

Product Data Sheet

Product Name: Mito-Tracker Deep Red FM

Cat. No.: GC20139

Chemical Properties

Cas. No. 873315-86-7

Formula $C_{34}H_{36}Cl_2N_2$ M.Wt 543.57

Solubility DMSO : 125 mg/mL (229.96 mM; Storage Store at -20°C, protect from light
Need ultrasonic)

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

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

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Use protocol:

Preparation of Stock Solution:

Prepare a 1 mM Mito-Tracker Deep Red FM solution using DMSO. Dissolve 50 µg of Mito-Tracker Deep Red FM in 92 µL of DMSO. Divide the stock solution into small aliquots and store in the dark at -20°C or -80°C.

Preparation of Working Solution:

Dilute the 1mM stock solution with growth medium or an appropriate buffer to the working concentration. The working solution should be prepared fresh before use. The commonly used working concentration range is 25-500nM; however, to avoid false positives, the concentration should not be too high. If cells require fixation and permeabilization for subsequent staining, it is advisable to increase the concentration used.

Cell staining using Mito-Tracker Deep Red FM:

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Staining Protocol for Adherent Cells:

1. Plate cells onto a cell culture dish, add medium, and allow cells to adhere.
2. When cells reach appropriate density, remove the medium, and add a suitable amount of probe (Mito-Tracker Deep Red FM)-containing medium preheated to 37°C. Incubate for 15 to 45 minutes.
3. Replace the staining solution with fresh medium and observe fluorescence under a fluorescence microscope or measure fluorescence using a fluorescence plate reader.

Suspension Cell Staining Protocol

1. Centrifuge to pellet cells and remove the supernatant.
2. Resuspend cells in probe (Mito-Tracker Deep Red FM)-containing medium preheated to 37°C, and incubate for 15 to 45 minutes.
3. Centrifuge again, remove the staining solution, and resuspend cells in fresh medium.
4. Depending on experimental requirements, analyze using Fluoroskan, or fluorescence microscope.

Fixation and Permeabilization After Staining

1. After staining, wash cells with fresh preheated buffer or growth medium.
2. Carefully aspirate the buffer or medium covering the cells, and fix them using fresh buffer or medium containing 2-4% paraformaldehyde.
3. After fixation, wash the cells several times with buffer.
4. If permeabilization is needed, use a buffer containing a surfactant such as Triton X-100 to permeabilize the cells. Once permeabilization is complete, wash the cells with buffer and proceed with the subsequent steps (e.g: incubate endothelial cells with PBS buffer containing 0.2% Triton X-100 for 10 minutes).

Background

Mito-Tracker Deep Red FM is a red fluorescent dye with an excitation/emission wavelength of 644/665 nm. With its ability to accumulate in the mitochondrial matrix, MitoTracker Deep Red FM is an ideal option for mitochondrial staining and localization in live cell studies [1-2].

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Mito-Tracker Deep Red FM(0-1000nM) inhibits mammosphere formation in MCF7, MDA-MB-231, and MDA-MB-468 cells^[3]. Mitochondrial activity is essential for sperm function. Mito-Tracker Deep Red FM can be used to evaluate mitochondrial membrane potential (MMP) in cryopreserved alpaca sperm ^[4-5]. Mitochondrial activity of bone marrow mesenchymal stem cells BMSC was analyzed by Mito-Tracker Deep Red FM(200nM; 30min), and BMSC of old mice had lower mitochondrial membrane potential ^[6]. In HT22 cells, the Mito-Tracker Deep Red FM(500nM; 30min) can be used to visualize mitochondrial morphology ^[7].

References:

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- [3]. Sargiacomo C, Stonehouse S, et.al. MitoTracker Deep Red (MTDR) Is a Metabolic Inhibitor for Targeting Mitochondria and Eradicating Cancer Stem Cells (CSCs), With Anti-Tumor and Anti-Metastatic Activity In Vivo. Front Oncol. 2021 Jul 30;11:678343. doi: 10.3389/fonc.2021.678343. PMID: 34395247; PMCID: PMC8361836.
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