# (+)-Catechin hydrate

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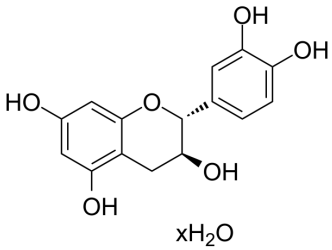
| **Cat. No.:** | HY-N0355 | | |
| **CAS No.:** | 225937-10-0 | | |
| **Molecular Formula:** | $C_{15}H_{14}O_6.xH_2O$ | | |
| **Target:** | COX | | |
| **Pathway:** | Immunology/Inflammation | | |
| **Storage:** | Powder | -20°C | 3 years |
| | | 4°C | 2 years |
| | In solvent | -80°C | 6 months |
| | | -20°C | 1 month |




## SOLVENT & SOLUBILITY

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| **In Vitro** | DMSO : 50 mg/mL (Need ultrasonic) |
| **In Vivo** | 1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline<br>Solubility: ≥ 2.5 mg/mL (Infinity mM); Clear solution<br>2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)<br>Solubility: ≥ 2.5 mg/mL (Infinity mM); Clear solution<br>3. Add each solvent one by one: 10% DMSO >> 90% corn oil<br>Solubility: ≥ 2.5 mg/mL (Infinity mM); Clear solution |

## BIOLOGICAL ACTIVITY

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| **Description** | (+)-Catechin hydrate inhibits cyclooxygenase-1 (COX-1) with an $IC_{50}$ of 1.4 μM. |
| **$IC_{50}$ & Target** | COX-1<br>1.4 μM ($IC_{50}$) |
| **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].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| **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 |

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| | hippocampus and the frontal cortex respectively)[3].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

## PROTOCOL

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| **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 ($2\times10^4$ 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].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| **Animal Administration** [3] | Rats[3]<br>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].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

## CUSTOMER VALIDATION

- Acta Pharm Sin B. 2021 Jan;11(1):143-155.
- Biomaterials. 2021, 120952.
- Autophagy. 2021 Apr;17(4):872-887.
- Plant Cell Physiol. 2020 Feb 1;61(2):318-330.
- Plants. 2021, 10(11), 2525.

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## 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.



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