Zinc Protoporphyrin

Cat. No.: HY-101193

CAS No.: 15442-64-5

Molecular Formula: $C_{34}H_{32}N_4O_4Zn$

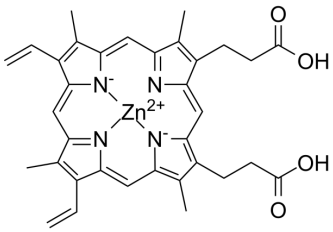
Molecular Weight: 626.02

Target: Reactive Oxygen Species; Endogenous Metabolite; Apoptosis

Pathway: Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB; Apoptosis

Storage: -20°C, sealed storage, away from moisture

* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 20.83 mg/mL (33.27 mM; ultrasonic and warming and heat to 80°C)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	1.5974 mL	7.9870 mL	15.9739 mL
	5 mM	0.3195 mL	1.5974 mL	3.1948 mL
	10 mM	0.1597 mL	0.7987 mL	1.5974 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: 1.67 mg/mL (2.67 mM); Suspended solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Zinc Protoporphyrin (Zn(II)-protoporphyrin IX) is an orally active and competitive heme oxygenase-1 (HO-1) inhibitor and markedly attenuates the protective effects of Phloroglucinol (PG) against H_2O_2[1]. Zinc Protoporphyrin is used as a screening marker of iron deficiency in individual pregnant women and children, but also to assess population iron status in combination with haemoglobin concentration[2]. Zinc Protoporphyrin has anti-cancer activity[3].

IC_{50} & Target

Human Endogenous Metabolite

In Vitro

to increase in Protoporphyrin (Zn(II)-protoporphyrin IX; 5 μM; 72 hours) causes the fraction of late apoptotic and necrotic cells increasing from 10.9% in controls to 30.4% after 72 h[3].

Zinc Protoporphyrin (1.25-40 μM; 48 or 72 hours) exerts cytostatic/cytotoxic effects against tumor cells[3].

Zinc Protoporphyrin (2.5, 5 μM; 48 or 72 hours) results in dose- and time-dependent reduction of cells in the G1 phase of the cell cycle[3].

Zinc Protoporphyrin (1.25-40 μM; 48 hours) leads to the accumulation of cleaved (active) caspase-3[3].

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

Apoptosis Analysis[3]

Cell Line:	C-26 cells
Concentration:	5 μM
Incubation Time:	72 hours
Result:	The fraction of late apoptotic and necrotic cells increased from 10.9% in controls to 30.4% after 72 h.

Cell Cytotoxicity Assay[3]

Cell Line:	C-26 and MDA-MB231 cells
Concentration:	1.25, 2.5, 5, 10, 20, 40 μM
Incubation Time:	48 or 72 hours
Result:	Exerted cystostatic/cytotoxic effects against tumor cells.

Cell Cycle Analysis[3]

Cell Line:	C-26 cells
Concentration:	2.5, 5 μM
Incubation Time:	48 or 72 hours
Result:	Resulted in dose- and time-dependent reduction of cells in G1 phase of the cell cycle.

Western Blot Analysis[3]

Cell Line:	C-26 cells
Concentration:	1.25, 2.5, 5, 10, 20, 40 μM
Incubation Time:	48 hours
Result:	Leaded to accumulation of cleaved (active) caspase-3.

In Vivo

Zinc Protoporphyrin (12.5, 25, 50 mg/kg for i.p.; 12.5, 50 mg/kg for p.o.; from day 7 to 19) exerts dose-dependent antitumor effects manifested by the retardation of tumor growth[3].

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

Animal Model:	BALB/c mice inoculated with C-26 cells[3]
Dosage:	12.5, 25, 50 mg/kg for i.p.; 12.5, 50 mg/kg for p.o.
Administration:	IP or PO; from day 7 to 19
Result:	Exerted dose-dependent antitumor effects manifested by the retardation of tumor growth.

CUSTOMER VALIDATION

- Adv Sci (Weinh). 2023 Jun 17;e2206798.
- Small. 2023 Jan 10;e2206415.
- Bone Res. 2022 Mar 9;10(1):26.
- Redox Biol. 2021 Dec 1;48:102203.
- Biomed Pharmacother. 2023 Dec 12:170:116006.

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REFERENCES

[1]. Park C, et al. Protective Effect of Phloroglucinol on Oxidative Stress-Induced DNA Damage and Apoptosisthrough Activation of the Nrf2/HO-1 Signaling Pathway in HaCaT Human Keratinocytes. Mar Drugs. 2019 Apr 13;17(4).

[2]. Mwangi MN, et al. Diagnostic utility of zinc protoporphyrin to detect iron deficiency in Kenyan pregnant women. BMC Med. 2014 Nov 26;12:229.

[3]. Nowis D, et al. Zinc protoporphyrin IX, a heme oxygenase-1 inhibitor, demonstrates potent antitumor effects but is unable to potentiate antitumor effects of chemotherapeutics in mice. BMC Cancer. 2008 Jul 11;8:197.

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