



Top1 (yC-13): sc-26167

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

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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 (yC-13) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the C-terminus 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-26167 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

RESEARCH USE

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

APPLICATIONS

Top1 (yC-13) 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.

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.