SANTA CRUZ BIOTECHNOLOGY, INC.

Top1 (yH-16): sc-26166

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

DNA topoisomerases play essential roles in many DNA metabolic processes including DNA repair. Topoisomerases can introduce DNA damage upon exposure to drugs that stabilize the covalent protein-DNA intermediate of the topoisomerase reaction. Lesions in DNA are also able to trap topoisomerase-DNA intermediates. DNA topoisomerase I (Top1) catalyzes the relaxation of supercoiled DNA by a mechanism of transient DNA strand cleavage characterized by the formation of a phosphotyrosyl bond between the DNA end and active site tyrosine. The antitumor agent camptothecin (CPT) reversibly stabilizes the covalent enzyme-DNA intermediate by inhibiting DNA religation. When a replication fork collides with a DNA Top1 cleavage complex, the covalently bound enzyme must be removed from the DNA 3' end before recombination-dependent replication restart. The tyrosyl-DNA phosphodiesterase Tdp1 and the structure-specific endonuclease Rad1-Rad10 function as primary alternative pathways of Top1 repair in *Saccharomyces cerevisiae*. In the budding yeast *S. cerevisiae*, DNA topoisomerases I and II can functionally substitute for each other in removing positive and negative DNA supercoils.

REFERENCES

1. Fiorani, P. and Bjornsti, M.A. 2000. Mechanisms of DNA topoisomerase I-induced cell killing in the yeast *Saccharomyces cerevisiae*. Annu. NY. Acad. Sci. 922: 65-75.
2. Nitiss, J.L., Nitiss, K.C., Rose, A. and Waltman, J.L. 2001. Overexpression of type I topoisomerases sensitizes yeast cells to DNA damage. J. Biol. Chem. 276: 26708-26714.
3. Trigueros, S. and Roca, J. 2002. Failure to relax negative supercoiling of DNA is a primary cause of mitotic hyper-recombination in topoisomerase-deficient yeast cells. J. Biol. Chem. 277: 37207-37211.
4. Vance, J.R. and Wilson, T.E. 2002. Yeast Tdp1 and Rad1-Rad10 function as redundant pathways for repairing Top1 replicative damage. Proc. Natl. Acad. Sci. USA 99: 13669-13674.
5. Woo, M.H., Vance, J.R., Marcos, A.R., Bailly, C. and Bjornsti, M.A. 2002. Active site mutations in DNA topoisomerase I distinguish the cytotoxic activities of camptothecin and the indolocarbazole, rebeccamycin. J. Biol. Chem. 277: 3813-3822.

SOURCE

Top1 (yH-16) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of Top1 of *Saccharomyces cerevisiae* origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-26166 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

STORAGE

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

APPLICATIONS

Top1 (yH-16) is recommended for detection of Top1 of *Saccharomyces cerevisiae* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (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.

RESEARCH USE

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

PROTOCOLS

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