Tirapazamine

Cat. No.: HY-13767

CAS No.: 27314-97-2

Molecular Formula: $C_7H_6N_4O_2$

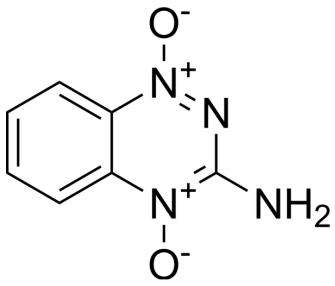
Molecular Weight: 178.15

Target: DNA/RNA Synthesis

Pathway: Cell Cycle/DNA Damage

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 62.5 mg/mL (350.83 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	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

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

In Vivo

1. Add each solvent one by one: 50% PEG300 >> 50% saline
   Solubility: 10 mg/mL (56.13 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: 2.5 mg/mL (14.03 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (11.68 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (11.68 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Tirapazamine (SR259075) is an anticancer agent that shows selective cytotoxicity for hypoxic cells in solid tumors, thereby inducing single-and double-strand breaks in DNA, base damage, and cell death. Tirapazamine is an anticancer and bioreductive agent.Tirapazamine (SR259075) can enhance the cytotoxic effects of ionizing radiation in hypoxic cells[1][2].

In Vitro

Tirapazamine (SR259075) is the optimal drug for combination therapy using Pba[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[1]

Cell Line:	SCC7 cells
Concentration:	1mg
Incubation Time:	24 h
Result:	Showed synergism with Pba at ED50, ED90 and ED95.

In Vivo

Tirapazamine (SR259075) (1mg; intravenously injected; twice at a 24-h interval) shows a synergetic effect to kill tumor cells because TPZ was activated under the hypoxic conditions that originated from the PDT with Pba and laser irradiation[1].

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Animal Model:	C3H/HeN mice[1].
Dosage:	1mg
Administration:	Tirapazamine (1mg; intravenously injected; twice at a 24-h interval)
Result:	Suppressed the tumors of mice by using laser irradiation.

CUSTOMER VALIDATION

- Biomaterials. 2022 Sep 27;290:121821.
- J Control Release. 2022 Sep 22;351:151-163.
- J Nanobiotechnology. 2024 Jun 21;22(1):358.
- Acta Biomater. 2023 Apr 21;S1742-7061(23)00220-9.
- Int J Biol Macromol. 2025 Feb 4:140694.

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REFERENCES

[1]. Lee, Donghyun, et al. Optimized Combination of Photodynamic Therapy and Chemotherapy Using Gelatin Nanoparticles Containing Tirapazamine and Pheophorbide a. ACS applied materials & interfaces vol. 13,9 (2021): 10812-10821.

[2]. Romero, José, et al. Electronic structure and reactivity of tirapazamine as a radiosensitizer. Journal of molecular modeling vol. 27,6 177. 22 May. 2021.

[3]. Cai TY, et al. Tirapazamine sensitizes hepatocellular carcinoma cells to topoisomerase I inhibitors via cooperative modulation of hypoxia-inducible factor-1α. Mol Cancer Ther. 2014 Mar;13(3):630-42.

[4]. Sliwinska J, et al. Tirapazamine-doxorubicin interaction referring to heart oxidative stress and Ca2? balance protein levels. Oxid Med Cell Longev. 2012;2012:890826.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite F, Monmouth Junction, NJ 08852, USA