Ethinylestradiol

Cat. No.: HY-B0216

CAS No.: 57-63-6

Molecular Formula: $C_{20}H_{24}O_2$

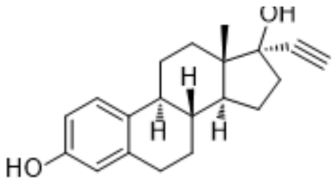
Molecular Weight: 296.4

Target: Estrogen Receptor/ERR; Endogenous Metabolite

Pathway: Vitamin D Related/Nuclear Receptor; Metabolic Enzyme/Protease

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (337.38 mM)

H_2O : < 0.1 mg/mL (ultrasonic;warming;heat to 80°C) (insoluble)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.3738 mL	16.8691 mL	33.7382 mL
5 mM	0.6748 mL	3.3738 mL	6.7476 mL
10 mM	0.3374 mL	1.6869 mL	3.3738 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (8.43 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (8.43 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (8.43 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Ethinylestradiol is an orally active steroidal estrogen. Ethinylestradiol is widely used in research on menopausal symptoms, gynecological conditions, and certain hormone-sensitive cancers[1].

IC_{50} & Target

Human Endogenous Metabolite

In Vitro

Ethinylestradiol (0.01-10 nM, 24-48 h) increases cGMP formation in RFL6 cells[2].
Ethinylestradiol (0.01-10 nM, 6-48 h) reduces superoxide anion production in BAEC cells in dose- and time-dependent manner[2].
Ethinylestradiol (1-100 nM, 24 h) decreases mRNA (XPC and XPA) abundance and NER capacity in zebrfish liver cells[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Ethinylestradiol (5 mg/kg, s.c., 5 days) increases synthesis and expression of low density lipoprotein-receptor in the liver of female Sprague-Dawley rats at pharmacological doses[4].
Ethinylestradiol (0-50 μg/kg, i.g., daily, 21 days) can have adverse effects on the reproductive development of nulliparous female Wistar rats[5].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Female Sprague-Dawley rats[4]
Dosage:	5 mg/kg
Administration:	Subcutaneous injection (s.c.), 5 days
Result:	Decreases plasma cholesterol levels and cholesterol content. Increased low density lipoprotein tissue spaces and clearance rates in the liver. Enhanced the hepatic expression of low density lipoprotein-receptor protein and mRNA. Increased cholesterol synthesis in several extrahepatic tissues, such as adrenals, ovaries, small bowel, and spleen.

Animal Model:	Nulliparous female Wistar rats[5]
Dosage:	0-50 μg/kg
Administration:	i.g., daily, 21 days
Result:	Increased number of nipples and reduced ovary weight in female offspring. Induced malformations of female genitalia. Deepened the width of urethral slits in adult rats. Increased the expression of estrogen-regulated gene in ventral prostate of prepubertal male offspring in a dose-dependent manner. Decreased ventral prostate weight at 15μg/kg in prepubertal male offspring.

CUSTOMER VALIDATION

- Cells. 2022, 11(3), 319.
- Preprints. 2024 Jan 29.

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REFERENCES

[1]. Arnal J F, et al. Ethinylestradiol does not enhance the expression of nitric oxide synthase in bovine endothelial cells but increases the release of bioactive nitric oxide by inhibiting superoxide anion production[J]. Proceedings of the National Academy of Sciences, 1996, 93(9): 4108-4113.

[2]. Notch EG, et al. 17alpha-Ethinylestradiol hinders nucleotide excision repair in zebrafish liver cells. Aquat Toxicol. 2009 Dec 13;95(4):273-8.

[3]. Bertolotti M, et al. Effect of hypocholesterolemic doses of 17 alpha-ethinyl estradiol on cholesterol balance in liver and extrahepatic tissues. J Lipid Res. 1996 Aug;37(8):1812-22.

[4]. Mandrup KR, et al. Effects of perinatal ethinyl estradiol exposure in male and female Wistar rats. Reprod Toxicol. 2013 Dec;42:180-91.

[5]. Kuhl H. Pharmacology of estrogens and progestogens: influence of different routes of administration. Climacteric. 2005 Aug;8 Suppl 1:3-63.

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