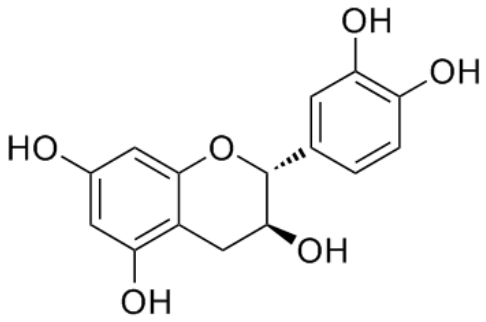
Product Data Sheet

Product Name: Catechin ((+)-Catechin)
Cat. No.: GC32841

Chemical Properties

Cas. No.	154-23-4		
SMILES	O[C@@H]1[C@@H](C2=CC(O)=C(O)C=C2)OC3=CC(O)=CC(O)=C3C1		
Formula	$C_{15}H_{14}O_6$	M.Wt	290.27
Solubility	DMSO : ≥ 100 mg/mL (344.51 mM)	Storage	4°C, away from moisture and 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

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Cell experiment: The Cell viability assay is performed to assess the toxicity of different concentrations of Catechin on MCF-7 cells. Briefly, MCF-7 cells (2×104 cells/well) are plated in 96-well plates and treated with 0 μg/mL Catechin and 160 μg/mL Catechin for 24 hours. Then, 40 μL of the Cell Titer Blue solution is directly added to the wells and incubated at 37°C for 6 hours. The fluorescence is recorded with a 560 nm/590 nm (excitation/emission) filter set using a microplate fluorescence reader, and the IC50 is calculated. Quadruplet samples are run for each concentration of Catechin in three independent experiments[2].

Animal experiment: Rats[3]Twelve weeks old, healthy male rats weighing 200 to 230 g are used in this study. Rats are divided into four experimental groups (n=9 each) for one vehicle and three groups of Catechin (three doses). The doses of Catechin are prepared at 50, 100, 200 mg/kg in 0.25% w/v sodium carboxy methylcellulose (CMC) and administered orally for 7 days prior to and during the experimental trials. Episodic memory, the conscious memory of the past experiences is evaluated in this study[3].

References:

[1]. Waffo-Téguo P, et al. Potential cancer-chemopreventive activities of wine stilbenoids and flavans extracted from grape (Vitis vinifera) cell cultures. Nutr Cancer. 2001;40(2):173-9.
[2]. Cheruku SP, et al. Catechin ameliorates doxorubicin-induced neuronal cytotoxicity in in vitro and episodic memory deficit in in vivo in Wistar rats. Cytotechnology. 2018 Feb;70(1):245-259.
[3]. Alshatwi AA. Catechin hydrate suppresses MCF-7 proliferation through TP53/Caspase-mediated apoptosis. J Exp Clin Cancer Res. 2010 Dec 17;29:167.

Background

Catechin inhibits cyclooxygenase-1 (COX-1) with an IC50 of 1.4 μM.

Catechin exhibits >95% inhibitory activity at 70 μg/mL against cyclooxygenase-1 (COX-1) with an IC50 of 1.4 μM[1]. A dose-dependent reduction in color is observed after 24 hours of treatment with

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Catechin, and 54.76% of the cells are dead at the highest concentration of Catechin tested (160 µg/mL) whereas the IC50 of Catechin is achieved at 127.62 µg/mL Catechin. A dose- and time-dependent increase in the induction of apoptosis is observed when MCF-7 cells are treated with Catechin. When compare to the control cells at 24 hours, 40.7 and 41.16% of the cells treated with 150 µg/mL and 300 µg/mL Catechin, respectively, undergo apoptosis. The expression levels of Caspase-3, -8, and -9 and p53 in MCF-7 cells treated with 150 µg/mL Catechin for 24 h increase by 5.81, 1.42, 3.29, and 2.68 fold, respectively, as compare to the levels in untreated control cells[2].

Animals treated with Catechin at the lowest tested dose, i.e., 50 mg/kg, p.o. have spent comparatively more time in exploring the novel object in the choice trial, however, the difference is not statistically significant. Catechin prevents the time-induced episodic memory deficits in a dose-dependent manner, the most effective being 200 mg/kg, p.o.. Treatment with Catechin prevents the rise in MPO level compare to DOX alone treatment group (21.98±9.44 and 36.76±4.39% in the hippocampus and the frontal cortex respectively)[3].

[1]. Waffo-Téguo P, et al. Potential cancer-chemopreventive activities of wine stilbenoids and flavans extracted from grape (Vitis vinifera) cell cultures. Nutr Cancer. 2001;40(2):173-9. [2]. Alshatwi AA. Catechin hydrate suppresses MCF-7 proliferation through TP53/Caspase-mediated apoptosis. J Exp Clin Cancer Res. 2010 Dec 17;29:167. [3]. Cheruku SP, et al. Catechin ameliorates doxorubicin-induced neuronal cytotoxicity in in vitro and episodic memory deficit in in vivo in Wistar rats. Cytotechnology. 2018 Feb;70(1):245-259.

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