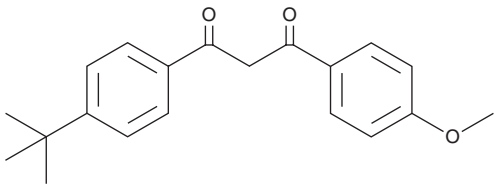
PRODUCT INFORMATION

Avobenzone

Item No. 23836

CAS Registry No.:	70356-09-1
Formal Name:	1-[4-(1,1-dimethylethyl)phenyl]-3-(4-methoxyphenyl)-1,3-propanedione
Synonyms:	BMDBM, Butyl Methoxydibenzoylmethane
MF:	$C_{20}H_{22}O_3$
FW:	310.4
Purity:	≥98%
UV/Vis.:	λ_{max}: 363 nm
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Avobenzone is supplied as a crystalline solid. A stock solution may be made by dissolving the avobenzone in the solvent of choice, which should be purged with an inert gas. Avobenzone is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of avobenzone is approximately 5 mg/ml in ethanol and approximately 30 mg/ml in DMSO and DMF.

Avobenzone is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, avobenzone should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. Avobenzone has a solubility of approximately 0.33 mg/ml in a 1:2 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

Avobenzone is a full-spectrum ultraviolet A (UVA) blocker.[1] It inhibits UVA-induced increases in melanin levels and tyrosinase activity in B16/F10 melanoma cells (IC_{30}s = 21.94 and 24.25 µM, respectively).[2] Avobenzone (30 µM) also inhibits UVA-induced production of reactive oxygen species (ROS) and 8-hydroxy-2'-deoxyguanosine (8-OH-dG; Item No. 89320), as well as inhibits UVA-induced depletion of glutathione (GSH; Item No. 10007461), in B16/F10 cells. It increases nuclear translocation of nuclear factor erythroid 2-related factor 2 (Nrf2) and upregulates the antioxidant response element (ARE) in UVA-irradiated B16/F10 cells when used at at a concentration of 30 µM. Formulations containing avobenzone have been used as a sun protectant in sunscreen products.

References

1. Beasley, D.G. and Meyer, T.A. Characterization of the UVA protection provided by avobenzone, zinc oxide, and titanium dioxide in broad-spectrum sunscreen products. *Am. J. Clin. Dermatol.* **11(6)**, 413-421 (2010).
2. Chaiprasongsuk, A., Onkoksoon, T., Pluemsamran, T., *et al.* Photoprotection by dietary phenolics against melanogenesis induced by UVA through Nrf2-dependent antioxidant responses. *Redox Biol.* **8,** 79-90 (2016).

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