

Product Data Sheet

Product Name: DiSC3(5)

Cat. No.: GC52109

Chemical Properties

Cas. No. 53213-94-8

SMILES CCCN1C(SC2=C1C=CC=C2)=CC=CC=CC3=[N+](CCC)C(C=CC=C4)=C4S3.[I-]

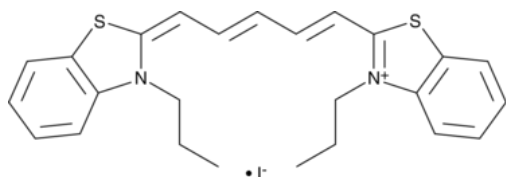
Formula $C_{25}H_{27}IN_2S_2$ M.Wt 546.53

Solubility DMSO : 5.83 mg/mL (10.67 mM; ultrasonic and warming and heat to 60°C) Storage 4°C, sealed storage, away from moisture and 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

1. Preparation of DiSC3(5) Membrane Staining Solution:

1.1 Preparation of DMSO or EtOH Stock Solution: The stock solution should be prepared at a concentration of 1-5 mM in DMSO or EtOH.

Note 1): Unused portions of the stock solution should be stored at -20°C. Avoid repeated freeze-thaw cycles.

1.2 Preparation of Working Solution: Dilute the stock solution in a suitable buffer, such as serum-free culture medium, HBSS, or PBS, to prepare a working solution of 1 to 5 µM.

Note 2): The concentration of the working solution should be determined empirically for different cell types and/or experimental conditions. Testing a range of concentrations, at least tenfold, is recommended.

2. Staining Cells in Suspension:

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

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- 2.1 Suspend cells at a density of $1 \times 10^6/\text{mL}$ in the dye working solution.
- 2.2 Incubate at 37°C for 2-20 minutes. Incubation time depends on the cell type. Start with a 20-minute incubation and then optimize as needed to obtain uniform labeling.
- 2.3 Centrifuge the labeled suspension tube at 1000 to 1500 rpm for 5 minutes.
- 2.4 Remove the supernatant and gently resuspend the cells in pre-warmed (37°C) growth medium.
- 2.5 Wash twice following steps 2.3 and 2.4.
3. Staining Adherent Cells:
 - 3.1 Culture adherent cells on sterile glass coverslips.
 - 3.2 Remove the coverslip from the growth medium and gently drain off excess medium. Place the coverslip in a humidified chamber.
 - 3.3 Pipette 100 μL of the dye working solution onto the corner of the coverslip and gently swirl until all cells are covered.
 - 3.4 Incubate the coverslip at 37°C for 2-20 minutes. Incubation time varies depending on the cell type. Start with a 20-minute incubation and then optimize as needed to obtain uniform labeling.
 - 3.5 Drain off the dye working solution and wash the coverslip two to three times with growth medium. For each washing cycle, cover the cells with pre-warmed growth medium, incubate for 5-10 minutes, and then remove the medium.
4. Microscopic examination.
5. Flow cytometry analysis:

DiS-labeled cells can be analyzed using the standard FL3 flow cytometry detection channel.

Background

DiSC3(5) is a fluorescent probe commonly used as a tracer dye to evaluate mitochondrial membrane potential. The excitation/emission wavelength of DiSC3(5) is up to 622/670 nm. DiSC3(5) can inhibit the respiratory system associated with mitochondrial NAD, and the IC_{50} value is 8 μM . DiSC3(5) in the presence of Na^+/K^+ -ATPase inhibitor ouabain 2 can induce membrane hyperpolarization of Ehrlich ascites tumor cells^{[1][2][3]}.

References:

- [1]. Yamamoto T, et al. Multiple effects of DiS-C3(5) on mitochondrial structure and function. Eur J Biochem. 2004;271(17):3573-3579.
- [2]. Sims PJ, et al. Studies on the mechanism by which cyanine dyes measure membrane potential in red blood cells and phosphatidylcholine vesicles. Biochemistry. 1974 Jul 30;13(16):3315-30.
- [3]. Smith TC, et al. The effect of the fluorescent probe, 3,3'-dipropylthiodicarbocyanine iodide, on the

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