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Anthrax Edema Factor Antibody

Catalog # ASC10279

Product Information

Application	E
Primary Accession	P40136
Other Accession	P40136, 729244
Reactivity	Bacteria
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	92478
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	Anthrax Edema Factor antibody can be used for the detection of Anthrax PA protein in ELISA. It will detect 10 ng of free peptide at 1 □g/mL.

Additional Information

Gene ID	45025501
Other Names	Anthrax Edema Factor Antibody: Calmodulin-sensitive adenylate cyclase, ATP pyrophosphate-lyase, EF, Calmodulin-sensitive adenylate cyclase
Target/Specificity	pxo1_122;
Reconstitution & Storage	Anthrax Edema Factor antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	Anthrax Edema Factor Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	cya
Function	Edema factor (EF), which constitutes one of the three proteins composing the anthrax toxin, causes edema in the host (PubMed:11807546, PubMed:2108958, PubMed:6285339). Acts as a calmodulin-dependent adenylyl cyclase by converting ATP to cAMP, leading to dramatic elevation of intracellular cAMP levels in the host, thereby causing edema (PubMed:11807546, PubMed:2108958, PubMed:6285339). EF is not toxic by itself and only acts as an edema factor when associated with protective antigen (PA) to form the edema toxin (EdTx) (PubMed:11553601, PubMed:2108958). Required for the survival of germinated spores within macrophages at the early stages of infection (PubMed:11737637).

Cellular Location	Secreted. Host cytoplasm, host cytosol Note=Translocation into host cytosol is mediated via interaction with the cleaved form of protective antigen (PA-63): following secretion, EF binds via its N-terminal region to the upper rim of the ring-shaped homooligomer (homoheptamer or homooctamer) formed by PA-63 on the host cell membrane (PubMed:32047164). In this PA-63 pre-pore state, the N- terminal segment of EF refolds into an alpha helix engaged in the alpha-clamp of the PA-63 pre-pore (PubMed:32047164, PubMed:32521227) Recruitment to the PA-63 pre-pore enables domain reorganization of EF (PubMed:32521227). Loaded complexes are then endocytosed, followed by a conformational change of oligomerized PA-63 from the pre-pore to pore state, which is triggered by the low pH in the endosome (PubMed:11207582). EF is then unfolded to pass through the PA-63 pore and translocate into the host cytosol (PubMed:32047164)

Background

Anthrax Edema Factor Antibody: Anthrax infection is initiated by the inhalation, ingestion, or cutaneous contact with Bacillus anthracis endospores. B. anthracis produces three polypeptides that comprise the anthrax toxin: protective antigen (PA), lethal factor (LF), and edema factor (EF). PA binds to two related proteins on the cell surface; these are termed tumor epithelial marker 8 (TEM8)/anthrax toxin receptor (ATR) and capillary morphogenesis protein 2 (CMG2), although it is still unclear which is physiologically relevant. Following PA binding to its receptor, PA is cleaved into two fragments by a furin-like protease. The bound fragment binds both LF and EF; the resulting complex is then endocytosed which allows the translocation of LF and EF into the cytoplasm. EF is a calmodulin and Ca++-dependent adenylate cyclase responsible for the edema seen in the disease. It is thought to benefit the B. anthracis bacteria by inhibiting cells of the host immune system.

References

Schwartz MN. Recognition and management of anthrax - an update. New Engl. J. Med. 2001; 345:1621-6.
Moayeri M and Leppla SH. The roles of anthrax toxin in pathogenesis. Curr. Opin. Microbiol. 2004; 7:19-24.
Bradley KA, Mogridge J, Mourez M, et al. Identification of the cellular receptor for anthrax toxin. Nature 2001; 414:225-9.
Scobie HM, Rainey GJ, Bradley KA, et al. Human capillary morphogenesis protein 2 functions as an anthrax toxin receptor. Proc. Natl. Acad. Sci. USA 2003; 100:5170-4.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.