

CERTIFICATE OF ANALYSIS  
ANTHRAX PROTECTIVE ANTIGEN (PA)  
RECOMBINANT from *Bacillus anthracis*  
Lot #17119A1B

**Contents**

Each vial, when reconstituted with 0.5 ml water, contains 0.6 mg of Protective Antigen from *Bacillus anthracis* in 0.005 M HEPES, 0.05 M NaCl, pH 7.5. Read the following recommendations prior to reconstituting this material. **Handle the product gently; do not vortex.**

**Packaging/Storage**

Anthrax toxin proteins, when reconstituted with water, may be stored at 2 – 8°C and used successfully within a few hours. However, over longer periods of time, there will be a decline in the activity of the PA+Lethal Factor (LF) complex in living cells.

**Packaging/Storage**

This product is provided as an aseptically packaged lyophilized powder, sealed under vacuum. Store at 2 – 8°C prior to reconstitution.

**Concentration**

Protein concentration was determined by absorbance at 280 nm using an extinction coefficient of 0.97 for a 1 mg/ml solution. This value is calculated by ProtParam<sup>1</sup> using an algorithm based on the Edelhoch<sup>2</sup> method with modifications described in Pace et al<sup>3</sup>.

**Purity**

When examined on 4 – 12% SDS-PAGE gels, this protein migrates as a single major band with an apparent molecular weight of approximately 83,000 daltons. Densitometric analysis estimates the purity as >90%.

The endotoxin content, determined using a kinetic chromogenic LAL assay, is <1 EU/mg.

**Activation**

In certain systems, this product may require trypsinization to generate the active C-terminal 63,000 dalton fragment.<sup>4</sup> Purified nicked Protective Antigen, product #174, is available.

**Cytotoxic Activity**

When J774A.1 cells were treated with this lot of PA alone, no toxicity was seen at 0.5 µg/ml. When combined with LF, Lethal Toxin formed causing the expected cytotoxic activity.

(continued)

### **Tissue Culture Application**

For tissue culture applications, medium containing glutamine must be fresh. Ammonium ions are released when glutamine breaks down, and may prevent acidification of the endosome thereby inhibiting translocation of LF or Edema Factor (EF) into the cytosol.<sup>5</sup> A stable form of glutamine must be used.<sup>6,7</sup>

### **Handling**

Good laboratory technique should be employed in the safe handling of this product; refer to the MSDS. Wear appropriate laboratory attire including lab coat, gloves and safety glasses. Nitrile gloves are recommended when handling lyophilized material.

This product is intended for research purposes by qualified personnel. It is not intended for use in humans or as a diagnostic agent. List Biological Laboratories, Inc. is not liable for any damages resulting from the misuse or handling of this product.

**FOR RESEARCH PURPOSES ONLY. NOT FOR HUMAN USE.**

### **References**

1. [www.expasy.ch/tools/protparam-doc.html](http://www.expasy.ch/tools/protparam-doc.html)
2. Edelhoich, H. (1967) *Biochemistry*, **6**, 1948-1954.
3. Pace, C.N., Vajdos, F., Fee, L., Grimsley, G. and Gray, T. (1995) *Protein Sci.* **4**, 2411-2423.
4. Bhatnagar, R., Singh, Y., Leppla, S.H., Friedlander, A.M. (1989) *Infect. Immun.* **57**, 2107-2114.
5. Stephen Little, Bacteriology Division, US Army Medical Research Institute of Infectious Diseases, Fort Detrick, MD, 21702, personal communication, 2003.
6. GlutaMAX™ by Invitrogen/Gibco, [www.invitrogen.com](http://www.invitrogen.com)
7. Ala-Gln by Sigma, [www.sigmaaldrich.com](http://www.sigmaaldrich.com)

Production: KD Date: 11-9-18 Management: NS Date: 11/9/18 QA/QC: JC Date: 11/9/18  
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