# Kaempferide

**Cat. No.:** HY-15449

**CAS No.:** 491-54-3

**Molecular Formula:** $C_{16}H_{12}O_6$

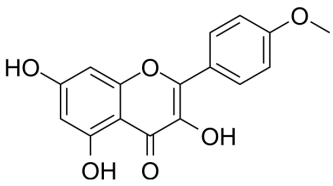
**Molecular Weight:** 300.26

**Target:** Estrogen Receptor/ERR; Autophagy; Bacterial; Influenza Virus; Apoptosis; PI3K; Akt; GSK-3; FOXO; β-catenin

**Pathway:** Vitamin D Related/Nuclear Receptor; Autophagy; Anti-infection; Apoptosis; PI3K/Akt/mTOR; Stem Cell/Wnt; Metabolic Enzyme/Protease

**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 : 20 mg/mL (66.61 mM; Need ultrasonic)

| Preparing Stock Solutions | Solvent / Mass / Concentration | 1 mg | 5 mg | 10 mg |
|---|---|---|---|---|
| | 1 mM | 3.3304 mL | 16.6522 mL | 33.3045 mL |
| | 5 mM | 0.6661 mL | 3.3304 mL | 6.6609 mL |
| | 10 mM | 0.3330 mL | 1.6652 mL | 3.3304 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 mg/mL (6.66 mM); Suspended solution; Need ultrasonic

## BIOLOGICAL ACTIVITY

**Description**

Kaempferide is an orally active flavonol isolated from Hippophae rhamnoides L. Kaempferide has anticancer, anti-inflammatory, antioxidant, antidiabetic, antiobesity, antihypertensive, and neuroprotective activities. Kaempferide induces apoptosis. Kaempferide promotes osteogenesis through antioxidants and can be used in osteoporosis research[1][2][3][4][5][6].

**In Vitro**

Kaempferid is toxic in HCC cell lines (HepG2:$IC_{50}$ = 27.94 μM; Huh7: $IC_{50}$ = 25.65 μM; N1S1: $IC_{50}$ = 15.18 μM)[1].
Kaempferid (5, 20 μM; 48 h) reduces lipid accumulation and oxidative stress in HepG2 cells induced by oral acid (OA) (0.5 mM) (HY-N1446)[2].
Kaempferide promotes osteogenesis through the FoxO1/β-catenin signaling pathway [3].Kaempferide (10-15 μM; 24 h) is toxic in HeLa cells with an $IC_{50}$ of 16 μM and can induce apoptosis[6].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[2]

| | |
|---|---|
| Cell Line: | HepG2 |
| Concentration: | 5 μM, 10 μM, 20 μM . Before treatment with OA (HY-N1446) (0.5 mM; 48 h) |
| Incubation Time: | 48 h |
| Result: | Lowered the expression of proteins related to fat production, including sterol regulatory element-binding protein 1 (SREBP1), fatty acid synthase (FAS), and stearoyl-CoA desaturase 1 (SCD-1).<br>Reduced the expression of two adipogenic transcription factors, peroxisome proliferator-activated receptor gamma (PPARγ) and CCAAT enhancer-binding protein β (C/EBPβ).<br>Enhanced the expression of heme oxygenase-1 (HO-1) and nuclear factor erythroid 2-related factor 2 (Nrf2). |

**In Vivo**

Kaempferid (25 mg/kg; IV; three times a week) has anticancer activity in SD (Sprague Dawley) rats[1].Kaempferide (10 mg/kg; supplemented in daily diet, once daily for16 weeks) ameliorates oxidative stress and inflammation in obese C57BL/6J mice by inhibiting the TLR4/i-κBα/NF-κB pathway and can alleviate Obesity and glucose and lipid metabolism disorders[4]. Kaempferide (0.1-0.3 mg/kg; injection, single dose) alleviates myocardial ischemia/reperfusion injury by activating PI3K/Akt/GSK-3β pathway in Sprague Dawley (I/R)-induced rats[5].

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| | |
|---|---|
| Animal Model: | High-fat diet male C57BL/6J mice model[4] |
| Dosage: | 10 mg/kg |
| Administration: | Supplemented in daily diet, once daily for16 weeks |
| Result: | Reduced the weight, organ weight, and index of mice.<br>Lowered the levels of glycolipids in mouse serum.<br>Decreased the expression levels of inflammatory-related genes, including NF-κB, IL-6, ICAM-1, VCAM-1, and TNF-α. |

| | |
|---|---|
| Animal Model: | Ischemia/Reperfusion (I/R) SD rat model[5]. |
| Dosage: | 0.1 mg/kg, 0.3 mg/kg, 3 mg/kg |
| Administration: | Injection, Single dose. Before the I/R injury induced by Coronary Artery Ligation (CAL) in SD rats. |
| Result: | Significantly improved heart function, reduced myocardial injury by reducing myocardial enzyme levels, and dose-dependently reduced the area of myocardial infarction in rats.<br>Significantly decreased serum levels of TNF-α, IL-6, C-reactive protein (CRP), MDA, and ROS, while increasing serum levels of SOD.<br>Downregulated the expression levels of nuclear factor erythroid 2-related factor 2 (Nrf2) and cleaved caspase-3, and upregulated the phosphorylation expression levels of phospho-Akt (p-Akt) and phospho-glycogen synthase kinase-3β (p-GSK-3β). |

## CUSTOMER VALIDATION

- Acta Pharm Sin B. 2021 Jan;11(1):143-155.
- Evid-Based Compl Alt. 26 Aug 2021.

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## REFERENCES


[1]. Chandrababu G, et al. Kaempferide exhibits an anticancer effect against hepatocellular carcinoma in vitro and in vivo[J]. Naunyn-Schmiedeberg's Archives of Pharmacology, 2023: 1-7.

[2]. Tie F, et al. Kaempferol and kaempferide attenuate oleic acid-induced lipid accumulation and oxidative stress in HepG2 cells[J]. International Journal of Molecular Sciences, 2021, 22(16): 8847.

[3]. Ma X, et al. Kaempferide enhances antioxidant capacity to promote osteogenesis through FoxO1/β-catenin signaling pathway[J]. European Journal of Pharmacology, 2021, 911: 174555.

[4]. Tang H, et al. Kaempferide improves oxidative stress and inflammation by inhibiting the TLR4/IκBα/NF-κB pathway in obese mice[J]. Iranian Journal of Basic Medical Sciences, 2021, 24(4): 493.

[5]. Wang D, et al. Kaempferide Protects against Myocardial Ischemia/Reperfusion Injury through Activation of the PI3K/Akt/GSK-3β Pathway. Mediators Inflamm. 2017;2017:5278218.

[6]. Nath L R, et al. Kaempferide, the most active among the four flavonoids isolated and characterized from Chromolaena odorata, induces apoptosis in cervical cancer cells while being pharmacologically safe[J]. RSC advances, 2015, 5(122): 100912-100922.



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



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