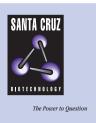
SANTA CRUZ BIOTECHNOLOGY, INC.

Cya A (bC-14): sc-17901



BACKGROUND

Bordetella pertussis, the causative agent of whooping cough, secretes several toxins implicated in this disease. One of these putative virulence factors is the adenylate cyclase toxin (Cya A or ACT), which elevates intracellular cAMP in eukaryotic cells to cytotoxic levels upon activation by endogenous calmodulin. The Bordetella pertussis Cya toxin-encoding locus (Cya) is composed of five genes. The Cya A gene encodes a virulence factor, Cya A, exhibiting adenylate cyclase, hemolytic and invasive activities. Cya A is related to the RTX (repeats in toxin) family of pore-forming toxins. Like all RTX toxins, Cya A is synthesized as a protoxin (proCya A) encoded by the cyaA gene. Activation to the mature cell-invasive toxin involves palmitoylation of Lysine 983 and is dependent on co-expression of Cya C. The Cya B, D and E gene products are necessary for Cya A transport, and the Cya C gene product is required to activate Cya A. Additionally, Cya A uses the α M β 2 Integrin (CD11b/CD18) as a cell receptor. Thus, the cellular distribution of CD11b, mostly on neutrophils, macrophages, and dendritic and natural killer cells, supports a role for Cya A in disrupting the early, innate antibacterial immune response.

REFERENCES

- Sebo, P., Glaser, P., Sakamoto, H. and Ullmann, A. 1991. High-level synthesis of active adenylate cyclase toxin of *Bordetella pertussis* in a reconstructed *Escherichia coli* system. Gene 104: 19-24.
- Gross, M.K., Au, D.C., Smith, A.L. and Storm, D.R. 1992. Targeted mutations that ablate either the adenylate cyclase or hemolysin function of the bifunctional Cya A toxin of *Bordetella pertussis* abolish virulence. Proc. Natl. Acad. Sci. USA 89: 4898-4902.
- Ehrmann, I.E., Weiss, A.A., Goodwin, M.S., Gray, M.C., Barry, E. and Hewlett, E.L. 1992. Enzymatic activity of adenylate cyclase toxin from *Bordetella pertussis* is not required for hemolysis. FEBS Lett. 304: 51-56.
- Westrop, G.D., Hormozi, E.K., Da Costa, N.A., Parton, R. and Coote, J.G. 1996. *Bordetella pertussis* adenylate cyclase toxin: proCya A and Cya C proteins synthesised separately in *Escherichia coli* produce active toxin *in vitro*. Gene 180: 91-99.
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SOURCE

Cya A (bC-14) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of Cya A of *B. pertussis* origin.

PRODUCT

Each vial contains 200 μ g lgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-17901 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

Cya A (bC-14) is recommended for detection of Cya A of *B. pertussis* origin by Western Blotting (starting dilution 1:200, dilution range 1:200-1:1,000), immunoprecipitation $[1-2 \mu g \text{ per } 100-500 \mu g \text{ of total protein (1 ml of cell lysate)]}$, immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Molecular Weight of Cya A: 233 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. 2) Immunofluo-rescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

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.