Avobenzone

Cat. No.: HY-B0316

CAS No.: 70356-09-1

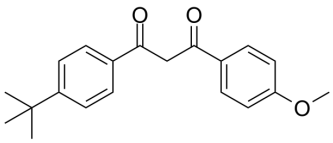
Molecular Formula: $C_{20}H_{22}O_3$

Molecular Weight: 310.39

Target: Estrogen Receptor/ERR; Apoptosis

Pathway: Vitamin D Related/Nuclear Receptor; Apoptosis

Storage: 4°C, protect from light, stored under nitrogen
* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light, stored under nitrogen)



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 50 mg/mL (161.09 mM)
H_2O : < 0.1 mg/mL (insoluble)
* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.2218 mL	16.1088 mL	32.2175 mL
5 mM	0.6444 mL	3.2218 mL	6.4435 mL
10 mM	0.3222 mL	1.6109 mL	3.2218 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.5 mg/mL (8.05 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (8.05 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Avobenzone, a dibenzoylmethane compound, is one of the most widely used filters in sunscreens for skin photoprotection in the UVA band. Avobenzone is an endocrine disruptor that directly binds to estrogen receptor β and acts as an estrogen agonist[1][2].

In Vitro

Avobenzone (EC_{50}=14.1 μM) significantly promots adipogenesis in hBM-MSCs as its positive control obesogenic chemicals.
Avobenzone (10 μM) significantly up-regulates mRNA levels of PPARγ during adipogenesis in hBM-MSCs[2].
Avobenzone (1-50 μM; 48 hours) inhibits proliferative activities of human trophoblast cells[3].
Avobenzone (1-50 μM; 48 hours) induces apoptosis in HTR8/SVneo cells[3].
Avobenzone only shows weak ERa agonism and weak AR antagonism[4].

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

Apoptosis Analysis[3]

Cell Line:	HTR8/SVneo cells
Concentration:	1-50 μM
Incubation Time:	48 hours
Result:	Inhibited proliferative activities of HTR8/SVneo cells.

REFERENCES

[1]. Kojić M, et al. A new insight into the photochemistry of avobenzone in gas phase and acetonitrile from ab initio calculations. Phys Chem Chem Phys. 2016;18(32):22168-22178.

[2]. Ahn S, An S, et al. A long-wave UVA filter avobenzone induces obesogenic phenotypes in normal human epidermal keratinocytes and mesenchymal stem cells. Arch Toxicol. 2019;93(7):1903-1915.

[3]. Yang C, et al. Avobenzone suppresses proliferative activity of human trophoblast cells and induces apoptosis mediated by mitochondrial disruption. Reprod Toxicol. 2018;81:50-57.

[4]. Schreurs RH, et al. Interaction of polycyclic musks and UV filters with the estrogen receptor (ER), androgen receptor (AR), and progesterone receptor (PR) in reporter gene bioassays. Toxicol Sci. 2005;83(2):264-272.

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