Product Information

Red Active Caspase Staining Kit

I. Kit Contents:

Component	K2052-25 25 assays	K2052-100 100 assays	Part Number
Red-VAD-FMK	25 µl	100 µl	K2052-C-1
Wash Buffer	50 ml	2 x 100 ml	K2052-C-2
Z-VAD-FMK	10 µl	10 µl	A1902

II. Introduction:

Caspases activation is curial in apoptosis. Red Caspase Staining Kit is an easy and sensitive way of detecting activated caspases in living cells. This assay uses the caspase family inhibitor, VAD-FMK, coupled to sulfo-rhodamine (Red-VAD-FMK) as a marker. In apoptotic cells, the cell permeable and nontoxic Red-VAD-FMK irreversibly binds to activated caspases.

III. Caspase Assay Protocol:

A. Staining Procedure:

1. Induce apoptosis in cells (1 x 10^6/ml) by desired method. Concurrently incubate a control culture without induction. An additional control can be prepared by adding the caspase family inhibitor Z-VAD-FMK at 1 µl/ml to an induced culture to inhibit caspase activation.
2. Aliquot 300 µl each of the induced and control cultures into eppendorf tubes.
3. Add 1 µl of Red-VAD-FMK into each tube and incubate for 0.5 - 1 hour at 37℃ incubator with 5% CO_2.
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.

Proceed to B, C, or D depending on methods of analysis.

B. Quantification by Flow Cytometry:

For flow cytometric analysis, resuspend cells in 300 µl of Wash buffer. Put samples on ice. Analyzing samples by flow cytometry using the FL-2 channel (Ex. 540 nm; Em. = 570 nm).

C. Detection by Fluorescence Microscopy:

For fluorescence microscopic analysis, resuspend cells in 100 µl 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 positive cells appear to have brighter red signals, whereas caspase negative control cells show much weaker signal.

Analysis by Fluorescence Plate Reader:

For analysis with fluorescence plate reader, resuspend cells in 100 µl 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.

General Troubleshooting Guide:

Problems	Cause	Solution
High Background	• Cell density is higher than recommended • Cells were not washed well with wash buffer after staining • Cells were Incubated for extended period of time • Use of extremely confluent cells • Contaminated cells	• Refer to data sheet and use the suggested cell number • Use the wash buffer provided, and as instructed in the datasheet • Refer to data sheets and incubate for exact times • Perform assay when cells are at 70-95% confluency • Check for bacteria/ yeast/ mycoplasma contamination
Lower signal levels	• Cells did not initiate apoptosis • Very few cells used for analysis • Incorrect setting of the equipment used to read samples • Use of expired kit or improperly stored reagents	• Determine the time-point for initiation of apoptosis after induction (time-course experiment) • Refer to data sheet for appropriate cell number • Refer to data sheet and use the recommended filter setting • Always check the expiry date and store the components appropriately
Erratic results	• Old (unhealthy) cells used • Adherent cells were dislodged and washed away prior to assaying • Incorrect incubation times or temperatures • Incorrect volumes used	• 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
Note: The most probable cause is listed under each section. Causes may overlap with other sections		

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