Signosis, Inc.
Innovative Plate Assay Solutions

Caspase-3/7 Assay Kit

Catalog # EA-7032 **(For Research Use Only)**

Introduction

Caspase-3 and caspase-7 are closely related executioner proteases that play a central role in apoptosis, the programmed cell death pathway essential for normal development and tissue homeostasis. Once activated by upstream initiator caspases, caspase-3/7 cleave a broad range of cellular substrates, leading to characteristic apoptotic changes such as DNA fragmentation, cytoskeletal breakdown, and membrane blebbing. Because their activation represents a point of no return in apoptosis, caspase-3/7 activity is widely used as a reliable biochemical marker for apoptotic cell death in biological and biomedical research. Signosis's Caspase-3/7 Assay Kit utilizes a fluorogenic substrate that can measure caspase-3/7 in different sample types including blood, cells, and tissue.

Principle

This assay utilizes a unique fluorogenic substrate that is specifically cleaved by caspase-3/7. Once cleaved, the substrate produces a luminescent signal which can be detected with a fluorescence plate reader.

Caspase-3/7: Ac-DEVD-AFC (Ex/Em: 400nm/505nm)

Materials Required but Not Provided

- PBS
- 96-well black microplate with clear bottom for fluorescence reading
- Microplate reader capable of measuring fluorescence

Materials Provided

- Caspase 3/7 Substrate (-80ºC)

****Spin down small tubes before starting experiment. ****

Plasma Sample Preparation

1. Centrifuge citrated or EDTA-collected blood at 4°C (1,000 x *g* for 10 minutes) to separate plasma from erythrocytes. Alternatively, blood collected without anticoagulant can be centrifuged to collect serum.
2. Transfer the plasma layer to a new tube without disturbing the buffy layer.
3. The plasma may be assayed directly or stored away at -80°C.

Cell Sample Preparation

1. Wash the cells once with PBS before lysing the cells.
2. For a 96-well culture plate, add 40 µL of lysis buffer to each well and incubate at room temperature for 10 minutes.
3. Pipette the lysis buffer up and down to detach the cells and transfer the cell lysates into a new tube.
4. If necessary, homogenize the cell lysates with a sonicator.
5. The cell lysates may be assayed directly or stored at -80°C.
6. Use PBS to dilute the cell sample to the appropriate concentration, if necessary.

Tissue Sample Preparation

1. Weigh tissue sample and add 1 mL of lysis buffer per 100mg of tissue.
2. Homogenize the tissue samples with a tissue grinder.
3. If necessary, further homogenize the tissue samples with a sonicator.
4. Centrifuge the sample at 10,000 RPM for 5 minutes to pellet the tissue debris.
5. Collect the supernatant and measure the protein concentration of the supernatant. The tissue sample can be assayed directly or stored at -80°C.
6. Use PBS to dilute the tissue sample to the appropriate concentration, if necessary.

Caspase 3/7 Measurement

1. Reaction mix preparation: calculate the amount of each reagent needed to make the reaction mix according to the table below.

Component	Reaction Mix (per well/sample)
Caspase 3/7 Substrate	5 µL
PBS	45 µL
Total	50 µL

2. Add 50 µL of reaction mix to each well of the plate.
3. Add 50 µL of sample to each well with reaction mix and mix thoroughly.
4. Cover the plate and incubate at 37°C for 1-2 hours.
5. Measure the fluorescence of the plate in a fluorescence plate reader at Ex/Em 400nm/505nm.