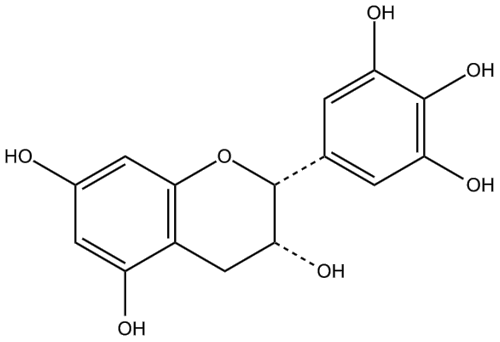
Product Data Sheet

Product Name: (-)-epigallocatechin
Cat. No.: GC17242

Chemical Properties

Cas. No.	970-74-1		
Chemical Name	(2R,3R)-2-(3,4,5-trihydroxyphenyl)chroman-3,5,7-triol		
SMILES	O[C@@H]1CC2=C(C=C(O)C=C2O)O[C@@H]1C3=CC(O)=C(O)C(O)=C3		
Formula	$C_{15}H_{14}O_7$	M.Wt	306.27
Solubility	DMF: 25 mg/ml,DMSO: 15 mg/ml,Ethanol: 5 mg/ml,PBS (pH 7.2): 1 mg/ml	Storage	Store at -20°C,protect from light
General tips	For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20°C for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		

Structure



Protocol

Cell experiment [1]:

Cell lines HCT 116 cells

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Preparation Method	HCT 116 cells were cultured in McCoy's 5A medium [12.0g/H_2O (1000ml) and $NaHCO_3$ (2.2g)], supplemented with 10% fetal bovine serum, and incubated at 37°C in a humidified environment with 5% CO_2. The cells were seeded in 96-well flat plate with a concentration of 2.5×10^4 cells/ml, and cultured at 37°C for 1 day to stabilize the cells. Then, different concentrations of (-)-epigallocatechin (1, 10, 100, and 1000μM) were added to each well, and cell viability analysis was performed after 3 days of incubation at 37°C.
Reaction Conditions	1, 10, 100, and 1000μM; 72h
Applications	(-)-epigallocatechin treatment decreased the cell viability of HCT 116 cells in a dose-dependent manner.

Animal experiment [2]:

Animal models	ICR mice
Preparation Method	ICR mice weighing 18-22 grams were housed in an SPF-level barrier animal room. The temperature was maintained at 23±2°C, the light/dark cycle was 12 hours, the humidity was 50-70%, and mice had free access to food and filtered water. The mice were divided into two groups: the experimental group was fed 1.0g/kg/day of (-)-epigallocatechin for 10 days; the control group was fed normal saline every day. The eyeballs were taken from the mice. One drop of blood (except the first drop) was collected and dropped onto a glass slide with a diameter of approximately 5mm. The blood clotting time and bleeding time were analyzed.
Dosage form	1.0g/kg/day for 10 days; p.o.

Caution: Product has not been fully validated for medical applications. For research use only.
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Applications	(-)-epigallocatechin treatment enhanced the blood clotting time and bleeding time in mice.

References:
[1] Uesato S, Kitagawa Y, Kamishimoto M, et al. Inhibition of green tea catechins against the growth of cancerous human colon and hepatic epithelial cells[J]. Cancer Letters, 2001, 170(1): 41-44.
[2] Chen X Q, Wang X B, Guan R F, et al. Blood anticoagulation and antiplatelet activity of green tea (–)-epigallocatechin (EGC) in mice[J]. Food & function, 2013, 4(10): 1521-1525.

Background

(-)-epigallocatechin is a major polyphenolic compound in green tea with antioxidant properties [1]. (-)-epigallocatechin binds to bovine β-lactoglobulin (βLG) through van der Waals forces and hydrogen bonds, leading to a change in the native conformation of βLG and improving the functionality of dairy products [2]. (-)-epigallocatechin has been widely used to inhibit the growth of different cancer cells[3].

In vitro, (-)-epigallocatechin treatment for 3 days significantly inhibited the proliferation of HCT 116 cells and Hep G2 cells, with IC_{50} values of 11.2 and 52.3μM, respectively[4]. Treatment of UMR-106 cells with 20μM (-)-epigallocatechin for 6 days increased alkaline phosphatase (ALP) activity and significantly increased matrix mineralization[5]. Treatment of H1299 cells with 40μM (-)-epigallocatechin for 24h induced apoptosis and down-regulated the mRNA level of hTERT[6].

In vivo, Oral administration of (-)-epigallocatechin (1g/kg/day) for 10 days significantly inhibited platelet aggregation and prolonged activated partial prothrombin time in ICR mice[7].

References:
[1] Hu J, Zhou D, Chen Y. Preparation and antioxidant activity of green tea extract enriched in epigallocatechin (EGC) and epigallocatechin gallate (EGCG)[J]. Journal of Agricultural and Food Chemistry, 2009, 57(4): 1349-1353.
[2] Wu X, Wu H, Liu M, et al. Analysis of binding interaction between (–)-epigallocatechin (EGC) and β-lactoglobulin by multi-spectroscopic method[J]. Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 2011, 82(1): 164-168.

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[3] Du G J, Zhang Z, Wen X D, et al. Epigallocatechin Gallate (EGCG) is the most effective cancer chemopreventive polyphenol in green tea[J]. Nutrients, 2012, 4(11): 1679-1691.
[4] Uesato S, Kitagawa Y, Kamishimoto M, et al. Inhibition of green tea catechins against the growth of cancerous human colon and hepatic epithelial cells[J]. Cancer Letters, 2001, 170(1): 41-44.
[5] Ko C H, Lau K M, Choy W Y, et al. Effects of tea catechins, epigallocatechin, gallocatechin, and gallocatechin gallate, on bone metabolism[J]. Journal of Agricultural and Food Chemistry, 2009, 57(16): 7293-7297.
[6] Lin S C, Li W C, Shih J W, et al. The tea polyphenols EGCG and EGC repress mRNA expression of human telomerase reverse transcriptase (hTERT) in carcinoma cells[J]. Cancer letters, 2006, 236(1): 80-88.
[7] Chen X Q, Wang X B, Guan R F, et al. Blood anticoagulation and antiplatelet activity of green tea (–)-epigallocatechin (EGC) in mice[J]. Food & function, 2013, 4(10): 1521-1525.