

Product Data Sheet

Product Name: Diethylamino hydroxybenzoyl hexyl benzoate (DHHB)

Cat. No.: GC30590

Chemical Properties

Cas. No. 302776-68-7

SMILES O=C(OCCCCC)C1=CC=CC=C1C(C2=CC=C(N(CC)CC)C=C2O)=O

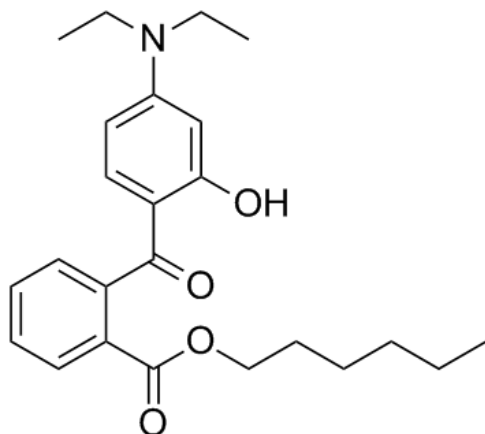
Formula $C_{24}H_{31}NO_4$ M.Wt 397.51

Solubility DMSO : ≥ 50 mg/mL (125.78 mM) Storage Store at -20°C , protect from light

General tips For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

Cell lines 3T3 Balb/c fibroblasts (mouse fibroblast cell line)

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

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Preparation Method Fibroblasts were grown in two 96-well plates and preincubated with eight different concentrations of the combinations under study (C2: containing Diethylamino hydroxybenzoyl hexyl benzoate, octocrylene and octyl methoxycinnamate). After 1h incubation, one plate was subjected to 5J/cm² of UVA radiation (+UV plate) and the other was kept in a dark box (-UV plate). Cell viability was assessed by determining the uptake of neutral red dye.

Reaction Conditions 62.5µg/mL; 1h preincubation

Applications Combinations containing Diethylamino hydroxybenzoyl hexyl benzoate did not show a phototoxic potential in the 3T3 Neutral Red Uptake Phototoxicity Test.

References:

[1] Kawakami CM, Máximo LN, Fontanezi BB, et al. Diethylamino hydroxybenzoyl hexyl benzoate (DHHB) as additive to the UV filter avobenzone in cosmetic sunscreen formulations - Evaluation of the photochemical behavior and photostabilizing effect. Eur J Pharm Sci. 2017 Mar 1;99:299-309.

Background

Diethylamino hydroxybenzoyl hexyl benzoate (DHHB) is a substituted benzophenone-type organic UV filter. Diethylamino hydroxybenzoyl hexyl benzoate absorbs UVA radiation in the 320–400nm wavelength range through its conjugated aromatic structure and converts the absorbed light energy into heat, thereby protecting the skin from photodamage. Diethylamino hydroxybenzoyl hexyl benzoate can be used in sunscreens, day creams, and other cosmetic products to provide broad-spectrum UVA protection and is applied in anti-photoaging skincare products^[1-4].

In vitro, 3T3 Balb/c fibroblasts were pre-treated for 1 hour with a combination containing Diethylamino hydroxybenzoyl hexyl benzoate (62.5µg/mL), octocrylene (75µg/mL), and octyl methoxycinnamate (100µg/mL), followed by UVA radiation (5J/cm²). The combination containing Diethylamino

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hydroxybenzoyl hexyl benzoate did not show phototoxic potential^[5]. *S. cerevisiae* Ogg1 mutant strain (CD138) was pre-treated with Diethylamino hydroxybenzoyl hexyl benzoate (100µg/mL) for 6 hours, followed by stimulation with solar simulated light (SSL) (2.5–10kJ/m²). Diethylamino hydroxybenzoyl hexyl benzoate increased cell survival and protected yeast cells from the toxic effects of solar simulator radiation^[6].

References:

- [1] Fagervold SK, Rohée C, Lebaron P. Marine sediments microbes degrade a limited repertoire of organic UV filters. *Environ Sci Pollut Res Int*. 2025 Jul;32(33):19823-19835.
- [2] Sobańska AW, Sobański AM, Brzezińska E. Organic Sunscreens-Biological Activity from an Enzymatic Perspective. *Molecules*. 2026 May 14;31(10):1656.
- [3] Shamoto Y, Yagi M, Oguchi-Fujiyama N, et al. Photophysical properties of hexyl diethylaminohydroxybenzoylbenzoate (Uvinul A Plus), a UV-A absorber. *Photochem Photobiol Sci*. 2017 Sep 13;16(9):1449-1457.
- [4] Ichikawa M, Shimokawa N, Makuta M, et al. Cytotoxicity, genotoxicity, and enzyme activity effects of UV filters and their chlorinated by-products in human lung epithelial cells (A549). *Sci Total Environ*. 2025 Sep 24;1002:180516.
- [5] Kibwila DM, Simon A, de Abreu LCL, et al. New alternatives in photoprotection: Preparation and evaluation of lamellar silicate derivatives and their use as sunscreens. *Int J Cosmet Sci*. 2026 Feb;48(1):172-185.
- [6] Murai M, Sakurada J, Seki K, et al. Apoptosis observed in BALB/3T3 cells having ingested *Staphylococcus aureus*. *Microbiol Immunol*. 1999;43(7):653-61.

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