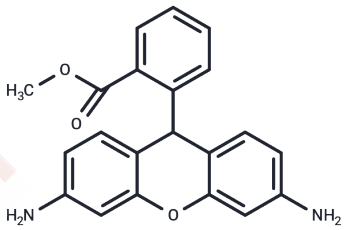
Data Sheet (Cat.No.T18977)

TargetMol

Dihydrorhodamine 123

Chemical Properties



CAS No. : 109244-58-8

Formula: C21H18N2O3

Molecular Weight: 346.38

Appearance: no data available

Storage: keep away from direct sunlight,store at low temperature,keep away from moisture
Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Biological Description

Description	Dihydrorhodamine 123 (DHR 123) is a fluorescent probe with excitation (λex=488 nm) and emission (λem=525 nm) wavelengths.
Targets(IC50)	Others
In vitro	In the presence of 10 μM Dihydrorhodamine 123 (DHR 123), the stimulation of neutrophil NADPH oxidase with 50 nM phorbol 12-myristate 13-acetate (PMA) increases the rate of rhodamine generation. Similarly, induced HL60 cells exhibit a sustained fluorescence increase after the addition of 50 nM PMA in the presence of 10 μM DHR 123.
Cell Research	I. Detection of Reactive Oxygen Species (ROS) 1. Solution preparation: Dissolve DHR 123 in an appropriate solvent (such as DMSO or PBS) at a concentration of typically 1-10 μM. 2. Cell staining: Add DHR 123 solution to cultured cells and incubate at 37°C for typically 30-60 min. 3. Oxidation process: ROS produced in cells oxidize DHR 123, converting it into fluorescent products. 4. Fluorescence measurement: After staining, measure the fluorescence of the oxidation products using a fluorescence spectrophotometer or fluorescence microscope with an excitation wavelength of 488 nm and an emission wavelength of 525 nm. 5. Analysis: Analyze ROS levels in cells by fluorescence intensity. Experiments can be performed in real time or at fixed time points. II. Assessment of mitochondrial function and membrane potential 1. Cell incubation: Incubate cells as described above. 2. Mitochondrial ROS detection: Oxidized DHR 123 will show a fluorescent signal under a fluorescence microscope, indicating the generation of mitochondrial ROS. 3. Fluorescence microscopy observation: Observe the fluorescent signal to see the distribution of ROS in specific areas of the cell (especially mitochondria). III. Flow cytometry for ROS quantitative analysis 1. Cell staining: Add DHR 123 solution to cells as described above. 2. Flow cytometric analysis: After incubation, wash the cells and perform fluorescence analysis using a flow cytometer. The fluorescence intensity is proportional to the ROS level in the sample, which can achieve quantitative analysis.

Solubility Information

Solubility	DMSO: 95 mg/mL (274.27 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.887 mL	14.435 mL	28.870 mL
5 mM	0.5774 mL	2.887 mL	5.774 mL
10 mM	0.2887 mL	1.4435 mL	2.887 mL
50 mM	0.0577 mL	0.2887 mL	0.5774 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.

Reference

Pioch J, Blomgran R. Optimized flow cytometry protocol for dihydrorhodamine 123-based detection of reactive oxygen species in leukocyte subpopulations in whole blood. J Immunol Methods. 2022 Aug;507:113308.
Zavvar M, et al. Dihydrorhodamine-123 flow cytometry method: time for substantial revision in technical procedure. Lab Med. 2024 Sep 8:lmae076.
Živančević K,et al. Zn0-Induced Cytotoxicity and Mitochondrial Stress in Microglia: Implications of the Protective Role of Immunoglobulin G In Vitro. Balkan Med J. 2024 Sep 6;41(5):348-356.