SANTA CRUZ BIOTECHNOLOGY, INC.

Apn1 (yS-18): sc-26254

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The Power to Question

BACKGROUND

DNA nucleases catalyze the cleavage of phosphodiester bonds. These enzymes play crucial roles in various DNA repair processes, which involve DNA replication, base excision repair, nucleotide excision repair, mismatch repair, and double strand break repair. In *Saccharomyces cerevisiae,* Apn1 functions as the major apurinic/apyrimidinic endonuclease and 3'-repair DNA diesterase to repair DNA damaged by oxygen radicals and alkylating agents. Specifically, Apn1 removes abasic sites, which are inhibitory to synthesis by DNA polymerases. Apn1, the yeast homolog of *Escherichia coli* endonuclease IV, shows overlapping function with the yeast Apn2, Rad1/Rad10 and Mus81/Mms4 proteins. Apn1 mutants display hypersensitivity to both oxidative and alkylating agents, and accumulate unrepaired damages in chromosomal DNA. The yeast Apn1 gene maps to chromosome XI, and expresses a protein that localizes to both the nucleus and mitochondria, where it may participate in repair of mitochondrial DNA.

REFERENCES

1. Ramotar, D., Popoff, S.C. and Demple, B. 1991. Complementation of DNA repair-deficient *Escherichia coli* by the yeast Apn1 apurinic/apyrimidinic endonuclease gene. Mol. Microbiol. 5: 149-155.
2. Ramotar, D., Popoff, S.C., Gralla, E.B. and Demple, B. 1991. Cellular role of yeast Apn1 apurinic endonuclease/3'-diesterase: repair of oxidative and alkylation DNA damage and control of spontaneous mutation. Mol. Cell. Biol. 11: 4537-4544.
3. Ramotar, D., Kim, C., Lillis, R. and Demple, B. 1993. Intracellular localization of the Apn1 DNA repair enzyme of *Saccharomyces cerevisiae*. Nuclear transport signals and biological role. J. Biol. Chem. 268: 20533-20539.
4. Game, J., Bell, M., Ramotar, D. and Miller, H. 1994. The use of random-breakage mapping to locate the genes APN1 and YUH1 in the *Saccharomyces* genome, and to determine gene order near the left end of chromosome XI. Yeast 10: 543-554.
5. Vongsamphanh, R., Fortier, P.K. and Ramotar, D. 2001. Pir1p mediates translocation of the yeast Apn1p endonuclease into the mitochondria to maintain genomic stability. Mol. Cell. Biol. 21: 1647-1655.
6. Unk, I., Haracska, L., Prakash, S. and Prakash, L. 2001. 3'-phosphodiesterase and 3'→5' exonuclease activities of yeast Apn2 protein and requirement of these activities for repair of oxidative DNA damage. Mol. Cell. Biol. 21: 1656-1661.
7. Nishino, T., et al. 2002. Structure and function of nucleases in DNA repair: shape, grip and blade of the DNA scissors. Oncogene. 21: 9022-9032.
8. Guillet, M. and Boiteux, S. 2002. Endogenous DNA abasic sites cause cell death in the absence of Apn1, Apn2 and Rad1/Rad10 in *Saccharomyces cerevisiae*. EMBO J. 21: 2833-2841.

SOURCE

Apn1 (yS-18) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of Apn1 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-26254 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Apn1 (yS-18) is recommended for detection of Apn1 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).

Molecular Weight of (predicted) Apn1: 41 kDa.

Molecular Weight of (observed) Apn1: 28 kDa.

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.

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.