

Calpain 3 (E-6): sc-365277

BACKGROUND

Calpain, an intracellular calcium-dependent protease that cleaves cytoskeletal and submembranous proteins, plays a role in cytoskeletal reorganization and muscle protein degradation. Calpain is a heterodimer composed of a small regulatory subunit and one of three large catalytic subunits, designated Calpain 1, Calpain 2 and Calpain 3. Calpain 3 (calpain p94) is a muscle-preferred calcium activated neutral protease that localizes to the nucleus. The gene encoding human Calpain 3 maps to chromosome 15q15.1. Mutations involving the Calpain 3 gene are associated with limb-girdle muscle dystrophy type 2A, a form of autosomal recessive and progressive neuromuscular disorder. Calpastatin regulates Calpain by inhibiting both the proteolytic activity of calpain and its binding to membranes. Calpastatin exists in two types, tissue type and erythrocyte type, resulting from both alternative splicing and proteolytic processing.

REFERENCES

- Murachi, T. 1984. Calcium-dependent proteinases and specific inhibitors: Calpain and calpastatin. *Biochem. Soc. Symp.* 45: 149-167.
- Takano, E., et al. 1991. Molecular diversity of erythrocyte calpastatin. *Biomed. Biochim. Acta* 50: 517-521.
- Takano, E., et al. 1993. Molecular diversity of calpastatin in human erythroid cells. *Arch. Biochem. Biophys.* 303: 349-354.
- Sorimachi, H., et al. 1993. Muscle-specific calpain, p94, is degraded by autolysis immediately after translation, resulting in disappearance from muscle. *J. Biol. Chem.* 268: 10593-10605.

CHROMOSOMAL LOCATION

Genetic locus: CAPN3 (human) mapping to 15q15.1; Capn3 (mouse) mapping to 2 E5.

SOURCE

Calpain 3 (E-6) is a mouse monoclonal antibody raised against amino acids 1-80 mapping at the N-terminus of Calpain 3 of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Calpain 3 (E-6) is available conjugated to agarose (sc-365277 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-365277 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-365277 PE), fluorescein (sc-365277 FITC), Alexa Fluor[®] 488 (sc-365277 AF488), Alexa Fluor[®] 546 (sc-365277 AF546), Alexa Fluor[®] 594 (sc-365277 AF594) or Alexa Fluor[®] 647 (sc-365277 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-365277 AF680) or Alexa Fluor[®] 790 (sc-365277 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

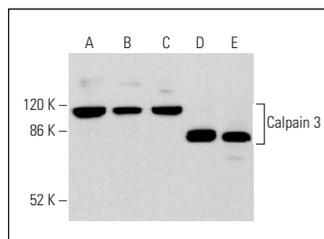
Calpain 3 (E-6) is recommended for detection of Calpain 3 isoforms I, II and III of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Calpain 3 siRNA (h): sc-41461, Calpain 3 siRNA (m): sc-41462, Calpain 3 shRNA Plasmid (h): sc-41461-SH, Calpain 3 shRNA Plasmid (m): sc-41462-SH, Calpain 3 shRNA (h) Lentiviral Particles: sc-41461-V and Calpain 3 shRNA (m) Lentiviral Particles: sc-41462-V.

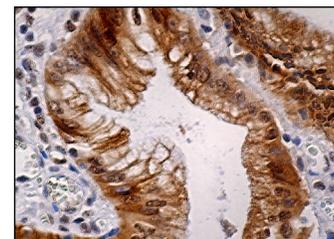
Molecular Weight of Calpain 3: 94 kDa.

Positive Controls: HL-60 whole cell lysate: sc-2209, T-47D cell lysate: sc-2293 or MOLT-4 cell lysate: sc-2233.

DATA



Calpain 3 (E-6): sc-365277. Western blot analysis of Calpain 3 expression in MOLT-4 (A), HL-60 (B) and T-47D (C) whole cell lysates and human brain (D) and mouse brain (E) tissue extracts. Detection reagent used: m-IgGκ BP-HRP: sc-516102.



Calpain 3 (E-6): sc-365277. Immunoperoxidase staining of formalin fixed, paraffin-embedded human gall bladder tissue showing cytoplasmic and nuclear staining of glandular cells.

SELECT PRODUCT CITATIONS

- Zeng, X., et al. 2017. Acylated and unacylated ghrelin inhibit atrophy in myotubes co-cultured with colon carcinoma cells. *Oncotarget* 8: 72872-72885.
- Singh, R.K., et al. 2018. Rbfox-splicing factors maintain skeletal muscle mass by regulating Calpain 3 and proteostasis. *Cell Rep.* 24: 197-208.
- Zeng, X., et al. 2021. Inhibition of mitochondrial and cytosolic calpain attenuates atrophy in myotubes co-cultured with colon carcinoma cells. *Oncol. Lett.* 21: 124.
- Macias, A., et al. 2021. Targeted next-generation sequencing reveals mutations in non-coding regions and potential regulatory sequences of Calpain 3 gene in polish limb-girdle muscular dystrophy patients. *Front. Neurosci.* 15: 692482.

RESEARCH USE

For research use only, not for use in diagnostic procedures.