

Product Data Sheet

Product Name: BODIPY dye

Cat. No.: GC80403

Chemical Properties

Cas. No. 945921-51-7

Formula $C_{20}H_{19}BF_2N_2O_2$

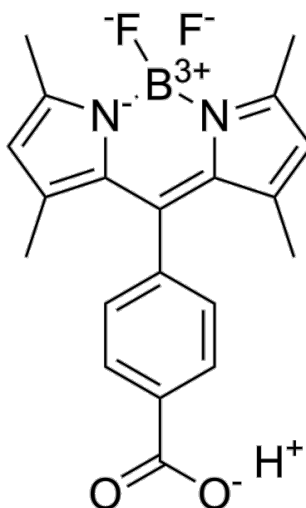
M.Wt 368.18

Solubility Storage Store at 4°C, stored under nitrogen

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



Background

BODIPY dyes are a class of small-molecule fluorophores with strong ultraviolet absorption and sharp fluorescence emission peaks. BODIPY dyes can non-specifically label erythrocyte membranes, fail to inhibit the proliferation of *Plasmodium falciparum*, exhibit weak cytotoxicity against Chinese hamster ovary cells, and have extremely low hemolytic activity. BODIPY dyes serve as a universal scaffold for fluorescent compounds such as laser dyes and fluorescent probes, and can also be used to construct photoelectric and biophotonic molecular assembly units. BODIPY dyes are applicable to research related to live-cell imaging, fluorescent labeling of proteins and DNA, and various biological imaging assays [1] [2] [3].

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

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In Vitro, BODIPY dye improves its fluorescence efficiency through selective α -position chlorination of 8-methylphenyl-BODIPY and electron-withdrawing group functionalization on boron center^[2]. BODIPY dye achieves bathochromic spectral shift toward far-red region and reaches maximum fluorescence quantum yield of 65 via extended conjugation with electron-withdrawing aryl substituents^[2]. BODIPY dyes can be functionalized with meso-pyrene or 4-phenylphenol moieties respectively, enabling reversible fluorescent sensing of solvent polarity or environmental pH via ICT or PET processes^[2]. BODIPY dyes induce chiral optical activities, including circular dichroism and circularly polarized luminescence. After forming helical bis-BODIPY via covalent linkage or combining with chiral binaphthol/vapal moieties, vapal-BODIPY acts as a highly efficient FRET-based antenna system^[2]. BODIPY dye bearing iodine substituents generates high-content singlet oxygen under light irradiation^[2]. BODIPY dye (5 μ M; 15 min) non-specifically stains both *Plasmodium falciparum* strain W2-infected and uninfected human red blood cells^[3]. BODIPY dye (100 nM; 24 h) does not alter the morphology of *Plasmodium falciparum* strain 3D7 in infected human red blood cells^[3]. BODIPY dye exhibits no anti-plasmodial activity against *Plasmodium falciparum* strains W2 and HB3, shows moderate toxicity to CHO-K1 cells with an IC₅₀ of 88 μ M, and does not induce hemolysis in healthy human red blood cells even at concentrations as high as 100 μ M^[3].

References:

- [1]. Loudet A, et al. BODIPY Dyes and Their Derivatives: Syntheses and Spectroscopic Properties. Chemical Reviews. 2007;107(11):4891-4932.
- [2]. Bañuelos J, et al. BODIPY Dye, the Most Versatile Fluorophore Ever?. Chemical record (New York, N.Y.). 2016 Feb;16(1):335-48.
- [3]. Rice DR, et al. Antiplasmodial activity of targeted zinc(II)-dipicolylamine complexes. Bioorganic & medicinal chemistry. 2017 May 15;25(10):2754-2760.

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