SANTA CRUZ BIOTECHNOLOGY, INC.

granzyme B (h3): 293T Lysate: sc-158574

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 14q12.

PRODUCT

granzyme B (h3): 293T Lysate represents a lysate of human granzyme B transfected 293T cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

RESEARCH USE

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

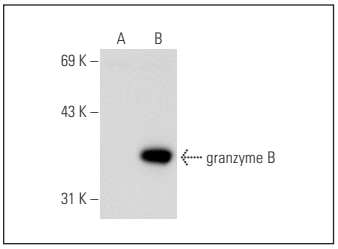
APPLICATIONS

granzyme B (h3): 293T Lysate is suitable as a Western Blotting positive control for human reactive granzyme B antibodies. Recommended use: 10-20 µl per lane.

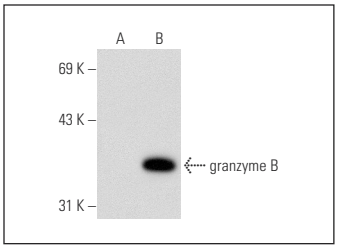
Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

granzyme B (GRB7): sc-73620 is recommended as a positive control antibody for Western Blot analysis of enhanced human granzyme B expression in granzyme B transfected 293T cells (starting dilution 1:100, dilution range 1:100-1:1,000).

DATA



granzyme B (GRB7): sc-73620. Western blot analysis of granzyme B expression in non-transfected: sc-117752 (**A**) and human granzyme B transfected: sc-158574 (**B**) 293T whole cell lysates.



granzyme B (GB7): sc-56119. Western blot analysis of granzyme B expression in non-transfected: sc-117752 (**A**) and human granzyme B transfected: sc-158574 (**B**) 293T whole cell lysates.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

PROTOCOLS

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