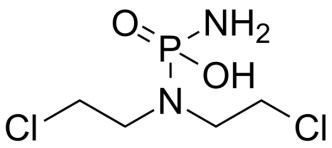
Phosphoramide mustard

Cat. No.:	HY-137316
CAS No.:	10159-53-2
Molecular Formula:	$C_4H_{11}Cl_2N_2O_2P$
Molecular Weight:	221.02
Target:	DNA Alkylator/Crosslinker; Drug Metabolite
Pathway:	Cell Cycle/DNA Damage; Metabolic Enzyme/Protease
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	Phosphoramide mustard is a biologically active metabolite of Cyclophosphamide (HY-17420), with anticancer activitiy. Phosphoramide mustard induces DNA damage[1][2].
IC_{50} & Target	DNA Alkylator[1]
In Vitro	Phosphoramide mustard causes cytotoxicity through forming cross-linked DNA adducts which inhibit DNA strand separation during replication[1]. Phosphoramide mustard (3-6 μM; 48 hours) reduces cell viability in rat spontaneously immortalized granulosa cells (SIGCs)[1]. Phosphoramide mustard (3-6 μM; 24-48 hours) induces DNA adduct formation and ovarian DNA damage[1]. Phosphoramide mustard (3-6 μM; 24-48 hours) increases DNA damage responses (DDR) gene mRNA expression levels and DDR proteins[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[1]

Cell Line:	SIGCs
Concentration:	0.5 μM, 1 μM, 3 μM, 6 μM
Incubation Time:	48 hours
Result:	Reduced cell viability at concentrations of 3 μM and higher.

RT-PCR[1]

Cell Line:	SIGCs
Concentration:	3 μM, 6 μM
Incubation Time:	24 hours, 48 hours
Result:	Increased DDR gene mRNA expression levels.

Western Blot Analysis[1]

Cell Line:	SIGCs
Concentration:	3 μM, 6 μM
Incubation Time:	24 hours, 48 hours
Result:	Generally increased DDR proteins.

In Vivo

Phosphoramide mustard (2.1-20.7 mg/kg; i.p.; daily; for 5 days) inhibits subcutaneous tumor growth in rats[2].
Phosphoramide mustard exhibits terminal elimination half-lives (rat 15.1 min) following intravenous administration (rat 59.4 mg/kg)[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Rat, subcutaneously implanted Walker 256 carcinosarcoma tumor[2]
Dosage:	2.1 mg/kg, 4.8 mg/kg, 10.4 mg/kg, 20.7 mg/kg
Administration:	Intraperitoneal injection, once daily, for 5 consecutive days
Result:	Required to produce 50% inhibition of subcutaneous tumor growth with dose of 12 mg/kg.

Animal Model:	Rats[2]
Dosage:	59.4 mg/kg (Pharmacokinetic Analysis)
Administration:	Intravenous injection
Result:	$T_{1/2}$ (15.1 min).

REFERENCES

[1]. Shanthi Ganesan, et al. Phosphoramide mustard exposure induces DNA adduct formation and the DNA damage repair response in rat ovarian granulosa cells. Toxicol Appl Pharmacol. 2015 Feb 1; 282(3): 252–258.

[2]. S Genka, et al. Brain and plasma pharmacokinetics and anticancer activities of cyclophosphamide and phosphoramide mustard in the rat. Cancer Chemother Pharmacol. 1990;27(1):1-7.

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