SANTA CRUZ BIOTECHNOLOGY, INC.

granzyme B (O2C5/F5): sc-56122

BACKGROUND

Granzyme A and granzyme B are serine proteases that mediate apoptotic signaling in cytotoxic T lymphocytes (CTL) and natural killer (NK) cells. Both granzyme A and granzyme B are synthesized as inactive proenzymes, and they are stored within cytolytic granules and released by effector cells during degranulation. In activated CTLs, granzyme A and granzyme B are processed and activated by cathepsin C, and they then function to induce apoptosis by two distinct pathways. Granzyme B proteolytically cleaves and activates members of the caspase family of cysteine proteases, including caspase-3, caspase-6, caspase-7 and caspase-9. When cleaved, these caspases assemble into active holoenzymes that then mediate apoptosis through a defined proteolytic cascade involving nuclear lamins and PARP (poly (ADP ribose) polymerase). Granzyme A mediates the activation of apoptosis by inducing single-strand DNA breaks, membrane perturbation and nuclear condensations in an alternative pathway that is independent from caspase activation or the caspase proteolytic cascade.

REFERENCES

1. Gershenfeld, H.K., et al. 1988. Cloning and chromosomal assignment of a human cDNA encoding a T cell- and natural killer cell-specific trypsin-like serine protease. Proc. Natl. Acad. Sci. USA 85: 1184-1188.
2. Shresta, S., et al. 1995. Natural killer and lymphokine-activated killer cells require granzyme B for the rapid induction of apoptosis in susceptible target cells. Proc. Natl. Acad. Sci. USA 92: 5679-5683.
3. Trapani, J.A., et al. 1996. A putative role in the mechanism of cytotoxic lymphocyte-mediated apoptosis. Localization of granzyme B in the nucleus. J. Biol. Chem. 271: 4127-4133.
4. Atkinson, E.A., et al. 1998. Cytotoxic T lymphocyte-assisted suicide. Caspase-3 activation is primarily the result of the direct action of granzyme B. J. Biol. Chem. 273: 21261-21266.
5. Trapani, J.A., et al. 1998. Efficient nuclear targeting of granzyme B and the nuclear consequences of apoptosis induced by granzyme B and perforin are caspase-dependent, but cell death is caspase-independent. J. Biol. Chem. 273: 27934-27938.
6. Pham, C.T., et al. 1999. Dipeptidyl peptidase I is required for the processing and activation of granzymes A and B *in vivo*. Proc. Natl. Acad. Sci. USA 96: 8627-8632.
7. Shresta, S., et al. 1999. Granzyme A initiates an alternative pathway for granule-mediated apoptosis. Immunity 10: 595-605.

CHROMOSOMAL LOCATION

Genetic locus: GZMB (human) mapping to 14q11.2.

SOURCE

granzyme B (O2C5/F5) is a mouse monoclonal antibody raised against granzyme B of human origin.

RESEARCH USE

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

PRODUCT

Each vial contains 100 µg IgG_{2a} in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

granzyme B (O2C5/F5) is recommended for detection of 32 kDa granzyme B of human origin and 30 kDa granzyme B of rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)]; non cross-reactive with granzyme H, granzyme A, or mouse granzyme B.

Suitable for use as control antibody for granzyme B siRNA (h): sc-35507, granzyme B siRNA (m): sc-35508, granzyme B shRNA Plasmid (h): sc-35507-SH, granzyme B shRNA Plasmid (m): sc-35508-SH, granzyme B shRNA (h) Lentiviral Particles: sc-35507-V and granzyme B shRNA (m) Lentiviral Particles: sc-35508-V.

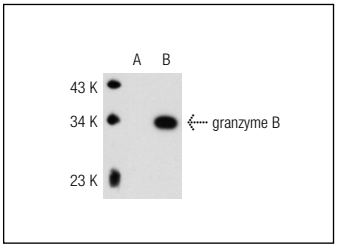
Molecular Weight of granzyme B: 32 kDa.

Positive Controls: granzyme B (h): 293T Lysate: sc-114114, CTLL-2 cell lysate: sc-2242 or HL-60 whole cell lysate: sc-2209.

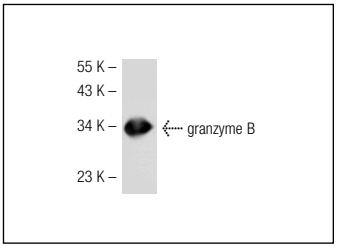
RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-mouse IgG-HRP: sc-2005 (dilution range: 1:2000-1:32,000) or Cruz Marker™ compatible goat anti-mouse IgG-HRP: sc-2031 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

DATA



granzyme B (O2C5/F5): sc-56122. Western blot analysis of granzyme B expression in non-transfected: sc-117752 (**A**) and human granzyme B transfected: sc-114114 (**B**) 293T whole cell lysates.



granzyme B (O2C5/F5): sc-56122. Western blot analysis of granzyme B expression in NK-92 whole cell lysate.

STORAGE

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

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.