Procyanidin B2

Cat. No.: HY-N0796

CAS No.: 29106-49-8

Molecular Formula: $C_{30}H_{26}O_{12}$

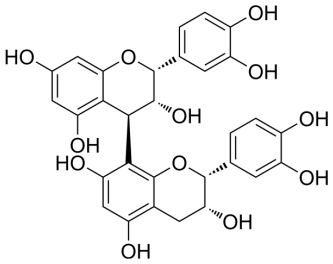
Molecular Weight: 578.52

Target: Reactive Oxygen Species

Pathway: Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

H_2O : 66.67 mg/mL (115.24 mM; Need ultrasonic)

DMSO : ≥ 50 mg/mL (86.43 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.7285 mL	8.6427 mL	17.2855 mL
5 mM	0.3457 mL	1.7285 mL	3.4571 mL
10 mM	0.1729 mL	0.8643 mL	1.7285 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 50 mg/mL (86.43 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (4.32 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (4.32 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (4.32 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Procyanidin B2 is a natural flavonoid, with anti-cancer, antioxidant activities.

In Vitro

Procyanidin B2 shows antiproliferative activity to MCF-7 cells, with an IC_{50} of 19.21 μM. However, Procyanidin B2 exhibits no

	effect on DNA-ladder formation[1]. Procyanidin B2 (0.1, 1, 2 μM) inhibits the activation of pyrin domain containing 3 (NLRP3) inflammasome in human umbilical vein ECs (HUVECs), and the inhibition is via suppression of AP-1 activity, and such effect can be abolished by overexpression of c-Jun. Procyanidin B2 (2 μM for 12 h) also reduces ROS in HUVECs[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Procyanidin B2 (40, 20, and 10 mg/kg, p.o.) protects against cerebral ischemia-induced infarct volume and brain edema in rats. Procyanidin B2 (40 mg/kg, p.o) also improves functional outcomes, regulates blood-brain barrier (BBB) permeability after cerebral ischemia. Moreover, Procyanidin B2 attenuates cerebral ischemia-induced tight junction degradation, mitochondrial depolarization and intracellular oxidative stress. Procyanidin B2 (40 mg/kg, p.o) increases Nrf2 activation and HO-1, GSTα, and NQO1 protein expression in normal brains in vivo[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	MCF-7 cells are grown in 5 mL of RPMI 1640 medium supplemented with 20% fetal bovine serum, penicillin (100 U/mL) and streptomycin (100 μg/mL). Cells are maintained at 37°C in a humidified atmosphere of 5% CO_2 in air and subcultured every 3 days. Exponentially growing cells are plated at a seeding density of 2×10^4 cells/mL, in 96-well plates or in dishes. After overnight incubation to allow for attachment, the cells are exposed for 24 or 48 h to various concentrations of Procyanidin B2 (0.5; 1.0; 5.0; 10.0; 25.0 and 50.0 μM) diluted in distilled water. Two millimolar cyclophosphamide (CP) is used as the positive control and solutions are sterilised by filtration[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [3]	To observe the effect of Procyanidin B2 on infarct size or brain edema, 40 rats are randomLy separated into five groups, and each group is administered with vehicle (equivalent dose of 0.9% saline administered via gavage) or 40, 20, or 10 mg/kg of Procyanidin B2, respectively. To elucidate the effect of Procyanidin B2 on blood-brain barrier (BBB) permeability, the rats (n = 6 per group for Evans blue extravasation and n = 4 per group for IgG leakage) are randomLy separated into two groups: vehicle and Procyanidin B2 (40 mg/kg). Procyanidin B2 (40 mg/kg) is administered intragastrically once a day starting at 3 h after middle cerebral artery occlusion (MCAO). For other observations, including immunohistological staining and western blot analysis, rats are randomLy separated into three groups: sham-operated, vehicle, and Procyanidin B2 (n = 4 per group). Procyanidin B2 (40 mg/kg) is administered intragastrically once a day starting at 3 h after MCAO. To elucidate the improvement in neurological function after ischemic stroke in rats, the rats (n = 8 per group) undergo neurobehavioral assays to evaluate the functional outcome after administration of Procyanidin B2 (40 mg/kg) once a day starting at 24 h after MCAO. The neurological deficits are assessed at 1, 3, 7, 11, and 14 days after MCAO[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Cell Death Dis. 2022 Jul 11;13(7):594.
- Food Chem. 2022: 134807.
- Food Res Int. 2019 May;119:187-195.
- Antioxidants. 2021, 10(6), 916.
- Food Funct. 2020 Dec 1;11(12):10493-10505.

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REFERENCES

[1]. Avelar MM, et al. Procyanidin b2 cytotoxicity to mcf-7 human breast adenocarcinoma cells. Indian J Pharm Sci. 2012 Jul;74(4):351-5.

[2]. Yang H, et al. Procyanidin B2 inhibits NLRP3 inflammasome activation in human vascular endothelial cells. Biochem Pharmacol. 2014 Dec 15;92(4):599-606.

[3]. Wu S, et al. Procyanidin B2 attenuates neurological deficits and blood-brain barrier disruption in a rat model of cerebral ischemia. Mol Nutr Food Res. 2015 Oct;59(10):1930-41.

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