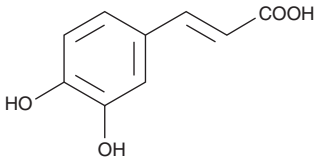
PRODUCT INFORMATION

Caffeic Acid

Item No. 70602

CAS Registry No.: 331-39-5
Formal Name: 3-(3,4-dihydroxyphenyl)-2-propenoic acid
Synonym: 3,4-Dihydroxycinnamic Acid
MF: $C_9H_8O_4$
FW: 180.2
Purity: ≥97%
Supplied as: A crystalline solid
Storage: Room temperature
Stability: ≥4 years
Item Origin: Synthetic



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Caffeic acid is supplied as a crystalline solid. A stock solution may be made by dissolving the caffeic acid in the solvent of choice, which should be purged with an inert gas. Caffeic acid is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of caffeic acid in ethanol is approximately 25 mg/ml and approximately 5 mg/ml in DMSO and DMF.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of caffeic acid can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of caffeic acid in PBS (pH 7.2) is approximately 0.5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Caffeic acid is a polyphenol that has been found in *E. alatus* and has diverse biological activities.[1-4] It is an inhibitor of lysine demethylase 6A (KDM6A) and KDM4C (IC_{50}s = 5.5 and 13.7 µM, respectively).[1] Caffeic acid also inhibits 12-lipoxygenase (12-LO) and 5-LO (IC_{50}s = 5.1 and 72 µM, respectively) and matrix metalloproteinase-9 (MMP-9) and MMP-2 (IC_{50}s = 8 and 12 µM, respectively).[2-4] It inhibits increases in migration and invasion induced by phorbol 12-myristate 13-acetate (PMA; Item No. 10008014) in HepG2 hepatocellular carcinoma cells when used at a concentration of 100 µg/ml.[4] Caffeic acid (5 mg/kg three times per week) decreases tumor growth and the number of liver metastases in a HepG2 mouse xenograft model.

References

1. Nielsen, A.L., Kristensen, L.H., Stephansen, K.B., *et al.* Identification of catechols as histone-lysine demethylase inhibitors. *FEBS Lett.* **586(8)**, 1190-1194 (2012).
2. Kohyama, N., Nagata, T., Fujimoto, S., *et al.* Inhibition of arachidonate lipoxygenase activities by 2-(3,4-dihydroxyphenyl)ethanol, a phenolic compound from Olives. *Biosci. Biotech. Biochem.* **61(2),** 347-350 (1997).
3. Koshihara, Y., Neichi, T., Murota, S.I., *et al.* Caffeic acid is a selective inhibitor for leukotriene biosynthesis. *Biochim. Biophys. Acta* **792(1)**, 92-97 (1984).
4. Chung, T.-W., Moon, S.-K., Chang, Y.-C., *et al.* Novel and therapeutic effect of caffeic acid and caffeic acid phenyl ester on hepatocarcinoma cells: Complete regression of hepatoma growth and metastasis by dual mechanism. *FASEB J.* **18(14)**, 1670-1681 (2004).

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