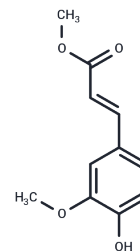


FERULIC ACID METHYL ESTER

Chemical Properties

CAS No. :	2309-07-1
Formula:	C ₁₁ H ₁₂ O ₄
Molecular Weight:	208.21
Storage:	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	FERULIC ACID METHYL ESTER (Methyl ferulate) is a hydroxycinnamic acid that is abundant in plants and originally derived from giant fennel (<i>F. communis</i>). This naturally-occurring phenolic has antioxidant activities that provide protection against inflammation and cancer. Ferulic acid methyl ester is a lipophilic derivative of ferulic acid, demonstrating increased ability to cross cell membranes.
Targets(IC50)	Autophagy,p38 MAPK
In vitro	Ferulic acid methyl ester has less antioxidant capacity than ferulic acid in neuronal PC12 cells (IC ₅₀ = 74.7 μM for ferulic acid ethyl ester vs. 44.6 μM for ferulic acid, 2,2-diphenyl-1-picrylhydrazyl radical scavenging). Ferulic acid methyl ester, at 10-25 μg/ml, inhibits the release of pro-inflammatory cytokines, blocks the expression of COX-2, and reduces nitric oxide generation from LPS-stimulated macrophages.
Kinase Assay	DPPH radical scavenging activity of caffeic acid and ferulic acid derivatives was assessed as previously described with some modifications. Briefly, the test compound was dissolved in dimethyl sulfoxide and 4 different concentrations were mixed with a methanolic solution of DPPH 100 mM in duplicate. After 30 min of incubation at room temperature in the dark, the absorbance at 517 nm was measured by a spectrophotometer. The concentrations (in the range 1-100 μM) were carefully chosen for each compound in order to produce a suitable dose response curve. The percent inhibition of the radical was calculated based on the absorbance of the mixture compared to the absorbance of DPPH solution alone.
Cell Research	Hydrogen peroxide (8.8 M solution) stored at 4 C was first diluted in PBS to prepare a 100 mM solution on the day of the experiment. This was further diluted in growth medium to prepare the final working solution. PC12 cells were plated in collagen-coated 96-well microplates at a density of 5 × 10 ⁵ cells/ml (100 μl per well). Blank wells contained only growth medium for background correction. After 48 h of incubation to allow for cell attachment, 20 μl of growth medium supplemented with different concentrations of HCAs were added in triplicate wells and preincubated for 1 h. Maximum concentration of DMSO in the well was kept below 0.2%. Afterwards, 20 μl of H ₂ O ₂ solution was added. The concentration of H ₂ O ₂ in the well was 75 μM. After another hour, the medium was replaced with fresh one and cells were incubated overnight. In the end, the medium was replaced with 30 μl of MTT 0.5 mg/ml dissolved in RPMI without phenol red. Formazan crystals were solubilised in 200 μl DMSO after 1.5 h of incubation at 37 C.

Solubility Information

Solubility	DMSO: 250 mg/mL (1200.71 mM),Sonication is recommended. Ethanol: 20 mg/mL (96.06 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: 2 mg/mL (9.61 mM),Sonication is recommended. <i>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.</i>

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	4.8028 mL	24.0142 mL	48.0284 mL
5 mM	0.9606 mL	4.8028 mL	9.6057 mL
10 mM	0.4803 mL	2.4014 mL	4.8028 mL
50 mM	0.0961 mL	0.4803 mL	0.9606 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

- Huang M T, etal. Inhibitory Effect of Curcumin, Chlorogenic Acid, Caffeic Acid, and Ferulic Acid on Tumor Promotion in Mouse Skin by 12-O-Tetradecanoylphorbol-13-acetate[J]. Cancer Research, 1988, 48(21):5941-5946.
- Sudheer A R, etal. Influence of ferulic acid on nicotine-induced lipid peroxidation, DNA damage and inflammation in experimental rats as compared to N-acetylcysteine[J]. Toxicology, 2008, 243(3):317.
- Garrido J, etal. Alkyl esters of hydroxycinnamic acids with improved antioxidant activity and lipophilicity protect PC12 cells against oxidative stress.[J]. Biochimie, 2012, 94(4):961-967.

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