abcam

Product datasheet

JC-10 Mitochondrial Membrane Potential Assay Kit (Flow Cytometry) ab112133

4 References 1 Image

Overview

Product name	JC-10 Mitochondrial Membrane Potential Assay Kit (Flow Cytometry)
Detection method	Fluorescent
Sample type	Adherent cells, Suspension cells
Assay type	Direct
Assay time	0h 20m
Product overview	JC-10 Mitochondrial Membrane Potential Assay Kit ab112133 is designed for use with flow cytometry, and it provides the most robust assay method for monitoring changes in mitochondrial membrane potential. The assay is based on the detection of the mitochondrial membrane potential changes in cells by the cationic, lipophilic JC-10 dye. In normal cells, JC-10 concentrates in the mitochondrial matrix where it forms red fluorescent aggregates. However, in apoptotic and necrotic cells, JC-10 diffuses out of mitochondria, changes to a monomeric form and stains cells with green fluorescence. Although JC-1 is widely used in many labs, its poor water solubility causes great inconvenience. Even at 1 µM concentration, JC-1 tends to precipitate in aqueous buffer. Compared to JC-1, JC-10 has much better water solubility. JC-10 selectively enters mitochondria, and reversibly changes its color from green to orange-red as membrane potentials increase. This property is due to the reversible formation of JC-10 aggregates upon membrane polarization which cause a shifts in emitted light from 520 nm (the emission of JC-10 monomeric form) to 570 nm (the emission of JC-10-aggregate form). When excited at 490 nm, the color of JC-10 changes reversibly from green to greenish orange as the mitochondrial membrane becomes more polarized. In normal cells, JC-10 concentrates in the mitochondrial matrix where it forms red fluorescent aggregates. However, in apoptotic and necrotic cells, JC-10 exists in monomeric form and stains cells green. The green emission can be analyzed in fluorescence channel 1 (FL1) and greenish orange emission in channel 2 (FL2). Both colors can be detected using the filters commonly mounted in all flow cytometers. Besides its use in flow cytometry, it can also be used in fluorescence imaging and fluorescence microplate platform.

JC-10 assay protocol summary:
- add JC-10 staining solution to experimentally treated cells
- incubate cells for 15-60 min
- analyze wth flow cytometer

Notes

If you would like to use JC-10 on a microplate reader, we recommend JC-10 Mitochondrial Membrane Potential Assay Kit (Microplate) (ab112134).

Related assays

Review the cell health assay guide to learn about kits to perform a cell viability assay, cytotoxicity assay and cell proliferation assay.

Review the metabolism assay guide to learn about assays for metabolites, metabolic enzymes, mitochondrial function, and oxidative stress, and also about how to assay metabolic function in live cells using your plate reader.

Platform

Flow cytometer

Properties

Storage instructions

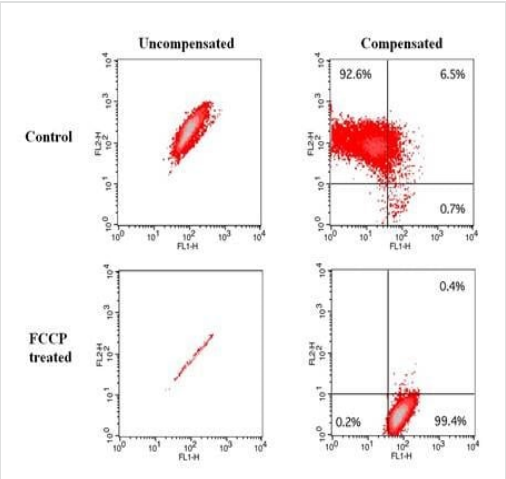
Store at -20°C. Please refer to protocols.

Components	100 tests
200X JC-10 in DMSO	1 x 250µl
Assay Buffer A	1 x 50ml

Relevance

Mitochondrial Membrane Potential is an important parameter of mitochondrial function used as an indicator of cell death. The collapse of the mitochondrial Membrane potential coincides with the opening of the mitochondrial permeability transition pores, leading to the release of cytochrome c into the cytosol, which in turn triggers other downstream events in the apoptotic cascade.

Images



Flow Cytometry - JC-10 Mitochondrial Membrane Potential Assay Kit (Flow Cytometry) (ab112133)

JC-10 Mitochondrial Membrane Potential Assay Kit (Flow Cytometry) (ab112133) was used to measure the effect of FCCP induced mitochondria membrane potential change in Jurkat cells by Flow Cytometry. Jurkat cells were dye loaded with JC-10 dye-loading solution along with DMSO (Top) or 5 µM FCCP (Low) for 10 minutes. The fluorescent intensities for both J-aggregates and monomeric forms of JC-10 were measured with a flow cytometer using FL1 and FL2 channels. Uncompensated data (left column) were compared with compensated data (right column).

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