Data Sheet (Cat.No.T0676)

TargetMol

Hydroxyurea

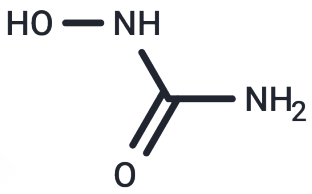
Chemical Properties

CAS No. : 127-07-1

Formula: CH4N2O2

Molecular Weight: 76.05

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.



Biological Description

Description	Hydroxyurea (Hydroxycarbamide), an antineoplastic agent, inhibits DNA synthesis through the inhibition of ribonucleoside diphosphate reductase.
Targets(IC50)	Apoptosis,HIV Protease,Autophagy,DNA/RNA Synthesis,Virus Protease
In vitro	hydroxyurea can inhibit HIV-1 replication. In vitro experiments have shown that the 90% inhibitory concentration (IC90) of hydroxyurea for laboratory strains of HIV-1 in activated PBMC is 0.4 mM. Hydroxyurea was also found to be synergistic with the nucleoside reverse transcriptase inhibitor didanosine and to inhibit HIV-1 replication in activated PBMC; this inhibition may be due to a reduction in deoxynucleoside triphosphate pool sizes. Hydroxyurea has been shown to sensitize didanosine-resistant mutants[1][2]. hydroxyurea has demonstrated activity in the treatment of sickle cell anemia by increasing the production of fetal hemoglobin, which reduces hemolysis in patients with this disease. Hydroxyurea exerts its cytostatic effect through inhibition of ribonucleotide reductase–the rate-limiting enzyme responsible for the conversion of ribonucleotides to deoxyribonucleotides, which are essential for DNA synthesis. As a result, cellular division is arrested in the S phase[1].
In vivo	Hydroxyurea treatment consistently decreases white blood cell (WBC) and absolute neutrophil count (ANC), yet does not enhance anemia over a 17-week period. At a dosage of 50 mg/kg, hydroxyurea effectively lowers WBC and ANC without ameliorating anemia in comparison to vehicle-treated sickle cell mice [5].
Cell Research	Erythroid cells obtained from peripheral blood of the same patients(Thirteen β-Thal/HbE patients are treated with hydroxyurea orally for 2 years at a starting dose of 5 mg/kg/day for 5 days/week with escalation to a maximum of 10 mg/kg/day) 1 year after they had stopped hydroxyurea treatment are treated with hydroxyurea in vitro. Treatment of cells performs in primary culture with 30 μM hydroxyurea for 96 hours. (Only for Reference)

Solubility Information

Solubility	DMSO: 255 mg/mL (3353.06 mM),Sonication is recommended. H2O: 55 mg/mL (723.21 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 5 mg/mL (65.75 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	13.1492 mL	65.7462 mL	131.4924 mL
5 mM	2.6298 mL	13.1492 mL	26.2985 mL
10 mM	1.3149 mL	6.5746 mL	13.1492 mL
50 mM	0.263 mL	1.3149 mL	2.6298 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Lori F, et al. Clin Infect Dis. 2000, 30 Suppl 2:S193-7.
Zhu H, Rao Z, Yuan S, et al. One therapeutic approach for triple-negative breast cancer: Checkpoint kinase 1 inhibitor AZD7762 combination with neoadjuvant carboplatin. European Journal of Pharmacology. 2021: 174366.
Zhou B, Jiang Z, Dai M, et al.Full-length GSDME mediates pyroptosis independent from cleavage.Nature Cell Biology.2024: 1-13.
Zala C, et al. Clin Infect Dis. 2000, Suppl 2:S143-50.
Watanapokasin Y, et al. Exp Hematol. 2005, 33(12):1486-92.
Boucher PD, et al. Gene Ther. 2002, 9(15):1023-30.
Lebensburger JD, et al. Hydroxyurea therapy requires HbF induction for clinical benefit in a sickle cell mouse model. Haematologica. 2010 Sep;95(9):1599-603.