Tetrahydrocurcumin

Cat. No.: HY-N0893

CAS No.: 36062-04-1

Molecular Formula: $C_{21}H_{24}O_6$

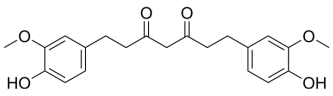
Molecular Weight: 372.41

Target: Cytochrome P450; Autophagy; Endogenous Metabolite

Pathway: Metabolic Enzyme/Protease; Autophagy

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (268.52 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.6852 mL	13.4261 mL	26.8521 mL
	5 mM	0.5370 mL	2.6852 mL	5.3704 mL
	10 mM	0.2685 mL	1.3426 mL	2.6852 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (6.71 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (6.71 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Tetrahydrocurcumin is a Curcuminoid found in turmeric (Curcuma longa) that is produced by the reduction of Curcumin. Tetrahydrocurcumin inhibit CYP2C9 and CYP3A4.

IC_{50} & Target			
	CYP2C9	CYP3A4	Autophagy

In Vitro

Tetrahydrocurcumin (THC) has a number of attractive properties not shared with Curcumin that may make it superior. Tetrahydrocurcumin inhibited lipoxygenase as low as 1 μM. Tetrahydrocurcumin is tested for its ability to inhibit CYP2C9, CYP3A4, CYP1A2 and CYP2D6. Tetrahydrocurcumin yields dose-dependent inhibition of CYP2C9, and to a lesser extent, CYP3A4. Tetrahydrocurcumin exhibits maximum inhibition of CYP2C9 and CYP3A4 at 50 to 100 μM. Tetrahydrocurcumin does not show a consistent dose-response inhibition of CYP1A2 or CYP2D6 over the range of concentrations tested. In some cases,

	the percent inhibition exceeds 100%. The effect of Tetrahydrocurcumin on cancer cell viability is measured. Sup-T1 cells, T-cell lymphoblastic lymphoma cells, are treated with Tetrahydrocurcumin to determine its ability to induce growth inhibition using an MTS assay, and the corresponding IC50 values are in the mid-to-high micromolar range[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	The serum Tetrahydrocurcumin (THC) concentration versus time curve shows that more than one absorption and distribution phase is present. Initially, a rapid absorption phase with an average Tmax of 6.8 μg/mL at 1 h is observed, followed by a short elimination phase. This is followed by two redistributions with two smaller Tetrahydrocurcumin maxima at 6 and 24 h. Both redistribution phases has similar maxima of about 1 μg/mL. The total amount of Tetrahydrocurcumin excrets unchanged in urine was up to 8 μg at 24 h[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	Sup-T1 cells are cultured in RPMI 1640 supplemented with 10% FBS and 1% Penicillin/Streptomycin at 37°C and 5% $CO_2$2. 2×10^5 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]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [1]	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]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Rev Psiquiatr Clin. 2023 Sep 13, 50(6).

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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.

Caution: Product has not been fully validated for medical applications. For research use only.

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