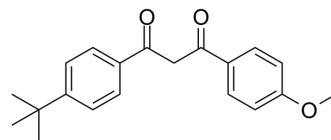


## Avobenzone

|                           |  |
|---------------------------|--|
| <b>Cat. No.:</b>          | HY-B0316   |
| <b>CAS No.:</b>           | 70356-09-1   |
| <b>Molecular Formula:</b> | C <sub>20</sub> H <sub>22</sub> O <sub>3</sub>   |
| <b>Molecular Weight:</b>  | 310.39   |
| <b>Target:</b>            | Estrogen Receptor/ERR; Apoptosis   |
| <b>Pathway:</b>           | Vitamin D Related/Nuclear Receptor; Apoptosis  |
| <b>Storage:</b>           | 4°C, protect from light, stored under nitrogen<br>* 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<sub>2</sub>O : < 0.1 mg/mL (insoluble)  
 \* "≥" means soluble, but saturation unknown.

|                              | Solvent<br>Concentration | Mass      |            |            |
|------------------------------|--------------------------|-----------|------------|------------|
|                              |                          | 1 mg      | 5 mg       | 10 mg      |
| Preparing<br>Stock Solutions | 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

- 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
- 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<sup>[1][2]</sup>.

#### In Vitro

Avobenzone (EC<sub>50</sub>=14.1 μM) significantly promotes 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<sup>[2]</sup>. Avobenzone (1-50 μM; 48 hours) inhibits proliferative activities of human trophoblast cells<sup>[3]</sup>. Avobenzone (1-50 μM; 48 hours) induces apoptosis in HTR8/SVneo cells<sup>[3]</sup>. Avobenzone only shows weak ERα agonism and weak AR antagonism<sup>[4]</sup>.

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

#### Apoptosis Analysis<sup>[3]</sup>

|                  |   |
|------------------|---|
| Cell Line:       | HTR8/SVneo cells  |
| Concentration:   | 1-50 $\mu$ M  |
| 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.

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

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