SANTA CRUZ BIOTECHNOLOGY, INC.

Cak1 (yL-15): sc-26204

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The Power to Question

BACKGROUND

A family of protein kinases known as cyclin-dependent kinases (Cdks) mediate Eukaryotic cell cycle progression. Cdk-activating kinase (CAK1) phosphorylates the major *S. cerevisiae* Cdk, Cdc28p, at threonine-169 allowing it to bind tightly to cyclin. This activation pathway contrasts with that in higher eukaryotes, in which cyclin binding appears to precede activating phosphorylation. CAK1 is a monomeric protein kinase with unique properties shared by Csk1 in *S. Pombe*, Cak1 in *Candida Albicans* and Cak1At in *Arabidopsis Thaliana*. All of these kinases display a preference for cyclin-free Cdk substrates, are insensitive to the protein kinase inhibitor 5'-FSBA and to the mutation of a highly conserved lysine residue found in the nucleotide binding pocket of all protein kinases. CAK1 also targets Bur1 which is part of a Cdk complex in *S. cerevisiae* that is involved in transcriptional regulation. CAK1 is required for spore wall assembly and mutants lacking CAK1 are blocked early in meiotic development due to substantial delays in premeiotic DNA synthesis and defects in the expression of sporulation-specific genes, including IME1. CAK1 activates multiple steps in meiotic development through the activation of various protein kinase targets.

REFERENCES

1. Ross, K.E., Kaldis, P., Solomon, M.J. 2000. Activating phosphorylation of the *Saccharomyces cerevisiae* cyclin-dependent kinase, cdc28p, precedes cyclin binding. Mol. Cell Biol. 11: 1597-1609.
2. Tsakraklides, V., Solomon, M.J. 2002. Comparison of Cak1p-like cyclin-dependent kinase-activating kinases. J. Biol. Chem. 277: 33482-33489.
3. Schaber, M., Lindren, A., Schindler, K., Bungard, D., Kaldis, P., Winter, E. 2002. CAK1 promotes meiosis and spore formation in *Saccharomyces cerevisiae* in a CDC28-independent fashion. Mol. Cell Biol. 22: 57-68.
4. Yao, S., Prelich, G. 2002. Activation of the Bur1-Bur2 cyclin-dependent kinase complex by Cak1. Mol. Cell Biol. 22: 6750-6758.
5. Kitazono, A.A., Kron, S.J. 2002. An essential function of yeast cyclin-dependent kinase Cdc28 maintains chromosome stability. J. Biol. Chem. 277: 48627-48634.

SOURCE

Cak1 (yL-15) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of Cak1 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-26204 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

Cak1 (yL-15) is recommended for detection of Cak1 of *Saccaromyces 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.