

Product Information

sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103 USA
Tel: (800) 521-8956 (314) 771-5765 Fax: (800) 325-5052 (314) 771-5757
email: techservice@sial.com sigma-aldrich.com

Monoclonal Anti-m/ μ Calpain, Small Subunit Clone 28F3

produced in mouse, purified immunoglobulin

Catalog Number **C0230**

Product Description

Monoclonal Anti-m/ μ Calpain, Small Subunit, (mouse IgG1 isotype) is produced by immunizing mice with purified calpain from human placenta.

Monoclonal Anti-m/ μ Calpain, Small Subunit, recognizes the 28-30 kDa subunit of m-calpain and μ -calpain by immunoblotting and immunoprecipitation. The antibody recognizes both the native and denatured protein. It reacts with human and bovine calpains, but does not react with rat or mouse calpains.

Calpains are calcium-activated, non-lysosomal thiol-proteases that cleave cytoskeletal and submembranous proteins. The calpain (calcium-dependent proteinases or calcium activated neutral protease) system consists of two ubiquitous forms of calpain (m-calpain and μ -calpain), a tissue specific calpain (n-calpain), and a calpain inhibitory protein (calpastatin). The calpain system plays a regulatory role in cellular protein metabolism.¹ This regulatory role may have important implications in platelet aggregation and pathologies associated with altered calcium homeostasis and protein metabolism such as ischemic cell injury and degenerative diseases. Inhibitors of calpain have been shown to block dexamethasone and low-level irradiation induced apoptosis in thymocytes suggesting that calpain has a regulatory or mechanistic role in apoptotic cell death.

Both m-calpain (calpain II) and μ -calpain (calpain I) are heterodimers consisting of 30 kDa and 80 kDa subunits. The 30 kDa subunit is identical in both isoforms, but the larger catalytic subunits (80 kDa) are different and exhibit distinct calcium requirements. M-calpain requires millimolar levels of calcium while μ -calpain is active at micromolar concentrations of calcium. 30 kDa/80 kDa complexes are thought to be inactive proenzymes which, upon binding to calcium, undergo conformational changes that promote cleavage of the 30 kDa subunit and result in enzyme activation.

Calpains are present in all mammalian tissues and are involved in a variety of processes including cytoskeletal reorganization, muscle protein degradation,¹ cell proliferation,^{2,3} differentiation,^{4,6} and vesicle secretion.

Reagent

Supplied as 1 mg/mL of antiserum in 0.02 M sodium phosphate, pH 7.5, 0.15 M sodium chloride, 50% glycerol, and 3 mM sodium azide.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

Store at -20°C . Do not store in a frost-free freezer. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: a working dilution of 1:5,000 is recommended. A band of 28-30 kDa is detected.

Note: In order to obtain the best results in various techniques and preparations, we recommend determining optimal working concentrations by titration.

References

1. Johnson, G.V., and Guttman, R.P., Calpains: intact and active? *Bioessays*, **19**, 1011-1018 (1997).
2. Ariyoshim, H., et al., Possible involvement of m-calpain in vascular smooth muscle cell proliferation. *Arterioscler. Thromb. Vasc. Biol.*, **18**, 493-498 (1998).
3. Kulkarni, S., et al., Calpain mediates integrin-induced signaling at a point upstream of Rho family members. *J. Biol. Chem.*, **274**, 21265-21275 (1999).

4. Balcerzak, D., et al., An antisense oligodeoxy-ribonucleotide to m-calpain mRNA inhibits myoblast fusion. *J. Cell Sci.*, **108**, 2077-2082 (1995).
5. Murray, S.S., et al., The calpain-calpastatin system and cellular proliferation and differentiation in rodent osteoblastic cells. *Exp. Cell Res.*, **233**, 297-309 (1997).
6. Stockholm, D., et al., Studies on calpain expression during differentiation of rat satellite cells in primary cultures in the presence of heparin or a mimic compound. *Exp. Cell Res.*, **252**, 392-400 (1999).

KAA,PHC 12/07-1