

Rhodamine 123

Cat: IR1800

Storage: Powder: 2-8°C, 2 years; Insolvent (mother liquid): -20°C, 6 months; -80°C, 1 year (protect from light)

Introduction

Rhodamine 123 is a cyto-staining reagent that stains mitochondria in living cells. Rhodamine 123 penetrates the cell membrane and accumulates in the mitochondria of living cells, emitting a yellowish-green fluorescence. Because Rhodamine 123 carries cations, it will accumulate to mitochondria when the membrane potential exists, and when the membrane potential declines, the accumulation of Rhodamine 123 will decrease, thus reducing the luminous intensity. Rhodamine 123 is widely used to detect mitochondrial membrane potential and is also commonly used for apoptosis detection. Because of the correlation between the amount of intracellular ATP and the fluorescence intensity of Rhodamine 123, this fluorescent dye is used to detect intracellular ATP.

Parameter

Ex/Em: 503/527 nm

CAS: 62669-70-9

Molecular Formula: C₂₁H₁₇ClN₂O₃

Molecular Weight: 380.82

Appearance: Red Solid

Solubility: Soluble in DMSO ≥ 1mg/mL

Protocols (*only for reference*)

Preparation of storage solution

A stock solution of 1 mg/mL was prepared with DMSO.

Note:

- Unused storage solution is recommended to be stored in portions at -20°C to avoid repeated freezing and thawing.
- Moisture-absorbing DMSO has a significant effect on the solubility of the product, use freshly opened DMSO.

Preparation of working fluid

Dilute the reservoir solution with a suitable buffer (e.g. serum-free medium or PBS, etc.) and prepare a working solution of 1 to 20 μM.

Note:

- The final concentration of the working solution is recommended to be optimized according to different cell lines and experimental systems.
- If it is found difficult to dissolve, it can be sonicated to promote dissolution.
- Please adjust the concentration of the working solution according to the actual situation, and use immediately after dissolution.

Fluorescence microscopic observation

- Prepare cells with slides. The recommended number of cells were 5×10^4 to 5×10^5 cells/mL. (Can be adjusted according to the experimental results)
- Cells were incubated on slides and washed with PBS.
- The Rhodamine 123 Working Solution was added to the slides and incubated at 37°C for 30

min to 1 h.

- 4) Remove the Rhodamine 123 solution and wash the cells with culture medium (after washing the cells if they are to be fixed, add 10% formalin buffer and incubate for 15-20 min, followed by washing with PBS).
- 5) Fluorescence microscope observation of cells.

Flow cytometric analysis

- 1) Cells in logarithmic growth phase were taken, inoculated into well plates and cultured overnight.
- 2) If drug stimulation is to be performed, intervene by adding the drug of interest to the cells, continue to incubate for a certain period of time, collect the cells, and wash them 2 times with PBS.
- 3) The cells were resuspended by adding Rhodamine 123 Working Solution and incubated at 37°C for 15 min or longer, protected from light.
- 4) Note: Due to the different cell types and experimental systems, the concentration of Rhodamine 123 working solution and incubation time can be adjusted according to the pre-experiment or references.
- 5) Detected by flow cytometry.

Note

1. All fluorescent dyes have quenching problems, please try to avoid light to slow down the fluorescence quenching.
2. For your safety and health, please wear lab coat and disposable gloves.
3. This product is for scientific research use only. Do not use in medicine, clinical diagnosis or treatment, food and cosmetics. Do not store in ordinary residential areas.

Related Literature

- [1]. Zhuo LB, Liu YM, Jiang Y, Yan Z. Zinc oxide nanoparticles induce acute lung injury via oxidative stress-mediated mitochondrial damage and NLRP3 inflammasome activation: In vitro and in vivo studies. *Environ Pollut.* 2024 Jan 15;341:122950. doi: 10.1016/j.envpol.2023.122950. Epub 2023 Nov 16. PMID: 37979646. (IF: 8.9)
- [2]. Yang Z, Cai Y, Mao S, Wu Q, Zhu M, Cao X, Wei B, Tian JM, Bao X, Ye X, Chen J, Wang S, Yu Y, Zhang H, Sun X, Cui ZN, Li YS, Wang H. Discovery of 2,5-disubstituted furan derivatives featuring a benzamide motif for overcoming P-glycoprotein mediated multidrug resistance in MCF-7/ADR cell. *Eur J Med Chem.* 2023 Sep 5;257:115462. doi: 10.1016/j.ejmech.2023.115462. Epub 2023 May 12. PMID: 37229830. (IF: 7.08)

Note: For more literature, please visit the Solarbio official website.