abcam

Product datasheet

MDR Assay Kit - flow cytometry (green) ab204534

1 References 3 Images

Overview

Product name	MDR Assay Kit - flow cytometry (green)
Detection method	Fluorescent
Sample type	Adherent cells, Suspension cells
Assay type	Cell-based (quantitative)
Assay time	1h 00m
Product overview	Abcam's MDR Assay Kit - flow cytometry (green) (ab204534) is designed for functional detection and profiling of multidrug resistant phenotypes in live cells (both suspension and adherent). The kit provides a fast, sensitive and quantitative method for monitoring the function and expression of the three clinically most important multidrug resistance proteins: MDR1 (P-glycoprotein), MRP1/2 and BCRP. The major component of the kit is an Efflux Green Detection Reagent, a substrate for three main ABC transporter proteins which serves as an indicator of these proteins' activity in the cell. The proprietary AM-ester form of the Efflux Green Detection Reagent is a hydrophobic non-fluorescent compound that readily penetrates the cell membrane and is subsequently hydrolyzed inside of the cells by intracellular esterases. Unless the Efflux Reagent is pumped out of the cell, the esterase cleaved dye is trapped inside the cell. The fluorescence signal of the dye generated within the cells thus depends upon the activity of the ABC transporters. The cells with highly active transporters will demonstrate lower fluorescence because of the active efflux of the reagent from the cell. Application of specific inhibitors of the various ABC transporter proteins, included in the kit, allows differentiation between the three common types of pumps. The activity of a particular MDR transporter is defined by the difference between the amount of the dye accumulated in the presence and in the absence of the inhibitors, respectively. The flow cytometry assay is based on determining fluorescence intensities of the tested cells after a short in vitro incubation of cell suspension with the Efflux Green Detection Reagent in the presence or absence of specific ABC transporter inhibitors. The results of the test can be quantified by calculating the MDR activity factor (MAF) values, which allow comparison of multidrug resistance between different samples or cell lines.
Notes	Multidrug resistance relates to resistance of tumor cells to a whole range of chemotherapy drugs with different structures and cellular targets. The phenomenon of multidrug resistance (MDR) is a well-known problem in oncology and thus needs profound consideration in cancer treatment. One of the underlying molecular rationales for MDR is the upregulation of a family of transmembrane ATP binding cassette (ABC) transporter proteins that present in practically all living organisms. These proteins cause chemotherapy resistance in cancer by actively extruding a wide variety of therapeutic compounds from the malignant cells. The same ABC transporters play an important

protective function against toxic compounds in a variety of cells and tissues and at blood-tissue barriers.

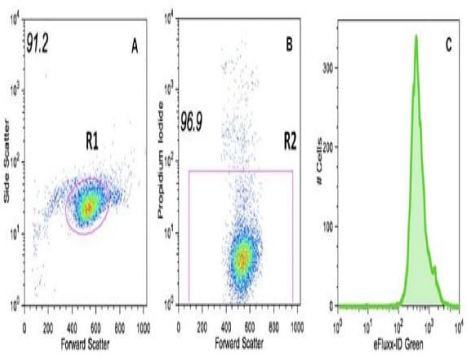
Platform Flow cytometer

Properties

Storage instructions Store at -80°C. Please refer to protocols.

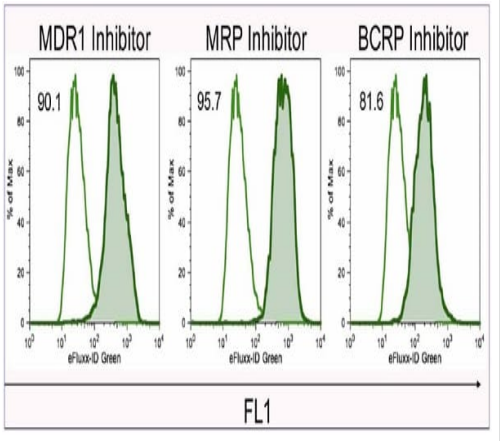
Components	100 tests
BCRP Inhibitor (Novobiocin)	1 x 1.5µmole
Efflux Green Detection Reagent	1 vial
MDR1 Inhibitor (Verapamil)	1 x 300nmole
MRP Inhibitor (MK-571)	1 x 750nmole
Propidium Iodide	1 x 500µl

Images



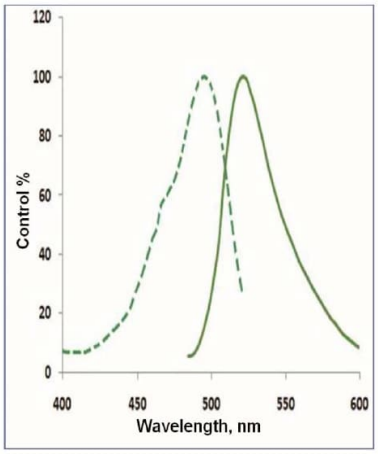
Flow cytometry measurements of the samples obtained using Abcam's MDR Assay Kit - flow cytometry (green) (ab204534).

Setting the parameters: Gate out the debris (Panel A), gate PI-negative events (Panel B), and set PMTs for the FL1 fluorescence channel (Panel C).



Typical results of the multidrug resistance assay obtained using Abcam's MDR Assay Kit - flow cytometry (green) (ab204534).

CHO K1 cells were incubated with Efflux Green Detection Reagent with and without specific inhibitors according to the kit protocol. Resulting fluorescence was measured using flow cytometry. Tinted histograms show fluorescence of inhibitor-treated samples and non-tinted histograms show fluorescence of untreated cells. The difference in fluorescence is indicative of a corresponding protein activity. The numbers in the upper left corners are MAF scores (multidrug resistance activity factors)— quantitative characteristics of multidrug resistance.



Spectral Characteristics of Efflux Green Detection Reagent.

The absorption and emission peaks of e-Fluxx-ID® Green detection dye are 490nm and 514nm, respectively. It can be well excited with an argon ion laser at 488nm and detected in the FL1 channel of most bench flow cytometers. Obtained using Abcam's MDR Assay Kit - flow cytometry (Fluorometric - green) (ab204534).

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