(-)-Epigallocatechin Gallate

Cat. No.: HY-13653

CAS No.: 989-51-5

Molecular Formula: $C_{22}H_{18}O_{11}$

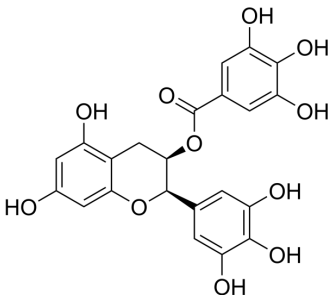
Molecular Weight: 458.37

Target: Endogenous Metabolite; Apoptosis

Pathway: Metabolic Enzyme/Protease; Apoptosis

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 : ≥ 30 mg/mL (65.45 mM)

H_2O : 20 mg/mL (43.63 mM; Need ultrasonic)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.1816 mL	10.9082 mL	21.8164 mL
5 mM	0.4363 mL	2.1816 mL	4.3633 mL
10 mM	0.2182 mL	1.0908 mL	2.1816 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 9.09 mg/mL (19.83 mM); Clear solution; Need ultrasonic and warming and heat to 60°C
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (4.54 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (4.54 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (4.54 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

(-)-Epigallocatechin Gallate (EGCG) is a major polyphenol in green tea, which can inhibit cell proliferation and induce cell apoptosis. (-)-Epigallocatechin Gallate inhibits glutamate dehydrogenase 1/2 (GDH1/2, GLUD1/2) activity. (-)-Epigallocatechin Gallate has a potent anticancer, antioxidant and anti-inflammatory properties against various types of

	cancers such as colorectal cancer, myeloid leukemia, thyroid carcinoma[1][2][3][4].

IC_{50} & Target	EGFR	HER2	HER3

In Vitro

(-)-Epigallocatechin Gallate (EGCG, 10-60 μM) inhibits the growth of FB-2 and WRO cells in a dose-dependent manner[1].
(-)-Epigallocatechin Gallate (10-60 μM, 0-24 h) reduces cyclin D1 and phosphorylation of AKT and ERK1/2, and increases p21 and p53 expression[1].
(-)-Epigallocatechin Gallate (10-60 μM, 12 h) reduces cell motility and migration[1].
(-)-Epigallocatechin Gallate (0-20 μM, 0-20 min approximately) inhibits GLUD1/2 and IDH1 activity in a concentration and time-dependent way (biochemical assays)[2].
(-)-Epigallocatechin Gallate (0-35 μg/mL, 24-72 h) inhibits the proliferation of colorectal cancer cells (LoVo, SW480, HT-29, HCT-8 cells), increases cell apoptosis and blocks cells at the G0/G1 phase[3].
(-)-Epigallocatechin Gallate (30 μM, 3-24 h) suppresses the expression of COX-2 and mPGES-1 mRNAs, prostaglandin E2 production in LPS-induced osteoblasts[4].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Proliferation Assay[1]

Cell Line:	FB-2 and WRO cells (serum-starved for 48h)
Concentration:	10, 40, 60 μM.
Incubation Time:	4 days
Result:	Inhibited basal cell proliferation (40% in FB-2 and 35% in WRO) at 10 μM, inhibited cell number (by 68% to 73%) at 40 and 60 μM).

Western Blot Analysis[1]

Cell Line:	FB-2 cells
Concentration:	10, 40, 60 μM.
Incubation Time:	24 h
Result:	Reduced cyclin D1 level, phosphorylation of AKT and ERK1/2. Induced the expression of p21 and p53, and E-cadherin, N-cadherin, Vimentin and α5-integrin.

Cell Migration Assay [1]

Cell Line:	FB-2 and WRO cells (serum-starved for 48h)
Concentration:	10, 40, 60 μM.
Incubation Time:	12 h
Result:	Reduced migration activity in FB-2 and WRO cells.

RT-PCR[4]

Cell Line:	Mouse primary osteoblasts (1 ng/ml LPS-treated)
Concentration:	30 μM
Incubation Time:	3, 6, 12, 24 h
Result:	Suppressed the LPS-induced expression of COX-2 and mPGES-1 mRNAs, prostaglandin E2 production.

In Vivo

(-)-Epigallocatechin Gallate (Intragastrical administration, 5-20 mg/kg, once daily for 14 days, orthotopic transplant model) decreases tumors growth[3].

(-)-Epigallocatechin Gallate (Injected into the mouse lower gingiva, a single dose of 0.5 mg/mouse, experimental periodontitis model) decreases inhibits the LPS-induced loss of bone mineral density (BMD)[3].

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

Animal Model:	Orthotopic transplant BALB/c nude mice model[3]
Dosage:	5, 10, and 20 mg/kg, once daily for 14 days.
Administration:	Intragastrical administration.
Result:	Inhibited tumors growth with no liver or lung metastases.

Animal Model:	Model of experimental periodontitis, LPS (25 μg/mouse)[4]
Dosage:	0.5 mg/mouse, a single dose.
Administration:	Injected into the mouse lower gingiva
Result:	Inhibited the LPS-induced loss of bone mineral density (BMD) in mice.

CUSTOMER VALIDATION

- Biomaterials. 2021, 120952.
- Cancer Res. 2022 Jul 27;CAN-22-0042.
- Cell Death Dis. 2023 Jul 29;14(7):481.
- Br J Cancer. 2021 Jan;124(2):425-436.
- Cell Mol Life Sci. 2022 Nov 30;79(12):611.

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REFERENCES

[1]. De Amicis F, et al. Epigallocatechin gallate inhibits growth and Epithelial-to-Mesenchymal Transition in human thyroid carcinoma cell lines. J Cell Physiol. 2013 Apr 1.

[2]. Peeters TH, et al. Isocitrate dehydrogenase 1-mutated cancers are sensitive to the green tea polyphenol epigallocatechin-3-gallate. Cancer Metab. 2019 May 20;7:4.

[3]. Jin H, et al. Epigallocatechin gallate inhibits the proliferation of colorectal cancer cells by regulating Notch signaling. Onco Targets Ther. 2013;6:145-53.

[4]. Tsukasa Tominari; Epigallocatechin gallate (EGCG) suppresses lipopolysaccharide-induced inflammatory bone resorption, and protects against alveolar bone loss in mice. FEBS Open Bio. 2015 Jun 12;5:522-7.

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