Product Data Sheet

Product Name: Tetrahydrocurcumin (HZIV 81-2)
Cat. No.: GC33833

Chemical Properties

Cas. No.	36062-04-1		
SMILES	O=C(CC(CCC1=CC=C(O)C(OC)=C1)=O)CCC2=CC=C(O)C(OC)=C2		
Formula	$C_{21}H_{24}O_6$	M.Wt	372.41
Solubility	DMSO : ≥ 3.8 mg/mL (10.20 mM)	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure			

Protocol

Cell experiment:

Sup-T1 cells are cultured in RPMI 1640 supplemented with 10% FBS and 1% Penicillin/Streptomycin at 37°C and 5% CO22. 2×105 cells/mL are seeded in each well and Tetrahydrocurcumin, Curcumin and Calebin-A, at 0.1, 0.5, 1.0, 5.0, 10.0, 50.0 and 100.0 μM dissolved in DMSO, are added to their respective wells and incubated for 24, 48 and 72 h. The MTS reagent is added and incubated for 4 h. Absorbance is recorded at 490 nm in Synergy HT multi-well plate reader and Gen5 data analysis software[1].

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Animal experiment:

Rats[1]Surgically-modified, exposed jugular vein-catheterized, adult male CD Sprague-Dawley rats (250–300 g) ared used. Each rat is placed in a separate metabolic cage and fasted for 12 h prior to dosing with free access to water. On the day of experiment, the animals (N=3) receive a single dose of Tetrahydrocurcumin by oral gavage (500 mg/kg) in a volume not exceeding 1 mL. Animals have free access to water pre- and post-dosing, and food is provided 2 hours post-dosing. A series of blood samples (0.3 mL) are collected at 0, 15 and 30 min, and 1, 2, 4, 6, 12, 24, 48 and 72 h post-dose. At 72 h after administration, the animals are euthanized and exsanguinated. Immediately after each blood collection time point (except the terminal point), the cannula is flushed with 0.3 mL of 0.9% saline to replenish the collected blood volume. The dead volume of the cannula is replaced with sterile heparin/50% dextrose catheter lock solution to maintain the patency of the cannula as advised in the technical sheet supplied with the animals from Charles River. Following centrifugation of blood samples at 15,000 rpm for 5 min, serum is collected and placed into 2 mL tubes at -20°C until further analysis. Urine samples are collected at 0, 2, 6, 12, 24, 48 and 72 h post-dose and placed in 15 mL tubes. The exact urine volume of each sample is recorded then stored at -20°C until further analysis[1].

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References:

[1]. Novaes JT, et al. Disposition, Metabolism and Histone Deacetylase and Acetyltransferase Inhibition Activity of Tetrahydrocurcumin and Other Curcuminoids. Pharmaceutics. 2017 Oct 12;9(4). pii: E45.

Background

Tetrahydrocurcumin is a metabolite of curcumin that has diverse biological activities, including antioxidant, anti-inflammatory, anti-angiogenic, and anticancer properties.[1,2,3,4] It scavenges 2,2-diphenyl-1-picrylhydrazyl radicals in a cell-free assay with an EC_{50} value of 16.8 μM.[1] Tetrahydrocurcumin (50 ?M) inhibits LPS-induced increases in inducible nitric oxide synthase (iNOS) and COX-2 expression in RAW 264.7 cells.[2] It also inhibits LPS-induced increases in TNF-α release when used at a concentration of 100 ?M and increases in nitric oxide (NO) production and IL-6 levels in a concentration-dependent manner. Tetrahydrocurcumin reduces carrageenan-induced paw edema in rats (ED_{50} = 20 mg/kg).[3] It also reduces the formation of neocapillaries and decreases microvascular density as well as VEGF, VEGF receptor 2 (VEGFR2), and hypoxia-inducible factor-1α (HIF-1α) expression in a CaSki cervical cancer nude mouse xenograft model when administered at doses of 100, 300, and 500 mg/kg.[4]

1.Manjunatha, J.R., Bettadaiah, B.K., Negi, P.S., et al.Synthesis of quinoline derivatives of tetrahydrocurcumin and zingerone and evaluation of their antioxidant and antibacterial attributesFood Chem.136(2)650-658(2013) 2.Zhao, F., Gong, Y., Hu, Y., et al.Curcumin

and its major metabolites inhibit the inflammatory response induced by lipopolysaccharide: Translocation of nuclear factor-κB as potential targetMol. Med. Rep.11(4)3087-3093(2015) 3.Mukhopadhyay, A., Basu, N., Ghatak, N., et al.Anti-inflammatory and irritant activities of curcumin analogues in ratsAgents Actions12508-515(1982) 4.Yoysungnoen, B., Bhattarakosol, P., Patumraj, S., et al.Effects of tetrahydrocurcumin on hypoxia-inducible factor-1α and vascular endothelial growth factor expression in cervical cancer cell-induced angiogenesis in nude miceBiomed. Res. Int.2015:391748(2015)

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