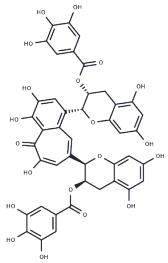
Data Sheet (Cat.No.T5429)

TargetMol

Theaflavin 3,3′-digallate

Chemical Properties



CAS No. : 30462-35-2

Formula: C43H32O20

Molecular Weight: 868.70

Storage: Keep away from direct sunlight,Store at low temperature
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Theaflavin 3,3'-digallate, a major polyphenol found in black tea, is an inducer of oxidative stress which has anti-inflammatory and cancer chemopreventive actions, it reduces tumor angiogenesis by downregulating HIF-1αand VEGF.
Targets(IC50)	Anti-infection,Antioxidant,HIV Protease,HSV,Virus Protease
In vitro	Theaflavin 3,3'-digallate (TF-3) significantly reduces viral RNA levels and the expression of NS3 and U87 MG proteins in a dose-dependent manner when used at concentrations of 6.25, 12.5, and 25 μM for 24 hours [1]. Theaflavin 3,3'-digallate demonstrates potent antiviral activity against ZIKV replication in Vero E6 cells (EC50: 7.65 μM), while showing minimal cytotoxicity at doses up to 40 μM. Theaflavin 3,3'-digallate interferes with the post-entry phases of the ZIKV replication cycle, disrupting gene transcription and translation [1]. Theaflavin 3,3'-digallate leads to a rapid and sustained reduction in phospho-ERK1/2 and phospho-MEK1/2 protein levels and inhibits HCT116 cell growth (IC50: 17.26 μM) [2].
In vivo	In vivo, Theaflavin 3,3'-digallatereduces serum levels of TNF-α, IL-1β, and IL-6 and decreases pulmonary edema, pulmonary congestion, and thickening of the alveolar wall in a mouse model of LPS-induced acute lung injury. It also inhibits osteoclast formation, polarization, and osteoclastic bone resorption in vitro and reduces titanium particle-induced bone erosion and the number of mature osteoclasts in mice in a dose-dependent manner [3].

Solubility Information

Solubility	DMSO: 117.50 mg/mL (135.26 mM),Sonication is recommended. Ethanol: 10.00 mg/mL (11.51 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 1.00 mg/mL (1.15 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	1.1511 mL	5.7557 mL	11.5115 mL
5 mM	0.2302 mL	1.1511 mL	2.3023 mL
10 mM	0.1151 mL	0.5756 mL	1.1511 mL
50 mM	0.023 mL	0.1151 mL	0.2302 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Wu YY, et al. Evaluation of the antioxidant effects of four main theaflavin derivatives through chemiluminescence and DNA damage analyses. J Zhejiang Univ Sci B. 2011 Sep;12(9):744-51.
Zhang H, Liang B, Sang X, et al.Discovery of Potential Inhibitors of SARS-CoV-2 Main Protease by a Transfer Learning Method.Viruses.2023, 15(4): 891.
Jiang Z, Piao L, Ren C, et al.Identifying Natural Products as Feline Coronavirus Mpro Inhibitors by Structural-Based Virtual Screening and Enzyme-Based Assays.ACS Omega.2025
Tanaka T, et al. Increase of theaflavin gallates and thearubigins by acceleration of catechin oxidation in a new fermented tea product obtained by the tea-rolling processing of loquat (Eriobotrya japonica) and green tea leaves. J Agric Food Chem. 2009 Jul 8;57(13):5816-22.
Hu X, et al. Theaflavin-3,3'-digallate represses osteoclastogenesis and prevents wear debris-induced osteolysis via suppression of ERK pathway. Acta Biomater. 2017 Jan 15;48:479-488.