorbance is then read at 595 nm. The staining intensity of each drug-treated sample (A 595) is then graphed as a percentage of the staining intensity at the 0-h time point.

References:

[1]. Schwartz PS, et al. Cyclophosphamide induces caspase 9-dependent apoptosis in 9L tumor cells. Mol Pharmacol. 2001 Dec;60(6):1268-1279.

[2]. al-Jafari AA, et al. Inhibition of human acetylcholinesterase by cyclophosphamide. Toxicology. 1995 Jan 19;96(1):1-6.

[3]. Harris RN, et al. Carbon tetrachloride-induced increase in the antitumor activity of cyclophosphamide in mice: a pharmacokineticstudy. Cancer Chemother Pharmacol. 1984;12(3):167-72.

[4]. Liu P, et al. Administration of cyclophosphamide changes the immune profile of tumor-bearing mice. J Immunother. 2010 Jan;33(1):53-9.

CAIndexNames:

2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide

SMILES:

ClCCN(CCCl)P1(OCCCN1)=O

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