

Tirapazamine

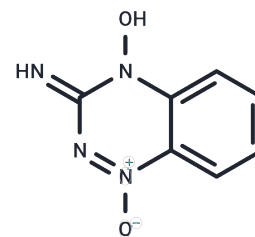
Chemical Properties

CAS No. : 27314-97-2

Formula: C₇H₆N₄O₂

Molecular Weight: 178.15

Storage: Keep away from moisture, Store at low temperature,
Keep away from direct sunlight
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	Tirapazamine (Win59075) is a potent cytotoxic agent under hypoxic conditions, can induce apoptosis by inducing breaks in single and double-stranded DNA, as well as chromosomal breaks. The compound sensitizes cells to other ionizing radiation and other cytotoxic agents like cisplatin.
Targets(IC50)	Others, DNA/RNA Synthesis
In vitro	Tirapazamine could downregulate HIF-1 α expression by decreasing HIF-1 α protein synthesis. The enhanced apoptosis induced by tirapazamine plus SN-38 (the active metabolite of irinotecan) was accompanied by increased mitochondrial depolarization and caspase pathway activation [1].
In vivo	The increased the anticancer efficacy of tirapazamine combined with irinotecan was further validated in a human liver cancer Bel-7402 xenograft mouse model [1]. Rats were intraperitoneally injected six times once a week with tirapazamine in two doses, 5 (5TP) and 10 mg/kg (10TP), while doxorubicin was administered in dose 1.8 mg/kg (DOX). Subsequent two groups received both drugs simultaneously (5TP+DOX and 10TP+DOX). Tirapazamine reduced heart lipid peroxidation and normalized RyR2 protein level altered by doxorubicin [2].

Solubility Information

Solubility	DMSO: 51 mg/mL (286.28 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: 2 mg/mL (11.23 mM), Sonication is recommended. <i>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.</i>

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	5.6132 mL	28.0662 mL	56.1325 mL
5 mM	1.1226 mL	5.6132 mL	11.2265 mL
10 mM	0.5613 mL	2.8066 mL	5.6132 mL
50 mM	0.1123 mL	0.5613 mL	1.1226 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

Cai T Y, Liu X W, Zhu H, et al. Tirapazamine sensitizes hepatocellular carcinoma cells to topoisomerase I inhibitors via cooperative modulation of hypoxia-inducible factor-1 α [J]. *Molecular cancer therapeutics*, 2013: molcanther. 0490.2013.

Liu C, Jia S, Tu L, et al. GSH-Responsive and Hypoxia-Activated Multifunctional Nanoparticles for Synergetically Enhanced Tumor Therapy. *ACS Biomaterials Science & Engineering*. 2022

Wu Z, Wang Y, Li L, et al. New insights into the antimicrobial action and protective therapeutic effect of tirapazamine towards *Escherichia coli*-infected mice. *International Journal of Antimicrobial Agents*. 2023: 106923.

Sliwinska J, Dudka J, Korga A, et al. Tirapazamine-Doxorubicin Interaction Referring to Heart Oxidative Stress and Ca sup> 2[J]. *Oxidative medicine and cellular longevity*, 2012, 2012.

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