SANTA CRUZ BIOTECHNOLOGY, INC.

Smac siRNA (h): sc-36505

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.

CHROMOSOMAL LOCATION

Genetic locus: DIABLO (human) mapping to 12q24.31.

PRODUCT

Smac siRNA (h) is a target-specific 19-25 nt siRNA designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Smac shRNA Plasmid (h): sc-36505-SH and Smac shRNA (h) Lentiviral Particles: sc-36505-V as alternate gene silencing products.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

Smac siRNA (h) is recommended for the inhibition of Smac expression in human cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RESEARCH USE

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

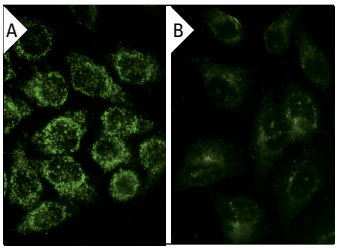
GENE EXPRESSION MONITORING

Smac (C-10): sc-393118 is recommended as a control antibody for monitoring of Smac gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Smac gene expression knockdown using RT-PCR Primer: Smac (h)-PR: sc-36505-PR (20 µl, 422 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

DATA



Smac siRNA (h): sc-36505. Immunofluorescence staining of methanol-fixed, control HeLa (**A**) and Smac siRNA silenced HeLa (**B**) cells showing diminished cytoplasmic staining in the siRNA silenced cells. Cells probed with Smac (V-17): sc-12683.

SELECT PRODUCT CITATIONS

1. Yang, X., et al. 2006. Akt-mediated cisplatin resistance in ovarian cancer: modulation of p53 action on caspase-dependent mitochondrial death pathway. Cancer Res. 66: 3126-3136.
2. Quast, S.A., et al. 2012. General sensitization of melanoma cells for TRAIL-induced apoptosis by the potassium channel inhibitor TRAM-34 depends on release of Smac. PLoS ONE 7: e39290.
3. Berger, A., et al. 2013. Sensitization of melanoma cells for TRAIL-induced apoptosis by BMS-345541 correlates with altered phosphorylation and activation of Bax. Cell Death Dis. 4: e477.
4. Berger, A., et al. 2014. RAF inhibition overcomes resistance to TRAIL-induced apoptosis in melanoma cells. J. Invest. Dermatol. 134: 430-440.
5. Jeong, S., et al. 2019. Cannabidiol promotes apoptosis via regulation of XIAP/Smac in gastric cancer. Cell Death Dis. 10: 846.
6. Liu, T., et al. 2020. Engeletin suppresses lung cancer progression by inducing apoptotic cell death through modulating the XIAP signaling pathway: a molecular mechanism involving ER stress. Biomed. Pharmacother. 128: 110221.

PROTOCOLS

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