4-Methylbenzylidene camphor

Cat. No.: HY-17587

CAS No.: 36861-47-9

Molecular Formula: $C_{18}H_{22}O$

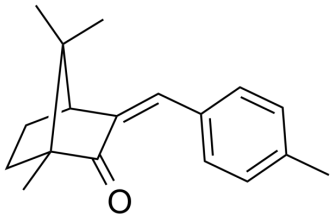
Molecular Weight: 254.37

Target: Apoptosis; PI3K; Akt; ERK

Pathway: Apoptosis; PI3K/Akt/mTOR; MAPK/ERK Pathway; Stem Cell/Wnt

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 (393.13 mM; Need ultrasonic)

H_2O : < 0.1 mg/mL (insoluble)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	3.9313 mL	19.6564 mL	39.3128 mL
	5 mM	0.7863 mL	3.9313 mL	7.8626 mL
	10 mM	0.3931 mL	1.9656 mL	3.9313 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 (9.83 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.5 mg/mL (9.83 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (9.83 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

4-Methylbenzylidene camphor (4-MBC) is an endocrine disrupter that produces estrogen-like effects. 4-Methylbenzylidene camphor decreases the proliferation of human trophoblast cells and induces apoptosis. 4-Methylbenzylidene camphor activates PI3K/AKT and ERK1/2 signaling pathways and elevates intracellular ROS production. 4-Methylbenzylidene camphor is a ultraviolet (UV) filter and may hamper normal placental formation during early pregnancy[1][2].

IC_{50} & Target	PI3K	Akt	ERK1	ERK2

In Vitro

4-Methylbenzylidene camphor (4-MBC; 5-400 μM; for 48 h) inhibits proliferation of HTR8/SVneo cell[1].
4-Methylbenzylidene camphor (10-50 μM; for 48 h) induces apoptotic cell death of human trophoblast cells[1].
4-Methylbenzylidene camphor (5-50 μM; for 48 h) increased the proportion of cells in the SubG1 phase[1].
4-Methylbenzylidene camphor (50 μM; for 48 h) reduces invasion of human trophoblast cells[1].
4-Methylbenzylidene camphor (50 μM; 5-120 min) activates PI3K/AKT and ERK1/2 signaling pathways in human trophoblast cells[1].
4-Methylbenzylidene camphor (20-50 μM; 24 h) significantly increases the expression of SEMA6 A, GPR56, ITGB4, EPHB4, NRP1[1].

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

Cell Proliferation Assay[1]

Cell Line:	HTR8/SVneo cells
Concentration:	0, 5, 10, 20, 50, 100, 200, and 400 μM
Incubation Time:	48 h
Result:	Dose-dependently inhibited cell proliferation of HTR8/SVneo cell.

Apoptosis Analysis[1]

Cell Line:	HTR8/SVneo cells
Concentration:	10, 20, 50 μM
Incubation Time:	48 h
Result:	Early and late apoptotic cells was significantly increased at 20 μM and 50 μM.

Cell Cycle Analysis[1]

Cell Line:	HTR8/SVneo cells
Concentration:	5, 10, 20, 50 μM
Incubation Time:	48 h
Result:	Gradually increased the proportion of cells in the SubG1 phase.

Cell Invasion Assay[1]

Cell Line:	HTR8/SVneo cells
Concentration:	50 μM
Incubation Time:	48 h
Result:	Revealed a significant reduction of 81.5% in invasiveness

Western Blot Analysis[1]

Cell Line:	HTR8/SVneo cells
Concentration:	50 μM
Incubation Time:	0, 5, 15, 30, 60, 120 min
Result:	The phosphorylation of AKT and its downstream kinase protein, P70S6K, peaked at 5 and 15 min, respectively, subsequently decreased after 30 min, and then reactivated at 120

	min

RT-PCR[1]

Cell Line:	HTR8/SVneo cells
Concentration:	20, 50 μM
Incubation Time:	24 h
Result:	Significantly increased the expression of semaphorin 6 A (SEMA6 A), GPR56, integrin subunit beta 4 (ITGB4), EPHB4, neuropilin 1 (NRP1).

In Vivo

4-Methylbenzylidene camphor (4-MBC; 0.7, 7, 24, 47 mg/kg/day; administered in chow to the parent generation before mating, during pregnancy and lactation, and to the offspring until adulthood) causes exhibited enhanced prostate growth and altered uterine gene expression in Neonates[2].

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

CUSTOMER VALIDATION

- Reprod Toxicol. 2019 Mar;84:49-58.

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REFERENCES

[1]. Changwon Yang, et al. 4-Methylbenzylidene-camphor inhibits proliferation and induces reactive oxygen species-mediated apoptosis of human trophoblast cells. Reprod Toxicol. 2019 Mar:84:49-58.

[2]. Margret Schlumpf, et al. Developmental toxicity of UV filters and environmental exposure: a review. Int J Androl. 2008 Apr;31(2):144-51.

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