DiI

Cat. No.: HY-D0083

CAS No.: 41085-99-8

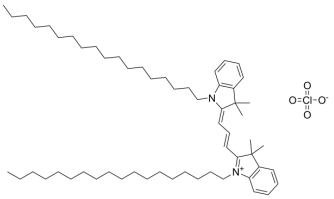
Molecular Formula: $C_{59}H_{97}ClN_2O_4$

Molecular Weight: 933.87

Target: Fluorescent Dye

Pathway: Others

Storage: 4°C, sealed storage, away from moisture and light
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 12.5 mg/mL (13.39 mM; ultrasonic and warming and heat to 80°C)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	1.0708 mL	5.3541 mL	10.7081 mL
	5 mM	0.2142 mL	1.0708 mL	2.1416 mL
	10 mM	0.1071 mL	0.5354 mL	1.0708 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: 1.25 mg/mL (1.34 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 1.25 mg/mL (1.34 mM); Suspended solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

DiI is a long-chain carbocyanine dye. Carbocyanine dyes are widely used as Di to label cells, organelles, liposomes, viruses and lipoproteins[2].

In Vitro

Carbocyanine dyes are widely used as Di to label cells, organelles, liposomes, viruses and lipoproteins. Long-chain carbocyanines which include DiO (DiOC18(3)), DiI (DiIC18(3)), DiD (DiIC18(5)) and DiR, and dialkyl aminostyryl dye DiA (4-Di-16-ASP) are used for labeling membranes and other hydrophobic structures. DiIC16(3) has shorter alkyl substituents (C16) than DiI (C18). They have extremely high extinction coefficients, environmental dependent fluorescence and short excited-state lifetimes in lipid environments. They are oils at room temperature and weakly fluorescent in water but highly fluorescent and quite photostable when incorporated into membranes or bound to lipophilic biomolecules. These optical characteristics make them ideal for staining the cytoplasmic membranes of cells. Once applied to cells, these dyes diffuse laterally within the plasma membrane, resulting in staining of the entire cell[1].

	DiO, DiI, DiD and DiR exhibit distinct green, orange, red and infrared fluorescence, respectively thus facilitating multicolor imaging and flow cytometric analysis of live cells . DiO and DiI can be used with standard FITC and TRITC filters respectively. Among them DiI and its analogs are most frequently used since they usually exhibit very low cell toxicity. In addition, DiI is widely used for determining lipoproteins such as LDL and HDL. The lipophilic aminostyryl dye DiA is also often used for neuronal tracing[2]. General Protocol 1. Preparing Stain Solutions of Di a. Prepare DMF, DMSO or ethanol stock solutions: The stock solutions should be prepared in dimethyl formamide (DMF), dimethylsulfoxide (DMSO, or ethanol DMSO at 1-5 mM. DMF is preferable to ethanol as a solvent for Di. The stock solution should be used promptly. Any unused solution need to be aliquoted and refrozen at least -20℃. Avoid repeated freeze/thaw cycle. The solution can be stored for 6 months. b. Prepare working solutions: Dilute the stock solutions into a suitable buffer such as serum-free culture medium, HBSS or PBS to make 1 to 5 μM working solutions. We do not recommend storing the aqueous solution for more than one day. Note: The final concentration of the working solution should be empirically determined for different cell types and/or experimental conditions. 2. Suspension cells a. Centrifuge at 1000 g at 4℃ for 3-5 minutes and then discard the supernatant. Wash twice with PBS, 5 minutes each time.The cell density is 1×10^6/mL. b. Add 1 mL of Di working solution, and then incubate at room temperature for 5-30 minutes. c. Centrifuge at 400 g at 4℃ for 3-4 minutes and then discard the supernatant. d. Wash twice with PBS, 5 minutes each time. e. Resuspend cells with serum-free cell culture medium or PBS.Observation by fluorescence microscopy or flow cytometry. 3. Adherent cells a. Culture adherent cells on sterile coverslips. b. Remove the coverslip from the medium and aspirate excess medium. c. Add 100 μL of working solution, gently shake it to completely cover the cells, and then incubate at room temperature for 5-30 minutes. d. Wash twice with medium, 5 minutes each time. Observation by fluorescence microscopy or flow cytometry. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	DiI-labeled motoneurons have remained viable for up to 4 weeks in culture and up to one year in vivo[1] MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Cancer Cell. 2024 Feb 23:S1535-6108(24)00046-1.
- Adv Funct Mater. 2024 May 9.
- Chem Eng J. 2024 Feb 16, 149761.
- J Immunother Cancer. 2022 Mar;10(3):e003950.
- J Immunother Cancer. 2020 Aug;8(2):e000330.

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REFERENCES

[1]. Gan WB, et al. Multicolor "DiOlistic" labeling of the nervous system using lipophilic dye combinations. Neuron. 2000 Aug;27(2):219-25.

[2]. D P Kuffler, et al. Long-term survival and sprouting in culture by motoneurons isolated from the spinal cord of adult frogs. J Comp Neurol. 1990 Dec 22;302(4):729-38.

[3]. D P Kuffler, et al. Long-term survival and sprouting in culture by motoneurons isolated from the spinal cord of adult frogs. J Comp Neurol. 1990 Dec 22;302(4):729-38.

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

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