Product Name: JC-1 (Mitochondrial Membrane Potential Probe)

Catalog No.: RA20022

Basic Information

Product name	JC-1 (Mitochondrial Membrane Potential Probe)
Size	5mg
Storage	4℃, away from light
Shipping	Shipped with ice pack
Validity	12 months
Ex/Em(Low Membrane Potential)	485/535nm
Ex/Em(High Membrane Potential)	550/600nm

Product Introduction

JC-1 is an ideal fluorescent probe widely used to detect mitochondrial membrane potential. It can be used to detect the mitochondrial membrane potential of cells, tissues or purified mitochondria. When the mitochondrial membrane potential is low, JC-1 cannot aggregate in the mitochondrial matrix. At this time, JC-1 is a monomer with a maximum emission wavelength of 527 nm, which can produce green fluorescence; when the mitochondrial membrane potential is high, JC-1 aggregates in the mitochondrial matrix to form polymers (J-aggregates) with a maximum emission wavelength of 590 nm, which can produce red fluorescence. In this way, it is very convenient to detect changes in mitochondrial membrane potential by changing the fluorescence color.

The decrease of mitochondrial membrane potential is a hallmark event in the early stages of apoptosis. The change of JC-1 from red fluorescence to green fluorescence can be easily detected, and the change of JC-1 from red fluorescence to green fluorescence can also be used as an indicator of early apoptosis.

Operation Steps

1.Prepare dye working solution: Dissolve JC-1 in anhydrous DMSO to prepare a stock solution of a certain concentration, and then dilute it to the commonly used working solution concentration (reference concentration range 1-20 μg/mL);

Note: When preparing JC-1 staining working solution, precipitation is easy to occur. Recommended method: Take a certain volume of stock solution, dilute it with diH_2O, and then add an appropriate volume of 10 × PBS to prepare the working solution. For example, if the stock solution concentration is 5mg/mL and the working solution concentration is 10 μg/mL, take 1 μL of the stock solution, add it to 450 μL of diH_2O, followed by 50 μL of 10× PBS.

2. Collect cells: discard the culture medium in the well plate and wash the cells twice with PBS;
3. Add a certain volume of staining solution of appropriate concentration to the well plate. Table 1 summarizes the staining schemes for several different cells.
4. Fluorescence microscopy observation.

Note

1. All fluorescent dyes have quenching problems. Please try to avoid light to slow down fluorescence quenching.
2. To avoid repeated freezing and thawing, this product can be divided into small quantities.
3. To prevent precipitation, it is not recommended to dilute the stock solution directly into the working solution with 1× PBS.
4. This product is For Research Use Only, Not for Diagnostic Use.

Table 1 JC-1 cell staining conditions

Method	Cell Type	Adherent/Dissociated	Incubation Conditions		
			Dye Concentration	Temperature	Time
Microscope	Neurons (rat)	Adherent	2.0 μg/mL	37°C	20-30 min
	Neurons (rat)	Adherent	1.0 μg/mL	37°C	20 min
	O-2A oligodendrocytes (rat)	Adherent	10 μg/mL	37°C	10 min
	PC12	Adherent	10 μg/mL	37°C	10 min
	Cardiac myocytes (rat)	Dissociated	10 μg/mL	37°C	10 min
Flow cytometer	Human fibroblasts	Dissociated	0.3 μg/mL	37°C	1 hour
	Colo-205	Dissociated	10 μg/mL	37°C	10 min
	U937	Dissociated	10 μg/mL	22°C	10 min