Data Sheet (Cat.No.C0176)

TargetMol

Mitochondrial Membrane Potential Detection Kit (Rhodamine 123)

Chemical Properties

CAS No. :

Formula:

Molecular Weight:

Storage: Keep away from direct sunlight
Store at -20°C
Actual storage temperature shall be subject to the COA.

Biological Description

Description	The Targeted Mol Mitochondrial Membrane Potential Detection Kit (Rhodamine 123) is a fluorescent probe specifically designed for rapid detection of dynamic changes in mitochondrial membrane potential (ΔΨm) using Rhodamine 123 as a fluorescent probe. Mitochondrial membrane potential (ΔΨm) refers to the potential difference on both sides of the inner membrane of mitochondria. Its formation and maintenance are crucial for mitochondrial energy metabolism, material transport, and cell survival, and are important indicators reflecting mitochondrial function. Rhodamine 123 is a positively charged lipid soluble fluorescent dye that can freely penetrate the cell membrane and enter the cytoplasm. It is in a free state in the cytoplasm and emits weak fluorescence. Under normal physiological conditions, mitochondria maintain an electrochemical gradient on both sides of the inner membrane through an electron transport chain (negative on the inner side and positive on the outer side). Rhodamine 123, which carries a positive charge, is driven by the electrochemical gradient to enter the mitochondrial matrix through the inner membrane pores and bind to proteins or lipids in the matrix, emitting bright green fluorescence (maximum excitation wavelength 507 nm, maximum emission wavelength 529 nm). When cell apoptosis, oxidative stress, or drug damage cause depolarization of mitochondrial membrane potential, the electrochemical gradient weakens, and dyes are released from mitochondria into the cytoplasm, resulting in a decrease in fluorescence intensity. By detecting changes in fluorescence intensity, the mitochondrial membrane potential state can be reflected, which can be used for detecting cell apoptosis. This reagent kit has a wide range of applications and is compatible with various sample types such as cells, tissues, and purified mitochondria. It can also be adapted to various detection instruments such as fluorescence microscopes, laser confocal microscopes, fluorescence spectrophotometers, and flow cytometers.