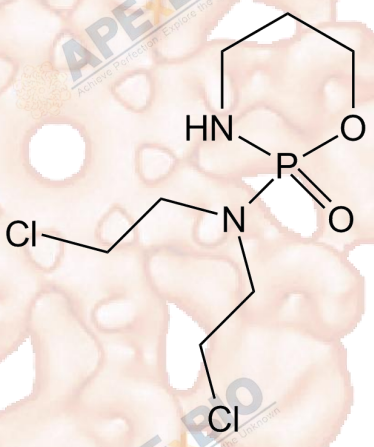
Product Data Sheet

Cyclophosphamide

Cat. No.: A2343
CAS No.: 50-18-0
Formula: C7H15Cl2N2O2P
M.Wt: 261.09
Synonyms: NSC 26271; Endoxan; Cytoxan; Neosar; Procytox; Revimmune; Cytophosphane
Target: MRP; DNA Alkylator/Crosslinker; DNA
Pathway: DNA Damage/DNA Repair; Immunology/Inflammation
Storage: Store at -20° C



Solvent & Solubility

In Vitro

⩾11.85 mg/mL in H2O with gentle warming and ultrasonic; ⩾13.05 mg/mL in DMSO; ⩾50.8 mg/mL in EtOH

Preparing Stock Solutions

Mass / Solvent / Concentration	1mg	5mg	10mg
1 mM	3.8301 mL	19.1505 mL	38.3010 mL
5 mM	0.7660 mL	3.8301 mL	7.6602 mL
10 mM	0.3830 mL	1.9150 mL	3.8301 mL

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

Biological Activity

Shortsummary

Cyclophosphamide (CAS 50-18-0) is a synthetic alkylating agent, structurally related to nitrogen mustards, functioning as a DNA cross-linking cytotoxic compound in proliferating cells and exhibiting immunosuppressive activity in various immune cell populations. Additionally, it undergoes hepatic bioactivation to generate active metabolites that promote its antineoplastic effects.

In preclinical and clinical studies, Cyclophosphamide induces apoptosis and inhibits cell proliferation with

significant cytotoxic effects, tested against a range of human cancer cell lines and animal models. It can also suppress both humoral and cellular immune responses by interfering with lymphocyte function and survival.

In research and clinical contexts, Cyclophosphamide is widely used for the treatment of malignant neoplasms, including lymphomas, leukemias, multiple myeloma, breast cancer, and ovarian cancer, as well as for conditioning regimens in bone marrow transplantation. It is also a recognized agent in the management of certain autoimmune diseases due to its potent immunomodulatory properties. Cyclophosphamide's broad application highlights its importance as a cornerstone in both oncology and immunology research and therapy.

IC_{50} & Target

In Vitro

Cell Viability Assay

Cell Line:	9L gliosarcoma cells retrovirally transduced with CYP2B6
Preparation method:	Cells (2.5×10^4) were suspended in 200 µl of media and placed onto the coverslip. Cells were allowed to attach for 2 h and then the well was filled with media. 24 hours after plating, the cells were treated with 1 mM Cyclophosphamide for 48 h.
Reacting conditions:	1 mM cyclophosphamide for 48 h incubation
Applications:	Cyclophosphamide was shown to cause tumor cell death by stimulating apoptosis, as evidenced by the induction of plasma membrane blebbing, DNA fragmentation, and cleavage of the caspase 3 and caspase 7 substrate poly(ADP-ribose) polymerase in drug-treated cells.

In Vivo

Animal experiment

Animal models:	Female C57BL/6 mice, 8 weeks of age
Dosage form:	2 mg Injected intraperitoneally
Applications:	Low-dose cyclophosphamide not only decreased the number of regulatory T cells (TREGs), but also led to decreased functionality of TREGs. Cyclophosphamide treatment enhanced apoptosis and decreased homeostatic proliferation of these cells.
Preparation method:	Female C57BL/6 mice, 8 weeks of age, were injected intraperitoneally with 2 mg cyclophosphamide on day 0. Control mice received no cyclophosphamide. At various time points after injection, mice were killed, and spleen and lymph node (LN) cells were collected and stained for cell surface markers.
Other notes:	The technical data provided above is for reference only.

Product Citations

References

1. Schwartz PS, Waxman DJ. Cyclophosphamide induces caspase 9-dependent apoptosis in 9L tumor cells. Molecular Pharmacology, 2001, 60(6): 1268-1279.

2. Lutsiak ME, Semnani RT, De Pascalis R, et al. Inhibition of CD4(+)25+ T regulatory cell function implicated in enhanced immune response by low-dose cyclophosphamide. Blood, 2005, 105(7): 2862-2868.

Caution

FOR RESEARCH PURPOSES ONLY.

NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

Specific storage and handling information for each product is indicated on the product datasheet. Most APExBIO products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Shortterm storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.

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