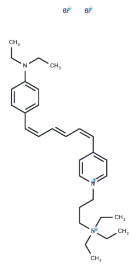
Data Sheet (Cat.No.T23409)

TargetMol

FM4-64

Chemical Properties



CAS No. : 162112-35-8

Formula: C30H45Br2N3

Molecular Weight: 607.51

Storage: Keep away from moisture,Keep away from direct sunlight
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	FM4-64 (SynaptoRed™ C2) is a styrene-based dye exhibiting membrane-binding and endocytosis tracing properties, yet it remains largely non-fluorescent in aqueous solutions. After binding to the plasma membrane bilayer, FM4-64 cannot passively diffuse into the cell interior and must undergo active transport across the membrane. FM4-64 can be used to study endocytosis, exocytosis, vesicular transport, and cell membrane dynamics.
Targets(IC50)	Others
In vitro	**Methods**: One-week-old Arabidopsis (wild-type) root tips (5 mm) were cultured ex vivo in 1/2 MS medium supplemented with 3% sucrose, E-64d (100 μM), and FM4-64 (10 μM). After 3 hours of E-64d pretreatment, FM4-64 staining for 30 minutes, followed by washing and continued cultivation in E-64d-containing medium for 18 hours. FM4-64 fluorescence localization was observed using confocal laser scanning microscopy. **Results**: In the non-E-64d group after 18 hours, FM4-64 fluorescence was primarily localized to the vacuolar membrane. In the E-64d-treated group, FM4-64 fluorescence predominantly localized to punctate structures (autolysosomes) within the cytoplasm, with weak fluorescence at the vacuolar membrane, indicating convergence of the autophagy and endocytosis pathways at the site of autolysosome formation. [1]
Cell Research	Instructions for use I. Solution preparation 1. Stock solution: Dissolve FM4-64 in DMSO or sterile water to prepare a high concentration stock solution (usually 1-5 mM). 2. Working solution: Dilute the stock solution to the working concentration (usually 1-10 μM) according to the experimental needs, using an appropriate buffer (such as PBS or serum-free medium). Notes: 1) FM4-64 is a membrane-affinity dye, but it cannot penetrate into cells, so it is suitable for labeling cell membranes or vesicle membranes. 2) The dye will degrade under light, so try to avoid light during operation. II. Operation steps 1. Cell experiment 1) Cell preparation: Culture cells to an appropriate density. Wash cells with serum-free

Cell Research	medium or PBS before staining to remove residual substances. Staining steps: 2) Add the working solution directly to the cell culture medium and mix gently. 3) Incubate at an appropriate temperature (e.g., 37°C) for 5-30 minutes, which needs to be optimized based on the experiment. 4) Washing: Wash the cells multiple times with an appropriate buffer (e.g., PBS) to remove unbound dye. Optionally, use cold PBS to terminate staining and reduce background signal. 5) Imaging: Observe the sample using a fluorescence microscope. Excitation wavelength: ~515-540 nm. Emission wavelength: ~640-700 nm (red fluorescence signal). 2. Tissue experiments 1) Tissue preparation: Fix and permeabilize tissue sections (if necessary) to enhance dye penetration. 2) Staining steps: Add working solution to tissue sections and incubate for 10-30 minutes. 3) Washing: Wash tissue sections with PBS to remove excess dye. 4) Imaging: Also observe the red fluorescence signal using a fluorescence microscope. The above information is based on published literature. Experimental procedures should be appropriately modified to meet specific research demands.

Solubility Information

Solubility	DMSO: 30 mg/mL (49.38 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween-80+45% Saline: 1 mg/mL (1.65 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	1.6461 mL	8.2303 mL	16.4606 mL
5 mM	0.3292 mL	1.6461 mL	3.2921 mL
10 mM	0.1646 mL	0.823 mL	1.6461 mL
50 mM	0.0329 mL	0.1646 mL	0.3292 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Oh-ye Y, et al. Detecting autophagy in Arabidopsis roots by membrane-permeable cysteine protease inhibitor E-64d and endocytosis tracer FM4-64. Plant Signal Behav. 2011 Dec;6(12):1946-9.

Li KH, et al. Ototoxicity among cisplatin, carboplatin, and oxaliplatin in zebrafish model. Environ Toxicol. 2024 Jul;39(7):4058-4065.

Mahapatra PP, Ahmed S. Fission yeast Bsd1 is required for ER stress response in Ire1 independent manner. Mol Biol Rep. 2024 Nov 27;52(1):19.

Bolte S, et al, Satiat-Jeunemaitre B. FM-dyes as experimental probes for dissecting vesicle trafficking in living plant cells. J Microsc. 2004;214(Pt 2):159-173.