



Caspase-9 Staining Kit (Red)

Catalog Number KA0765

100 assays

Version: 02

Intended for research use only

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Introduction

Background

Activation of caspases plays a central role in apoptosis. The Caspase-9 Staining Kit (Red) provides a convenient means for detecting activated caspase-9 in living cells. The assay utilizes a caspase-9 inhibitor LEHD-FMK conjugated to sulforhodamine (Red-LEHD-FMK) as the fluorescent marker. Red-LEHD-FMK is cell permeable, nontoxic, and irreversibly binds to activated caspase-9 in apoptotic cells. The fluorescence label allows detection of activated caspase-9 in apoptotic cells by fluorescence microscopy, flow cytometry, or fluorescence plate reader.

General Information

Materials Supplied

List of component

Component	Amount
Red-LEHD-FMK	100 μ L
Wash Buffer	100 mL x 2
Z-VAD-FMK	10 μ L

Storage Instruction

Store kit at -20°C.

Assay Protocol

Assay Procedure

- Staining Procedure
 1. Induce apoptosis in cells (1×10^6 /mL) by desired method. Concurrently incubate a control culture without induction. An additional negative control can be prepared by adding the caspase inhibitor Z-VAD-FMK at 1 μ L/mL to an induced culture to inhibit caspase activation.
 2. Aliquot 300 μ L each of the induced and control cultures into eppendorf tubes.
 3. Add 1 μ L of Red-LEHD-FMK into each tube and incubate for 0.5-1 hour at 37°C incubator with 5% CO₂.
 4. Centrifuge cells at 3000 rpm for 5 minutes and remove supernatant.
 5. Resuspend cells in 0.5 mL of Wash Buffer, and centrifuge again.
 6. Repeat Step 5.
 7. Proceed to Quantification by Flow Cytometry, Detection by Fluorescence Microscopy and Analysis by Fluorescence Plate Reader depending on methods of analysis.
- Quantification by Flow Cytometry

For flow cytometric analysis, resuspend cells in 300 μ L of Wash buffer. Put samples on ice. Analyzing samples by flow cytometry using the FL-2 channel.
- Detection by Fluorescence Microscopy

For fluorescence microscopic analysis, resuspend cells in 100 μ L Wash Buffer. Put one drop of the cell suspension onto a microslide and cover with a coverslip. Observe cells under a fluorescence microscope using rhodamine filter. Caspase-9 positive cells appear to have brighter red signals, whereas caspase-9 negative control cells show much weaker signal.
- Analysis by Fluorescence Plate Reader

For analysis with fluorescence plate reader, resuspend cells in 100 μ L Wash Buffer and then transfer the cell suspension to each well of the black microtiter plate. Measure the fluorescence intensity at Ex/Em = 540/570 nm (*Note: Ex/Em = 488/570 nm will also work, although it's not an optimal wavelength*). For control, use wells containing unlabeled cells.

Resources

Trouble shooting

GENERAL TROUBLESHOOTING GUIDE:

Problems	Cause	Solution
High Background	<ul style="list-style-type: none"> Cell density is higher than recommended. Cells were not washed well with buffer after staining. Cells were incubated for extended period of time. Use of extremely confluent cells. Cells were contaminated. 	<ul style="list-style-type: none"> Refer to datasheet and use the suggested cell number. Use the wash buffer provided, and as instructed in the datasheet. Refer to datasheet for proper incubation time Perform assay when cells are at 70-95% confluency. Check for bacteria/yeast/mycoplasma contamination.
Lower signal levels	<ul style="list-style-type: none"> Cells did not initiate apoptosis. Very few cells were used for analysis. Incorrect setting of the equipment or wavelength used to read samples. Use of expired kit or improperly stored reagents 	<ul style="list-style-type: none"> Determine the optimal time and dose for apoptosis induction (time-course experiment) Refer to datasheet for appropriate cell number. Refer to datasheet and use the recommended filter setting. Always check the expiry date and store the components appropriately.
Erratic results	<ul style="list-style-type: none"> Old (unhealthy) cells used. Adherent cells were dislodged and washed away prior to assaying. Incorrect incubation times or temperatures. Incorrect volumes used, 	<ul style="list-style-type: none"> Seed healthy cells and make sure cells are healthy prior to induction of apoptosis. Collect all cells (both attached and dislodged) after induction for accurate results. Refer to datasheet & verify correct incubation times and temperatures. Use calibrated pipettes and aliquot correctly.
<i>Note: The most probable cause is listed under each section. Causes may overlap with other sections.</i>		