SANTA CRUZ BIOTECHNOLOGY, INC.

Smac (56): sc-136302

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The activation of caspases is a key regulatory step in apoptosis. Once cytochrome c is released from the mitochondria into the cytosol, it binds Apaf-1 to form an oligomeric cytochrome c/Apaf-1 complex, which induces caspase activation. Inhibitors of apoptosis proteins (IAPs), are a family of proteins that regulate the cytochrome c/Apaf-1 caspase activating pathway. Like cytochrome c, Smac (for second mitochondria-derived activator of caspase, also designated DIABLO in mouse for direct IAP binding protein with low PI) promotes caspase activation in the cytochrome c/Apaf-1/caspase-9 pathway by binding IAPs and preventing them from inhibiting caspases. In healthy cells, Smac is a mitochondrial protein, but when cells undergo apoptosis, Smac is released into the cytosol.

REFERENCES

1. Zou, H., et al. 1997. Apaf-1, a human protein homologous to *C. elegans* CED-4, participates in cytochrome c-dependent activation of caspase-3. Cell 90: 405-413.
2. Deveraux, Q.L., et al. 1998. IAPs block apoptosis events induced by caspase-8 and cytochrome c by direct inhibition of distinct caspases. EMBO J. 17: 2215-2223.
3. Thornberry, N.A., et al. 1998. Caspase: enemies within. Science 281: 1312-1316.
4. Du, C., et al. 2000. Smac, a mitochondrial protein that promotes cytochrome c-dependent caspase activation by eliminating IAP inhibition. Cell 102: 33-42.
5. Verhagen, A.M., et al. 2000. Identification of DIABLO, a mammalian protein that promotes apoptosis by binding to and antagonizing IAP proteins. Cell 102: 43-53.
6. Jia, L., et al. 2003. Role of Smac in human leukaemic cell apoptosis and proliferation. Oncogene 22: 1589-1599.
7. Uren, R.T., et al. 2004. Mitochondrial release of pro-apoptotic proteins: electrostatic interactions can hold cytochrome c but not Smac/DIABLO to mitochondrial membranes. J. Biol. Chem. 280: 2266-2274.
8. Voortman, J., et al. 2007. Bortezomib, but not cisplatin, induces mitochondria-dependent apoptosis accompanied by up-regulation of noxa in the non-small cell lung cancer cell line NCI-H460. Mol. Cancer Ther. 6: 1046-1053.

CHROMOSOMAL LOCATION

Genetic locus: DIABLO (human) mapping to 12q24.31; Diablo (mouse) mapping to 5 F.

SOURCE

Smac (56) is a mouse monoclonal antibody raised against amino acids 125-239 of Smac of human origin.

PRODUCT

Each vial contains 50 µg IgG_{2b} in 0.5 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

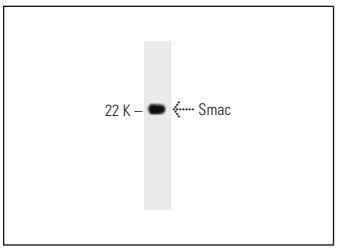
Smac (56) is recommended for detection of Smac of mouse, rat, human and canine origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for Smac siRNA (h): sc-36505, Smac siRNA (m): sc-36506, Smac shRNA Plasmid (h): sc-36505-SH, Smac shRNA Plasmid (m): sc-36506-SH, Smac shRNA (h) Lentiviral Particles: sc-36505-V and Smac shRNA (m) Lentiviral Particles: sc-36506-V.

Molecular Weight of Smac: 21 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, Caki-1 cell lysate: sc-2224 or DU 145 cell lysate: sc-2268.

DATA



Smac (56): sc-136302. Western blot analysis of Smac expression in HeLa whole cell lysate.

SELECT PRODUCT CITATIONS

1. Gravina, G.L., et al. 2015. Dual PI3K/mTOR inhibitor, XL765 (SAR245409), shows superior effects to sole PI3K [XL147 (SAR245408)] or mTOR [rapamycin] inhibition in prostate cancer cell models. Tumour Biol. 37: 341-351.
2. Ge, Y., et al. 2017. Synergistic antitumor effects of CDK inhibitor SNS-032 and an oncolytic adenovirus co-expressing TRAIL and Smac in pancreatic cancer. Mol. Med. Rep. 15: 3521-3528.
3. Liu, W., et al. 2018. Olfactomedin 4 contributes to hydrogen peroxide-induced NADPH oxidase activation and apoptosis in mouse neutrophils. Am. J. Physiol., Cell Physiol. 315: C494-C501.
4. Carvalho, M.R., et al. 2021. Influence of high-intensity interval training and intermittent fasting on myocardium apoptosis pathway and cardiac morphology of healthy rats. Life Sci. 264: 118697.

STORAGE

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

RESEARCH USE

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