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ProductInformation

Monoclonal Anti-Caspase 3
Clone 84803.111
Purified Mouse Immunoglobulin

Product Number **C 5737**

Product Description

Monoclonal Anti-Caspase 3 is produced from a mouse hybridoma elicited from a mouse immunized with recombinant human caspase 3 (18 kDa subunit, amino acids 29-175). The IgG fraction from the ascites fluid was purified by Protein G affinity chromatography.

Monoclonal Anti-Caspase 3 detects recombinant human precursor caspase 3 and the 18 kDa form generated during apoptosis.

Apoptosis or programmed cell death (PCD), is an essential mechanism for controlling cell number during embryonic development (particularly in the central nervous system (CNS) and the immune system) in homeostasis through adult life and in cellular defense against tumorigenesis. Apoptosis can be triggered by a variety of cellular "death" stimuli including TNF, Fas ligand (FasL), and granzyme B. Among the many known effectors and regulators of apoptosis, the ICE-related, cysteine aspartic-specific proteases or caspases play a crucial role in apoptosis in almost every cell type.[1, 2] At least thirteen different caspases have been identified, which can be grouped into three different subfamilies based on their substrate specificities. Members of this family show significant homology to other known cysteine proteases, including the *C. elegans* cell death protein (Ced-3) and interleukin-1β-converting enzyme (ICE).

Caspase 3 (also termed CPP32, Yama, apopain) is one of the key executioners of apoptosis downstream in the apoptotic pathway, as it is activated in cells by various death signals.[3, 4] Caspase 3 is a cytosolic protein found in cells as an inactive 32 kDa proenzyme. It is activated by proteolytic cleavage into the 20 kDa (p20) and 11 kDa (p11) active subunits only when cells undergo apoptosis.[4] Many key proteins are cleaved by caspase 3 during apoptosis, including poly(ADP-ribose) polymerase (PARP), sterol-regulatory element-binding proteins (SREBPs), DNA-dependent protein kinase (DNA-PK), α-fodrin, gelsolin, PKCδ, and DFF45/ICAD.[2, 5-7]

In some neurodegenerative diseases, such as Huntington disease (HD) and Alzheimer's disease (AD), specific neuronal caspase substrates have been identified. In Huntington disease (HD), caspase 3 specifically cleaves the HD gene product, Huntingtin.[8] High levels of caspase 3 are found in lymphocytes, suggesting that caspase 3 is an important mediator of apoptosis in the immune system.[3] Deletion of CASP-3 gene in mice results in hyperplasia and cell abnormalities,[9] indicating that caspase 3 is essential for morphogenetic cell death during normal brain development.

Reagent

The antibody is supplied lyophilized from a 0.2 µm filtered solution in 0.01 M phosphate buffered saline with 5% trehalose.

Preparation Instructions
To one vial of lyophilized powder, add 1 mL of 0.2 µm filtered phosphate buffered saline to produce a 100 µg/mL stock solution. If aseptic technique is used, no further filtration should be needed for use in cell culture environments.

Storage/Stability
Prior to reconstitution, store at –20 °C. Upon reconstitution, the antibody can be stored at 2-8 °C for up to one month. For prolonged storage, freeze in working aliquots at –20 °C. Repeated freezing and thawing is not recommended. Storage in "frost-free" freezers is not recommended. Working dilution samples should be discarded if not used within 12 hours.

Product Profile
For immunoblotting, a minimum working antibody concentration of 1.0 µg/ml is recommended using a whole cell extract of the human T-cell leukemia Jurkat cell line.
Note: In order to obtain the best results in various techniques and preparations, we recommend determining the optimal working dilution by titration.

References

1. Nicholson, D. W., and Thornberry N. A., Trends Biochem. Sci., **22**, 299 (1997).
2. Cohen, G. M., Biochem. J., **326**, 1 (1997).
3. Fernandes-Alnemri, T., et al., J. Biol. Chem., **269**, 30761 (1995).
4. Nicholson, D. W., et al., Nature, **376**, 37 (1995).
5. Song, Q., et al., EMBO J., **15**, 3238 (1996).
6. Liu, X., et al., Cell, **89**, 175 (1997).
7. Jänicke, R. U., et al., J. Bio. Chem., **273**, 15540 (1998).
8. Goldberg, Y. P., et al., Nat. Genet., **13**, 442-449 (1996).
9. Kim, T-W., et al., Science, **277**, 373 (1997).

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