Ferulic acid sodium

Cat. No.: HY-N0060A

CAS No.: 24276-84-4

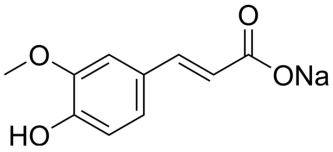
Molecular Formula: $C_{10}H_9NaO_4$

Molecular Weight: 216.17

Target: Reactive Oxygen Species; FGFR; Endogenous Metabolite

Pathway: Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB; Protein Tyrosine Kinase/RTK

Storage: 4°C, sealed storage, away from moisture
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

H_2O : 100 mg/mL (462.60 mM; Need ultrasonic)
DMSO : 33.33 mg/mL (154.18 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	4.6260 mL	23.1299 mL	46.2599 mL
	5 mM	0.9252 mL	4.6260 mL	9.2520 mL
	10 mM	0.4626 mL	2.3130 mL	4.6260 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 33.33 mg/mL (154.18 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 (11.56 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (11.56 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Ferulic acid sodium is a novel fibroblast growth factor receptor 1 (FGFR1) inhibitor with IC_{50}s of 3.78 and 12.5 μM for FGFR1 and FGFR2, respectively.

IC_{50} & Target

IC50: 3.78 μM (FGFR1), 12.5 μM (FGFR2)[1].

In Vitro

Ferulic acid (FA) is a novel fibroblast growth factor receptor 1 (FGFR1) inhibitor with IC_{50}s of 3.78 and 12.5 μM for FGFR1 and FGFR2, respectively. Ferulic acid exhibits great inhibitory activity on FGFR1 with an inhibitory rate of 92% at 1 μM. The

	proliferation of HUVEC stimulated by FGF1 is markedly decreased after Ferulic acid treatment ranging from 5 to 40 μM for 24 h. Ferulic acid does not exert significant cell viability up to 20 μM, but over 30 μM Ferulic acid exhibits a cytotoxic effect in HUVEC compare to the control. Ferulic acid inhibits FGF1-induced HUVEC migration and invasion in a dose-dependent manner. Ferulic acid markedly suppresses the FGF1-induced phosphorylation of PI3K and Akt. Ferulic acid treatments significantly inhibit MMP-2 and MMP-9 expression stimulated by FGF1[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Treatment with Ferulic acid (FA) potently inhibits FGF1-induced neovascularization. It is found that intragastric administration of Ferulic acid markedly inhibits tumor volume and tumor weight, as compare to the counterparts treated with DMSO. Furthermore, Ferulic acid treatment is well tolerated, and there is no significant difference in weight between the vehicle group and the FA-treated groups[1]. Ferulic acid (0.01, 0.1, 1 or 10 mg/kg) given by oral route decreases significantly the immobility time in the forced swimming test (FST) and tail suspension test (TST), whereas produces no effect in the open-field test. Results demonstrate that the administration of Ferulic acid (0.001 mg/kg, p.o.) boosts the antidepressant-like effect of fluoxetine (5 mg/kg, p.o.) in the TST[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	HUVEC (5×10^4 cells/well) are plated onto a gelatinized 24-well culture plate and cultured in ECGS containing 15% FBS. HUVEC are treated with DMSO (0.1%) or different concentrations of Ferulic acid (FA) (0, 2.5, 5, 10, 20, 30, 40 μM) for 24 h. Cell viability is determined by the MTT assay. After 4 h of incubation, the absorbance is measured at 450 nm with a microplate reader. The results are calculated from six replicates of each experiment. Three independent experiments are performed[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [2]	Male Swiss mice (30 to 40 g) are maintained at 21 to 23°C with free access to water and food, under a 12:12 h light/dark cycle (lights on at 07:00 h). All manipulations are carried out between, 9:00 and 16:00 h, with each animal used only once. In order to investigate the antidepressant-like effect of Ferulic acid, Ferulic acid is administered at a dose range of 0.001 to 10 mg/kg, by oral route (p.o.) 60 min before the forced swimming test (FST), tail suspension test (TST) or open-field test. The control animals receive appropriate vehicle[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Food Chem. 2022: 134807.
- Neurotherapeutics. 2023 Apr 20.
- CNS Neurosci Ther. 2023 May 8.
- Pharmaceuticals. 2022, 15(2), 179.
- Appl Bionics Biomech. 31 Jul 2022.

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REFERENCES

[1]. Yang GW, et al. Ferulic Acid Exerts Anti-Angiogenic and Anti-Tumor Activity by Targeting Fibroblast Growth Factor Receptor 1-Mediated Angiogenesis. Int J Mol Sci. 2015 Oct 12;16(10):24011-31.

[2]. Zeni AL, et al. Ferulic acid exerts antidepressant-like effect in the tail suspension test in mice: evidence for the involvement of the serotonergic system. Eur J Pharmacol.

2012 Mar 15;679(1-3):68-74.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com
Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA