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Anthrax Lethal Factor Antibody

Catalog # ASC10277

Product Information

Application	E
Primary Accession	P15917
Other Accession	P15917, 50402185
Reactivity	Bacteria
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	93770
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	Anthrax lethal factor antibody can be used for the detection of Anthrax LF protein in ELISA. It will detect 10 ng of free peptide at 1 □g/mL.

Additional Information

Gene ID	45025515
Other Names	Anthrax Lethal Factor Antibody: Lethal factor, Anthrax lethal toxin endopeptidase component, LF, Lethal factor
Target/Specificity	pxo1_107;
Reconstitution & Storage	Anthrax Lethal 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 Lethal Factor Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	lef {ECO:0000303|PubMed:2509294}
Function	Lethal factor (LF), which constitutes one of the three proteins composing the anthrax toxin, is able to trigger rapid cell death in macrophages (PubMed:10475971, PubMed:11104681, PubMed:3711080, PubMed:8380282, PubMed:9563949, PubMed:9703991). Acts as a protease that cleaves the N-terminal of most dual specificity mitogen-activated protein kinase kinases (MAPKKs or MAP2Ks) (except for MAP2K5): cleavage invariably occurs within the N-terminal proline-rich region preceding the kinase domain, thus disrupting a sequence involved in directing specific protein-protein interactions necessary for the assembly of signaling complexes (PubMed:10475971, PubMed:11104681, PubMed:14718925,

	PubMed:9563949, PubMed:9703991). Also cleaves mouse Nlrp1b: host Nlrp1b cleavage promotes ubiquitination and degradation of the N-terminal part of Nlrp1b by the proteasome, thereby releasing the cleaved C-terminal part of Nlrp1b, which polymerizes and forms the Nlrp1b inflammasome followed by host cell pyroptosis (PubMed:10338520, PubMed:19651869, PubMed:30872531, PubMed:31268597). Able to cleave mouse Nlrp1b alleles 1 and 5, while it is not able to cleave Nlrp1b alleles 2, 3 and 4 (PubMed:16429160, PubMed:19651869). In contrast, does not cleave NLRP1 human ortholog (PubMed:19651869). LF is not toxic by itself and only acts as a lethal factor when associated with protective antigen (PA) to form the lethal toxin (LeTx): PA is required for LF translocation into the host cytosol (PubMed:10475971, PubMed:11104681, PubMed:9563949, PubMed:9703991).
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, LF binds via its N-terminal region to the upper rim of the ring-shaped homooligomer formed by PA-63 on the host cell membrane (PubMed:21037566, PubMed:32810181). In this PA-63 pre-pore state, the N-terminal segment of LF refolds into an alpha helix engaged in the alpha-clamp of the PA-63 pre-pore (PubMed:32047164, 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:10085027, PubMed:12551953, PubMed:3711080, PubMed:8380282). LF is then unfolded to pass through the PA-63 pore and translocate into the host cytosol (PubMed:21037566, PubMed:32047164, PubMed:32521227)

Background

Anthrax Lethal 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. LF is the primary toxin of anthrax and functions as a highly specific protease that cleaves members of the mitogen-activated protein kinase kinase (MAPKK) family near their amino terminus, interfering with MAPK signaling and inducing apoptosis.

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.

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