

**Epsilon Protoxin, from *Clostridium perfringens*, Strain 34 (Type B)**

**Catalog No. NR-856**

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**For research use only. Not for human use.**

**Contributor and Manufacturer:**

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**Product Description:**

Epsilon protoxin was purified from culture supernatants of *Clostridium perfringens* (*C. perfringens*), strain 34 (type B) (ATCC® 3626™). The protein is suitable for western blots or can be treated with trypsin to generate the active toxin for cytotoxicity assays.<sup>1</sup>

Epsilon toxin is produced by strains of *C. perfringens* that inhabit the intestinal tract of sheep and lambs. Intoxication results in enterotoxemia and neurological disorders and is usually fatal in certain livestock. The sequence of the gene for the epsilon toxin precursor protein has been reported (GenBank: M95206)<sup>2,3</sup> and is reported in Appendix I. The structure of epsilon protoxin has been solved (PDB: 1UYJ).<sup>4</sup>

**Material Provided:**

Each vial of NR-856 contains approximately 0.25 mg of epsilon protoxin suspended in 10 mM phosphate buffer (pH 7.4). The concentration, expressed as mg per mL, is shown on the Certificate of Analysis.

**Packaging/Storage:**

NR-856 was packaged aseptically in plastic cryovials. The product is provided frozen on dry ice and should be stored at -80°C or colder immediately upon arrival (the label for lot 5053478 incorrectly indicates that the storage temperature is 2 to 8°C). Repeated freeze-thaw cycles should be avoided.

**Functional Activity:**

NR-856 reacts with polyclonal IgG antibody produced by immunization of rabbits with peptides that correspond to distinct internal regions of the full-length epsilon toxin (BEI Resources NR-865).

**Citation:**

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: Epsilon Protoxin, from *Clostridium perfringens*, Strain 34 (Type B), NR-856."

**Biosafety Level: 2**

Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the following publication: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health. Biosafety in Microbiological and Biomedical Laboratories. 5th ed. Washington, DC: U.S. Government Printing Office, 2009; see [www.cdc.gov/biosafety/publications/bmb15/index.htm](http://www.cdc.gov/biosafety/publications/bmb15/index.htm).

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**References:**

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5. Smedley, J. G., et al. "The Enteric Toxins of *Clostridium perfringens*." Rev. Physiol. Biochem. Pharmacol. 152 (2004): 183-204. PubMed: 15517462.
6. Goswami, P. P., et al. "Molecular Cloning of *Clostridium perfringens* Epsilon-Toxin Gene and Its High Level Expression in *E. coli*." Biochem. Biophys. Res. Commun. 226 (1996): 735-740. PubMed: 8831683.
7. Mantis, N. J. "Vaccines Against the Category B Toxins: Staphylococcal Enterotoxin B, Epsilon Toxin and Ricin." Adv. Drug. Deliv. Rev. 57 (2005): 1424-1439. PubMed: 15935880.

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**Appendix I: Gene and Protein Sequences of Epsilon Protoxin, from *Clostridium perfringens*, Strain 34 (Type B)\***

DNA Sequence:

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ATGAAAAAAAA ATCTTGTAAG AAGTTTAGCA ATCGCATCAG CGGTGATATC CATCTATTCA
ATAGTTAATA TTGTTTCACC AACTAATGTA ATAGCTAAGG AAATATCTAA TACAGTATCT
AATGAAATGT CCAAAAAAGC TTCTTATGAT AATGTAGATA CATTAATTGA GAAAGGAAGA
TATAATACAA AATATAATTA CTTAAAGAGA ATGGAAAAAT ATTATCCTAA TGCTATGGCA
TATTTTGATA AGGTTACTAT AAATCCACAA GGAAATGATT TTTATATTAA TAATCCTAAA
GTTGAATTAG ATGGAGAACC ATCAATGAAT TATCTTGAAG ATGTTTATGT TGGAAAAGCT
CTCTTAACTA ATGATACTCA ACAAGAACAA AAATTTAAAT CACAATCATT CACTTGTAAG
AATACTGATA CAGTAACTGC AACTACTACT CATACTGTGG GAACTTCGAT ACAAGCAACT
GCTAAGTTTA CTGTTCCCTTT TAATGAAACA GGAGTATCAT TAACTACTAG TTATAGTTTT
GCAAATACAA ATACAAATAC TAATTCAAAA GAAATTACTC ATAATGTCCC TTCACAAGAT
ATACTAGTAC CAGCTAATAC TACTGTAGAA GTAATAGCAT ATTTAAAAAA AGTTAATGTT
AAAGGAAATG TAAAGTTAGT AGGACAAGTA AGTGGAAAGT AATGGGGAGA GATACCTAGT
TATTTAGCTT TTCCTAGGGA TGGTTATAAA TTTAGTTTAT CGGATACAGT AAATAAGAGT
GATTTAAATG AAGATGGTAC TATTAATATT AATGGAAAAG GAAATTATAG TGCAGTTATG
GGAGATGAGT TAATAGTTAA GGTTAGAAAT TTAAATACAA ATAATGTACA AGAATATGTA
ATACCTGTAG ATAAAAAAGA AAAAAGTAAT GATTCAAATA TAGTAAAATA TAGGAGTCTT
TATATTAAGG CACCAGGAAT AAAATAA
    
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Protein Sequence:

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EISNTVSNEM SKKASYDNVD T LIEKGRYNT KYNLYKRMEK YYPNAMAYFD KVTINPQGND
FYINNPKVEL DGEPSMNYLE DVYVVGKALLT NDTQQEQKLEK SQSFTCKNTD TVNATTTHTV
GTSIQATAKE TVPFNETGVS LTTSYSFANT NTNTNSKEIT HNVPSQDILV PANTTVEVIA
YLKKNVVKGN VKLVGVSGS EWGEIPSYLA FPRDGYKFSL SDTVNKSDLN EDGTININGK
GNYSAVMGDE LIVKVRNLNT NNVQEYVIPV DKKEKSNSDN IVKYRSLYIK APGIK
    
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\*Provided by the contributor