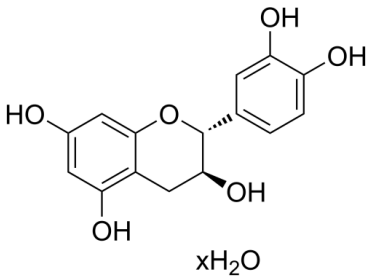
Data Sheet

Product Name:	(+)-Catechin hydrate
Cat. No.:	CS-0008908
CAS No.:	225937-10-0
Molecular Formula:	$C_{15}H_{14}O_6.xH_2O$
Target:	COX
Pathway:	Immunology/Inflammation
Solubility:	DMSO : 50 mg/mL (Need ultrasonic)



BIOLOGICAL ACTIVITY:

(+)-Catechin hydrate inhibits cyclooxygenase-1 (**COX-1**) with an **IC_{50}** of 1.4 μM. IC50 & Target: IC50: 1.4 uM (COX-1)[1] ***In Vitro:*** (+)-Catechin exhibits >95% inhibitory activity at 70 μg/mL against cyclooxygenase-1 (COX-1) with an IC_{50} of 1.4 μM[1]. A dose-dependent reduction in color is observed after 24 hours of treatment with (+)-Catechin, and 54.76% of the cells are dead at the highest concentration of (+)-Catechin tested (160 μg/mL) whereas the IC_{50} 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]. ***In Vivo:*** 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].

PROTOCOL (Extracted from published papers and Only for reference)

Cell Assay: [2]The Cell viability assay is performed to assess the toxicity of different concentrations of (+)-Catechin on MCF-7 cells. Briefly, **MCF-7 cells** (**2×10^4 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 IC_{50} is calculated. Quadruplet samples are run for each concentration of (+)-Catechin in three independent experiments[2].
Animal Administration: (+)-Catechin hydrate is prepared in 0.25% w/v sodium carboxy methylcellulose (CMC)[3].[3]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 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]. 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.

CAIndexNames:

2H-1-Benzopyran-3,5,7-triol, 2-(3,4-dihydroxyphenyl)-3,4-dihydro-, hydrate (1:x), (2R,3S)-

SMILES:

OC1=CC(O)=C(C[C@H](O)[C@@H](C2=CC=C(O)C(O)=C2)O3)C3=C1.[xH2O]

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