# Erastin

**Cat. No.:** HY-15763

**CAS No.:** 571203-78-6

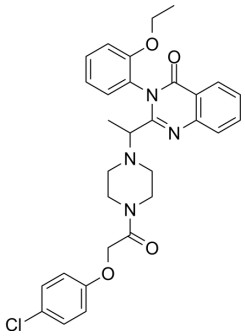
**Molecular Formula:** $C_{30}H_{31}ClN_4O_4$

**Molecular Weight:** 547.04

**Target:** Ferroptosis; VDAC

**Pathway:** Apoptosis; Membrane Transporter/Ion Channel

**Storage:** Powder -20°C 3 years
4°C 2 years
* The compound is unstable in solutions, freshly prepared is recommended.



## SOLVENT & SOLUBILITY

**In Vitro**

DMSO : 12.5 mg/mL (22.85 mM; Need ultrasonic)
$H_2O$ : < 0.1 mg/mL (insoluble)

| Preparing Stock Solutions | Solvent / Mass / Concentration | 1 mg | 5 mg | 10 mg |
|---|---|---|---|---|
| | 1 mM | 1.8280 mL | 9.1401 mL | 18.2802 mL |
| | 5 mM | 0.3656 mL | 1.8280 mL | 3.6560 mL |
| | 10 mM | 0.1828 mL | 0.9140 mL | 1.8280 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: 5 mg/mL (9.14 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 1.25 mg/mL (2.29 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 1 mg/mL (1.83 mM); Clear solution

## BIOLOGICAL ACTIVITY

**Description**

Erastin is a ferroptosis inducer. Erastin shows selective cytotoxicity, targeting cells expressing oncogenic mutants of RAS. Erastin exhibits the mechanism of ferroptosis induction related to ROS and iron-dependent signaling. Erastin inhibits voltage-dependent anion channels (VDAC2/VDAC3) and accelerates oxidation, leading to the accumulation of endogenous reactive oxygen species. Erastin also disrupts mitochondrial permeability transition pore (mPTP) with anti-tumor activity[1][2][3].

**In Vitro**

Erastin (10 μM; 24 h) triggers ferroptosis in ectopic endometrial stromal cells (EESCs), and increases the total ROS level at 9 h

[1].

Erastin shorts mitochondria and increases membrane density in EESCs[1].

Erastin (10 μM; 9 h) decreases the mRNA expression levels of iron-related proteins, such FPN (iron exporter) in EESCs. However, FPN overexpression significantly inhibits erastin-induced ferroptosis in EESCs[1].

Erastin (10 μM; 24 h) induces mitochondrial permeability transition pore (mPTP) opening in HT-29 colorectal cancer cells[2].

Erastin (30 μM; 72 h) significantly inhibits the growth of HT-29 colorectal cancer cells[2].

The molecular mechanism by which Erastin induces ferroptosis is related to genes regulating iron or mitochondrial fatty acid metabolism. Includes ribosomal protein L8, iron response element binding protein 2 (IREB2), ATP synthase F0 complex subunit C3, citrate synthase, tetrapeptide repeat domain 35, and acyl-CoA synthetase family member 2 (ACSF2)[3].

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

Cell Viability Assay[1]

| | |
|---|---|
| Cell Line: | Normal endometrial stromal cells (NESCs) and endometrial stromal cells (EESCs) |
| Concentration: | 0, 0.5, 0.8, 1, 1.5, 2, 2.5, 5, 10 μM |
| Incubation Time: | 24 hours |
| Result: | Induced cell detachment and overt death in EESCs, but not NESCs. |

Apoptosis Analysis[1]

| | |
|---|---|
| Cell Line: | EESCs infected with adenovirus expressing FPN cDNA (co-incubation for 24 hr) |
| Concentration: | 0, 0.5, 1.5, 2.5, 5 and 2.5 μM |
| Incubation Time: | 24 hours |
| Result: | Induced ferroptosis by decreasing the levels of total ROS and lipid ROS. And reversed by the overexpression of FPN in adenovirus-infected cells. |

**In Vivo**

Erastin can be used in animal modeling to construct ferroptosis induction model.

Erastin (40 mg/kg; i.p.; once every 3 days for 2 weeks) suppresses endometriotic implants in the mouse endometriosis model, indicating Erastin regresses ectopic lesions by trigging ferroptosis[1].

Erastin (10 mg/kg, 30 mg/kg; i.p.; once daily for 4 weeks) suppresses HT-29 xenograft growth in SCID mice, with more potent efficacy under 30 mg/kg treatment[2].

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

| | |
|---|---|
| Animal Model: | Mouse model of endometriosis[1] |
| Dosage: | 40 mg/kg |
| Administration: | Intraperitoneal injection; once every 3 days for 2 weeks |
| Result: | Showed little impact on body weight of mice and hair of mice displayed neat and glossy. Reduced the volume of ectopic lesions. |

## CUSTOMER VALIDATION

- Cell Discov. 2022 May 3;8(1):40.
- Nat Cell Biol. 2022 Feb;24(2):168-180.

- Adv Funct Mater. 2023 Apr 28.
- Adv Sci (Weinh). 2023 Jun 21;e2300881.
- Chem Eng J. 2023 May 22, 143685.

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## REFERENCES

[1]. Li Y, et al. Erastin induces ferroptosis via ferroportin-mediated iron accumulation in endometriosis. Hum Reprod. 2021 Mar 18;36(4):951-964.

[2]. Xie Y, et al. Ferroptosis: process and function. Cell Death Differ. 2016 Mar;23(3):369-79.

[3]. Huo H, et al. Erastin Disrupts Mitochondrial Permeability Transition Pore (mPTP) and Induces Apoptotic Death of Colorectal Cancer Cells. PLoS One. 2016 May 12;11(5):e0154605.

**Caution: Product has not been fully validated for medical applications. For research use only.**

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