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Product #178A
Lot #1785A1A

**CERTIFICATE OF ANALYSIS
RECOMBINANT
ANTHRAX EDEMA FACTOR (EF)
from *Bacillus anthracis*
Lot #1785A1A**

Contents

Each vial contains 0.1 mg of edema factor from *Bacillus anthracis*. When reconstituted with 0.1 ml of water, the concentration of buffer is 5 mM HEPES, 50 mM NaCl, pH 7.5. Read the following recommendations prior to reconstituting this material. **Handle the product gently. Do not vortex.**

Recommended Reconstitution and Storage of Anthrax Proteins

Anthrax toxin proteins, when reconstituted in 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 enzymatic activity of EF.

If it is necessary to store this material, reconstitute it at a concentration of 1 mg/ml.¹ Reconstitution with 1 mg/ml BSA will enhance stability and recovery. It is further recommended that the solution be aliquoted and frozen at either -20°C or -80°C. Avoid repeated freeze-thaw cycles. After the protein has been reconstituted as described above, cold glycerol may be added to 50% if a liquid is desired at freezer temperatures.

Packaging/Storage

This product is packaged aseptically, lyophilized, and sealed under vacuum. Store at 2-8°C prior to reconstitution.

Concentration

Protein concentration was determined by a modification of the method of Bradford² using bovine serum albumin as the standard.

Purity

When examined on 4-12% polyacrylamide gels in the presence of SDS, this preparation migrates as a band representing > 95% of the protein with an apparent molecular weight of 89,000 daltons.

The endotoxin content determined using a kinetic chromogenic LAL assay is 0.1 EU/mg.

Activity

The enzymatic activity of edema factor is assessed in a cell free system by measuring cAMP formation from ATP.³ The activity of this EF lot is approximately 1150 μ M cAMP/min/mg protein.



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The potency of EF to raise cAMP levels in Chinese hamster ovary (CHO) cells is tested in the presence of 1 µg/ml PA by the method of Kumar, *et al.*⁴ The effective concentration 50% (EC₅₀) of this EF lot meets specifications.

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 EF into the cytosol.⁵ A stable form of glutamine must be used.^{6,7}

Handling

Good laboratory technique should be employed in the safe handling of this product. This involves observing the following practices:

1. Wear appropriate laboratory attire including a labcoat, gloves, and safety glasses. Nitrile gloves are recommended when handling lyophilized material.
2. Do not mouth pipette, inhale, ingest, or allow to come into contact with open wounds. Wash thoroughly any area of the body which comes into contact with the product.
3. Avoid accidental autoinoculation by exercising extreme care when handling in conjunction with any injection device.
4. This product is intended for research purposes only. 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. Leppla, S.H. (1988) *Meth. Enz.* **165**, 103-116.
2. Bradford, M.M. (1976) *Anal. Biochem.* **72**, 248-254.
3. Bhatnagar, R., Singh, Y., Leppla, S.H., Friedlander, A.M. (1989) *Infec. Immun.* **57**, 2107-2114.
4. Kumar, P., Ahuja, N., and Bhatnagar, R. (2002) *Infection and Immunity* **70(9)**, 4997-5007.
5. Stephen Little, Personal Communication.
6. Glutamax by Invitrogen/Gibco, www.invitrogen.com
7. Ala-Gln by Sigma, www.sigmaaldrich.com

Quality Assurance:

Date:

10 AUG 2021